TABLE OF CONTENTS VOL#007 FOR 28211 001 -10991 MODE M3 ROST BY FACTORY MLC ▫▫ DATE 29JUL70

TOTAL PAGES THIS VOLUME 20

2540 READER FUNCTION TEST

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1. PURPOSE

1.1 INTENT.

F810 READER FUNCTION 1
TESTS ABILITY TO...
1. ADDRESS THE DEVICE UNDER TEST.
2. ISSUE SENSE START I-O.
3. PROPERLY SET ALL CONDITION CODES.
4. CLEAR INTERRUPTS WITH TEST I-O AND BY ENABLING THE SYSTEM MASK.
5. PROPERLY STORE THE CSW (CHANNEL STATUS WORD).
6. PROPERLY SET AND SUPPRESS THE INCORRECT LENGTH INDICATOR.
7. BREAK COMMAND CHAINING WITH UNUSUAL COMMAND SEQUENCE.
8. REJECT ALL INVALID COMMANDS ISSUED TO THE DEVICE.
9. ISSUE THE I-O INSTRUCTIONS SIO, TIO, AND HIO WHILE THE DEVICE AND CHANNEL ARE IN VARIOUS STATES OF PENDING OR STACKED STATUS.
* 10. ISSUE I-O INSTRUCTIONS TO A NOT READY DEVICE.
* 11. ISSUE I-O INSTRUCTIONS TO AN OFF LINE DEVICE.
* 12. TEST END OF FILE.

* MANUAL INTERVENTION ROUTINES, UNDER CONTROL OF SENSE SWITCHES 5 AND 8.

F811 READER FUNCTION 2
TESTS ABILITY TO...
1. ISSUE DIAGNOSTIC WRITE TO THE PUNCH ASSOCIATED WITH THE TEST READER UNDER VARIOUS CONDITIONS.
2. DEVELOP DATA CHECK IN THE READER SENSE BYTE BY FILLING THE READ BUFFER WITH COLUMN BINARY DATA WITH THE DIAGNOSTIC WRITE COMMAND.
3. ISSUE VALID COMMANDS TO THE READER.
4. COMMAND CHAIN AND DATA CHAIN COMMANDS.
5. BREAK COMMAND CHAINING AND DATA CHAINING WITH WRONG LENGTH RECORD.
6. ISSUE 1400 COMPATIBILITY COMMANDS WHICH ACTIVATE THE PROVISIONAL FEED HARDWARE IN THE READER.

F812 READER FUNCTION 3
TESTS ABILITY TO...
1. READ ALL VALID EBCDIC CHARACTERS AND INDICATE ANY ERRORS.
ALSO ALLOWS...
2. PUNCHING THE DATA CARDS NEEDED IN THE READ ROUTINE. THIS IS UNDER CONTROL OF SENSE SWITCH 9.

2540 READER FUNCTION TEST

2. PREREQUISITES

2.1 PROGRAM REQUIREMENTS.

THE EXCLUSIVE CPU FLAG IS ON IN ALL SECTIONS.

DM MUST HAVE A FOUR BYTE UDT ENTRY, ONLY THE FIRST TWO BYTES ARE SHOWN BELOW. THE NEXT TWO BYTES MUST CONTAIN THE CHANNEL AND UNIT ADDRESS.

UNIT TYPE	OPTIONAL FEATURE DIGIT 1				OPTIONAL FEATURE DIGIT 2			
UNIT	ZZ	BIT 0 HEX 8	BIT 1 HEX 4	BIT 2 HEX 2	BIT 3 HEX 1	BIT 4 HEX 8	BIT 5 HEX 4	BIT 6 HEX 2	BIT 7 HEX 1
2540 READER	81		CARD IMAGE		51 COL FEAT.	1400 FEAT.			2 CHNL SW ON 2821

NOTE. THIS PROGRAM ISSUES DIAGNOSTIC WRITE COMMANDS TO TEST THE READER CIRCUITRY. THIS REQUIRES A 2540 PUNCH (UNIT TYPE 82) 4 BYTE UDT ENTRY TO PROVIDE THE PUNCH ADDRESS FOR THE DIAGNOSTIC WRITE COMMAND.

NOTE. WHEN MORE THAN ONE READER/PUNCH IS PRESENT, DM UDT ENTRIES FOR THE COMBINATIONS MUST NOT BE MIXED. FOR EXAMPLE, ENTER READER 1 / PUNCH 1, THEN READER 2 / PUNCH 2.

2.2 EQUIPMENT REQUIREMENTS.

INPUT DEVICE FOR LOADING PROGRAM -TEST DEVICE CAN BE LOADER-.
OUTPUT DEVICE.
4K OF STORAGE
CPU
CHANNEL

3. USE PROCEDURE

3.1 PROGRAM LOADING.

STANDARD AS DESCRIBED IN USERS GUIDE.

3.2 PROGRAM OPERATE.

********** NOTE **********
* IF 2 CHANNEL SWITCH FEATURE IS INSTALLED, DISABLE THE *
* UNUSED INTERFACE TO PREVENT NOT READY TO READY STATUS *
* FROM BEING PRESENTED TO THE OTHER CHANNEL. *
****

IF EQUIPMENT OR DATA CHECK TROUBLE IS EXPERIENCED WHILE RUNNING F810 OR F811, IT IS SUGGESTED THAT F812 BE RUN TO ANALYZE THE TROUBLE.

A PSW RESTART EXECUTED WHILE THE PROGRAM IS OPERATING NORMALLY MAY CAUSE A MISLEADING HANG UP MESSAGE. THE HANG UP MESSAGE IS ONLY VALID WHEN A PSW RESTART IS INITIATED DURING A SYSTEM HANG UP CONDITION.

IF MORE THAN ONE 2540 IS DEFINED IN THE DM UDT, ALL ROUTINES IN EACH SECTION WILL BE EXECUTED ON THE FIRST 2540 ALLOCATED BY DM BEFORE ANY TESTING OCCURS ON THE NEXT.

3.2.1 RIPPLE READ TEST (F812)

27 DETAIL CARDS, CONTAINING A RIPPLE PATTERN OF ALL EBCDIC CHARACTERS, ARE RELEASED WITH F812.

THE PROGRAM ASSUMES THAT DETAIL CARDS ARE IN THE READER IF THE CARD READER IS THE LOADER DEVICE, AND PROCEEDS WITH THE TEST. HOWEVER, IF THE CARD READER IS NOT THE LOADER DEVICE, A MESSAGE IS ISSUED FOR THE OPERATOR TO PLACE DETAIL CARDS IN THE READER AND A HALT OCCURS.

ADDITIONAL DETAIL CARDS MAY BE GENERATED VIA SECTION SENSE SWITCH 9. SENSE SWITCH 9 MUST BE ON AT THE INITIAL EXECUTION OF F812. IF EXECUTION OF F812 HAS BEGUN, SET SENSE SWITCH 9 ON AND PERFORM A PSW RESTART.

DUPLICATE SETS OF DETAIL CARDS MAY BE GENERATED VIA SECTION SENSE SWITCH 4.

THERE ARE TWO WAYS OF READING DUPLICATE SETS OF DETAIL CARDS IN ROUTINE 2. NORMALLY ONE SET OF DETAIL CARDS IS USED.

1. SECTION SENSE SWITCH 4 ON CAUSES THE ROUTINE TO LOOP. IN THIS LOOP, A READ NO FEED (C2) IS DONE, THE DATA IS TESTED, AND THEN A FEED TO STACKER R1 IS ISSUED.
2. SECTION SENSE SWITCH 10 ON CAUSES A LOOP ON READ FEED AND STACKER SELECT R1 (02). THE DATA IS TESTED AFTER EACH START I/O.

RESETTING THESE SWITCHES CAUSES A NORMAL TERMINATION.

3.2.2 SECTION SENSE SWITCHES

THE SENSE SWITCHES SHOWN BELOW ARE IN THE SENSE SWITCH BYTES OF THEIR RESPECTIVE SECTION PREFACES. THE CHARACTER X REPRESENTS THE RELOCATION FACTOR CONTAINED IN REGISTER 15 DURING RUN TIME. THE SWITCH BITS ARE ZERO WHEN OFF, AND ONE WHEN ON.

NOTE. RESETTING SENSE SWITCH 0 OR 1 AFTER LOOPING MAY CAUSE ERRORS IN THE NORMAL PROGRAM RUN.

SENSE SW. NO.	FUNCTION	SECTION OR ROUTINE	BYTE AND BIT
0	OFF--PROCEED ON--LOOP ON CURRENT I-O COMMAND.	ALL	X004 0
1	OFF--PROCEED ON--LOOP ON CURRENT SIO, TIO COMMAND.	ALL	X004 1
2	OFF--TEST BOTH READ DATA AND CHECK READ DATA. ON--BYPASS READ DATA TESTING.	F812 RTN 2	X004 2
4	OFF--PROCEED ON--LOOP ROUTINE CURRENTLY BEING EXECUTED.	F812	X004 4

3.2.2 SECTION SENSE SWITCHES (CONTINUED)

5	OFF--BYPASS MANUAL INTERVENTION ROUTINES. ON--PERFORM MANUAL INTERVENTION ROUTINES.	F810	X004 5
7	OFF--PROCEED ON--PRINT CORRECT RESULTS.	ALL	X004 7
8	OFF--BYPASS OFF LINE TESTING ON--EXECUTE OFF LINE TEST IF SSW 5 ALSO ON.	F810	X005 0
9	OFF--BYPASS PUNCHING 27 RIPPLE READ DATA CARDS. ON--PUNCH A SET OF 27 RIPPLE READ DATA CARDS.	F812 RTN 1	X005 1
10	OFF--PROCEED WITH RIPPLE READ TEST. ON--LOOP READ, FEED, STK SELECT R1 COMMAND.	F812 RTN 2	X005 2

3.3 PROGRAM HALTS

F810 - IF THE INTERVENTION TESTS ARE EXECUTED -ROUTINE 12-, HALTS OCCUR WHEN THE OPERATOR RECEIVES INSTRUCTIONS FROM THE PROGRAM. THE OPERATOR SHOULD CARRY OUT THE INSTRUCTIONS AND THEN INTERRUPT TO CONTINUE.

F810 AND F811 - THE FIRST ROUTINE ATTEMPTS A TEST I-O ON BOTH THE READER AND THE ASSOCIATED PUNCH. IF INTERVENTION REQUIRED IS DETECTED, A MESSAGE IS ISSUED AND A HALT OCCURS TO ALLOW THE OPERATOR TO MAKE THE DEVICE READY.

F812 - IF THE READER OR PUNCH GO NOT READY, A MESSAGE AND A HALT WILL OCCUR TO ALLOW THE OPERATOR TO RECOVER.

IF ROUTINE 02 IS EXECUTED AND THE TEST DEVICE IS NOT THE LOADER, A MESSAGE AND A HALT OCCUR TO ALLOW THE OPERATOR TO PLACE DETAIL CARDS INTO THE TEST DEVICE.

IF SECTION SENSE SWITCH 4 IS TURNED ON IN ROUTINE 02, AND THE DEVICE BEING TESTED IS THE LOADER, A MESSAGE AND HALT OCCUR TO INFORM THE OPERATOR THAT ONLY DETAIL CARDS SHOULD BE USED IN THE TEST. THIS IS TO PREVENT FEEDING TEST DECKS.

4. PRINTOUTS

4.1 OPERATOR INSTRUCTIONS

AN SDO HEADER IS GIVEN WITH EVERY MESSAGE TO DEFINE THE I-O DEVICE ADDRESS THAT IS ASSOCIATED WITH THE MESSAGE.

F810

- DO NOPRO, PUT ABOUT 30 BLNK CDS IN RDR,MAKE RDY,EOF ON. -

THIS MESSAGE WILL OCCUR IF THE INTERVENTION ROUTINE IS EXECUTED AND THE TEST DEVICE IS NOT THE LOADER.

- RTN BYPASSED -

THE ABOVE MESSAGE WILL OCCUR WHEN A ROUTINE IS BYPASSED.

ROUTINE 09 WILL BE BYPASSED IF SSW 7 IS ON. TESTS 0220 TO 0270 ARE THE TEST NUMBERS BYPASSED IN THIS TEST. THIS IS DUE TO TIMING RESTRICTIONS. MISLEADING RESULTS WOULD OCCUR IF TIME WAS TAKEN BETWEEN TESTS TO PRINT THE CORRECT RESULTS.

ROUTINE 12 WILL BE BYPASSED IF SECTION SENSE SWITCH 5 IS OFF. THE TEST NUMBERS ARE 0380 TO 0470, HOWEVER, THE OFF LINE TESTS 0440 TO 0460 ARE NOT EXECUTED UNLESS SENSE SWITCH 8 IS ALSO ON. THESE TESTS ARE NORMALLY BYPASSED BECAUSE MUCH INTERVENTION IS REQUIRED.

- MAKE DEVICE RDY-

THE ABOVE MESSAGE WILL OCCUR IF THE READER OR PUNCH USED IN THE TEST IS NOT READY, OR IF UNIT EXCEPTION IS DETECTED. PUT MORE CARDS IN THE DEVICE AND INTERRUPT TO CONTINUE.

- MAKE READER NOT READY-

THE ABOVE MESSAGE IS ISSUED UPON ENTRANCE TO THE NOT READY TESTS IN THE INTERVENTION ROUTINE -RTN 12-. A HALT OCCURS TO ENABLE THE OPERATOR TO PERFORM THE INSTRUCTION. THE OPERATOR SHOULD INTERRUPT TO CONTINUE.

- PUT READER OFF LINE-

THE ABOVE MESSAGE IS ISSUED WHEN SECTION SENSE SWITCHES 5 AND 8 ARE ON IN SECTION F810. THE OPERATOR CAN FOLLOW THE INSTRUCTIONS BY EITHER PUTTING THE READER OFF LINE WITH THE C. E. TEST BOX, OR BY TURNING OFF THE 2821 METER SWITCH. THE METER SWITCH SHOULD NOT BE USED IF THE OUTPUT DEVICE USED BY DM IS ALSO ATTACHED TO THE 2821 ICU. THE WORD -OFF- IS REPLACED WITH -ON- AND THE MESSAGE IS REPEATED AT THE END OF THE TEST, TO ENABLE THE OPERATOR TO RESTORE THE DEVICE TO READY.

- DO NOPRO, PUT 5 BLNK CDS IN RDR,MAKE RDY,EOF ON. -

THE ABOVE MESSAGE IS ISSUED AT THE START OF THE END OF FILE TEST TO ALLOW THE OPERATOR TO PREPARE THE DEVICE.

F810 (CONTINUED)

- REMOVE BLNK CDS FROM READER-
- PUT REMAINING TEST DECKS INTO RDR HPR AND MAKE RDR RDY,EOF ON-

THE ABOVE MESSAGE IS ISSUED AT THE END OF THE INTERVENTION ROUTINE IF THE LOADER WAS THE DEVICE BEING TESTED. THE BLANK CARDS IN STACKER R1 ARE FROM THE END OF FILE TEST AND SHOULD BE REMOVED, TO PREVENT THEM FROM BEING MIXED IN WITH THE TEST DECKS.

- REMOVE CDS FROM STACKER OF LOADER DEVICE-
- REMOVE THE REMAINING TEST DECKS,IF ANY, FROM THE LOADER HPR-
- DO NOPRO AND PLACE CDS RUN OUT IN FRONT OF REMAINING TEST DECKS-
- SAVE REMAINING TEST DECKS UNTIL A MSG REQUESTS THEM TO BE PUT IN HPR-

THE ABOVE MESSAGE IS ISSUED WHEN THE INTERVENTION ROUTINE IS TO BE EXECUTED ON THE LOADER DEVICE. IT PREVENTS THE READING OF TEST DECKS BY THE ROUTINE.

F812

- READ ERR-
- CARD IN PRESTKR STA-

```
-      EXPECTED SHD              BUF-
- COL PUNCHES   RD RD XU XL PAR ADR TRAN-
```

THE ABOVE MESSAGES ARE ISSUED WHEN A READ ERROR IS DETECTED IN THE RIPPLE READ ROUTINE IN SECTION F812. THESE MESSAGES ARE ISSUED FOLLOWING THE MESSAGES LISTED IN THE SAMPLE PRINTOUT IN 4.2.1 OF THIS DESCRIPTION. THE READ ERRORS ARE INDICATED FOR EACH COLUMN FOLLOWING THIS HEADING. AN EXPLANATION OF THE ABBREVIATIONS IN THIS HEADING FOLLOWS THE SAMPLE PRINTOUT EXPLANATION IN 4.2.3 OF THIS DESCRIPTION.

- 2 DIAG CHK RDS ATTEMPTED -BOTH FAILED-

THIS MESSAGE IS ISSUED BY THE COMMON START I-O ROUTINE WHEN A READ ERROR IS DETECTED IN THE RIPPLE READ ROUTINE OF SECTION F812, AND THE TWO DIAGNOSTIC CHECK READ START I-O INSTRUCTIONS ARE NOT ABLE TO BE ACCEPTED. THE CHECK READ DATA IS NOT INDICATED IF THIS CONDITION OCCURS.

- DO NPRO,PLACE DETAIL CDS IN RDR. HPR,MAKE RDY,EOF ON-

THE ABOVE MESSAGE IS ISSUED WHEN EXECUTING THE RIPPLE READ TEST ON A 2540 READER THAT IS NOT USED AS THE LOADER. THIS ALLOWS THE OPERATOR TO PLACE A SET OF RIPPLE READ CARDS INTO THE TEST DEVICE.

- SET SSW 9 ON, DO PSW RESTART IF SET OF DETAIL CDS DESIRED -

THE ABOVE MESSAGE IS GIVEN AS AN AID TO THE OPERATOR IF A SET OF DETAIL CARDS IS NOT AVAILABLE.

- LOOPING LOADER- KEEP ONLY DETAIL CDS IN RDR-

THE ABOVE MESSAGE IS ISSUED WHEN THE LOOP ROUTINE SENSE SWITCH -SECTION SENSE SWITCH 4- IS ON, AND THE LOADER IS THE TEST DEVICE. THE OPERATOR SHOULD BE AWARE OF THE POSSIBILITY OF FEEDING THE TEST DECKS THAT ARE STILL IN THE READER HOPPER.

4.2 STATUS MESSAGES

4.2.1 SAMPLE CORRECT PRINTOUT

```
LINE    MESSAGE

 01     - SDO  F810R 08    00135C 00C-
 02     - TST 0370-
 03     - ADR 0018A4 LINK-
 04     - ADR 001182 SIO-
 05     - CAW 0018B8-
 06     - CCW 02001831 80000020-
        - CCW 00001831 00000030-
 07     - CC 0 EXP-
 08     - CC 0 ACT-
 09     - CSW 00001BC8 08000001 EXP-
 10     - CSW 00001BC8 08000001 ACT-
 11     - CSW 00000000 04000000 EXP-
 12     - CSW 00000000 04000000 ACT-
 13     - SNS 00 EXP-
 14     - SNS 00 ACT-
 15     - LOG 00 000000 000000 000000-
 16     - SET SS 0 ON FOR LOOP ON SIO, SS 1 ON FOR TIO SIO LOOP-
```

4.2.2 ANALYSIS OF SAMPLE PRINTOUT

LINE 01 — THIS IS THE HEADER LINE PRINTED BY DM. IF AN ASTERISK PRECEDES THE -SDO- AN ERROR HAS CAUSED THE MESSAGE PRINTOUT. IF NO ASTERISK IS PRINTED, THE MESSAGE IS A RESULT OF EITHER HAVING THE CORRECT PRINTOUT SWITCH ON OR AN OPERATOR MESSAGE IS TO FOLLOW. ALL LINES THAT FOLLOW THE -SDO- ARE PART OF THAT SAME MESSAGE. THE START OF A NEW MESSAGE IS INDICATED BY ANOTHER -SDO- PRINTOUT. THE -F810R- IS THE SECTION ID NUMBER WHERE -R- REPRESENTS THE REVISION LEVEL OF THE PROGRAM. THE -08- IS THE PROGRAM ROUTINE NUMBER WHILE THE -00C- IS THE ADDRESS OF THE DEVICE UNDER TEST.

LINE 02 — THIS IS THE TEST NUMBER ASSOCIATED WITH THE MESSAGE. AT THE BEGINNING OF THE PROGRAM LISTING, THERE IS A LIST OF TEST NUMBERS. WITH THE TEST NUMBER IS A SHORT EXPLANATION OF WHAT WAS BEING DONE, AND WHAT SHOULD OCCUR.

LINE 03 — THIS LINE SHOWS THE ADDRESS FROM WHICH THE I-O HANDLER SUB-ROUTINE WAS ENTERED. ALL I-O COMMANDS ARE ISSUED FROM THIS SUB-ROUTINE, SO IT IS ENTERED MANY TIMES FROM MANY PLACES. TO INSURE THE SPECIFIC I-O OPERATION YOU WANT TO LOOK AT WILL BE THE NEXT ONE PERFORMED, YOU SHOULD RESTART THE PROGRAM WITH A SYSTEM RESET, PSW RESTART, AND ADDRESS STOP AT THE GIVEN ADDRESS.

LINE 04 — THIS LINE SHOWS THE ADDRESS OF THE START I-O, TEST I-O, OR HALT I-O THAT WAS ISSUED IN THE I-O HANDLER SUB-ROUTINE.

LINE 05 — THIS LINE SHOWS THE ADDRESS OF THE CCW TO BE ISSUED BY A START I-O COMMAND. IF CCWS ARE CHAINED, THE ADDRESS GIVEN REFERS TO THE FIRST CCW IN THE CHAIN.

LINE 06 — THIS LINE DISPLAYS THE FIRST CCW. THE FIRST BYTE CONTAINS THE COMMAND CODE. THE NEXT 3 BYTES CONTAIN AN ADDRESS IN STORAGE, WHICH WILL BE USED IF DATA TRANSFER IS PERFORMED. THE NEXT BYTE CONTAINS FLAGS USED BY THE CHANNEL. THE LAST 3 BYTES ARE THE COUNT FIELD. IF CHAINING IS INDICATED IN BYTE 4, ADDITIONAL CCWS WILL BE SHOWN BELOW THIS LINE.

LINE 07 — THIS LINE SHOWS THE CONDITION CODE EXPECTED, BY THE PROGRAM, IN RESPONSE TO ISSUING THE I-O COMMAND.

LINE 08 — THIS LINE SHOWS THE ACTUAL CONDITION CODE SET IN RESPONSE TO THE I-O COMMAND.

LINE 09 — THIS LINE DISPLAYS THE FIRST CSW EXPECTED BY THE PROGRAM. A BIT BY BIT DESCRIPTION OF THE DEVICE STATUS BYTE PORTION OF THE CSW APPEARS IN THE PROGRAM LISTING FOLLOWING THE TEST NUMBER DESCRIPTIONS.

LINE 10 — THIS LINE DISPLAYS THE ACTUAL CSW RECEIVED BY THE PROGRAM.
NOTE. FOR EVERY EXPECTED (EXP) CSW PRINTED OUT THERE SHOULD BE A CORRESPONDING ACTUAL (ACT) CSW PRINTED OUT ON THE NEXT LINE. THE ABSENCE OF A (ACT) CSW PRINTOUT INDICATES A MACHINE FAILURE. A MACHINE FAILURE IS ALSO INDICATED IF THERE ARE (ACT) CSW PRINTOUTS WHERE THERE ARE NONE EXPECTED.

LINE 11 — THIS LINE WILL APPEAR IF THE PROGRAM EXPECTS MORE THAN ONE CSW.

LINE 12 — THIS LINE WILL APPEAR IF THE PROGRAM RECEIVED A SECOND CSW.

LINE 13 — THIS LINE SHOWS THE SENSE BYTE EXPECTED BY THE PROGRAM. A BIT BY BIT DESCRIPTION OF THE 2540 SENSE BYTE APPEARS IN THE PROGRAM LISTING, AFTER THE TEST NUMBER DESCRIPTIONS.

LINE 14 — THIS LINE SHOWS THE ACTUAL SENSE BYTE RECEIVED BY THE PROGRAM.

LINE 15 — THIS LINE DISPLAYS THE CPU AND CHANNEL LOGOUT AREA ON MODEL 30 SYSTEMS. IT WILL NOT APPEAR ON ANY OTHER SYSTEM.

LINE 16 — THIS LINE SHOWS THE SECTION SENSE SWITCH LOOP OPTIONS. IF AN ERROR HAD OCCURRED, AND DM SENSE SWITCH 25 WAS ON, A HALT WOULD NOW OCCUR, TO ALLOW SETTING OF THE SECTION SENSE SWITCHES. TO INSURE THAT LOOPING OCCURS ON THE COMMAND THAT FAILED, THE OPERATOR SHOULD HAVE THE DM SENSE SWITCH ON THAT ENABLES HALTING WHEN AN ERROR OCCURS, SET THE PROPER SECTION SENSE SWITCH ON, AND PRESS THE EXTERNAL INTERRUPT KEY TO EXECUTE.

4.2.3 SAMPLE OF CARD READ ERROR PRINTOUT OF SECTION F812.

THE FOLLOWING MESSAGE IS GIVEN IN SECTION F812 ROUTINE 2, WHEN A READ ERROR IS DETECTED. THIS DATA IS PRINTED IMMEDIATELY BEFORE LINE 16 OF A MESSAGE TYPE OF THE SAME FORMAT AS DESCRIBED IN 4.2.1 OF THIS DESCRIPTION.

```
LINE     MESSAGE
 01    - READ ERR
 02    - CARD IN PRESTKR STA

 03    -     EXPECTED SHD                    BUF
 04    - COL PUNCHES  RD  RD XU XL PAR ADR TRAN

 05    - 07     689  3E  3E  0  1   0   0   0
 06    - 10    T019  41  41  0  1   0   0   0
 07    - 22     T58  4D  4D  0  1   0   0   0
 08    - 55     068  6E  6E  0  1   0   0   0
```

4.2.4 ANALYSIS OF CARD READ ERROR PRINTOUT OF SECTION F812.

LINE 01 — THIS MESSAGE INDICATES THAT A READ ERROR OCCURRED. IT MAY BE DUE TO NORMAL READ DATA, DIAGNOSTIC CHECK READ INFORMATION, OR BOTH.

LINE 02 — THIS MESSAGE TELLS WHERE THE CARD IN ERROR IS LOCATED. IF LOOPING WITH SENSE SWITCH 10 PRESTKR STA MAY READ STACKER R1.

LINE 03 — THIS IS THE FIRST PART OF THE HEADER WHICH IS USED TO EXPLAIN THE DATA OF LINES 05 THRU 08. THIS HEADER IS READ VERTICALLY WITH RESPECT TO LINE 04.

LINE 04 — THIS IS THE SECOND LINE OF THE DATA HEADER. AN EXPLANATION OF THE HEADER ABBREVIATIONS OF LINES 03 AND 04 IS AS FOLLOWS-

COL — THIS TELLS WHAT CARD COLUMN HAD AN ERROR.

EXPECTED PUNCHES — THIS TELLS WHAT THE EXPECTED CARD PUNCHES WERE FOR THE DATA IN THE SHD RD COLUMN.

SHD RD — THIS IS THE EXPECTED HEX DATA.

RD — THIS IS THE HEX BYTE WHICH WAS READ FROM THE READER FOR THE INDICATED COLUMN.

XU — THIS IS A BIT IN THE DIAGNOSTIC CHECK RD BYTE FOR THE INDICATED COLUMN THAT WILL BE A 1 OR A 0. IF 1, IT INDICATES THAT THE X UPPER CHECK PLANE WAS LEFT ON.

XL — THIS IS THE X LOWER CHECK BIT. IF IN ERROR IT WILL BE A 1, IF NOT IT WILL BE 0.

PAR — THIS IS A BIT INDICATING A BUFFER PARITY CHECK WHEN 1.

BUF ADR — THIS IS A BIT INDICATING A READ BUFFER ADDRESS CHECK WHEN 1.

TRAN — THIS IS A BIT INDICATING A READER TRANSLATE CHECK WHEN 1.

4.2.5 PSW RESTART AFTER I/O HANG UP

- PREVIOUS HANG UP DETECTED-

THE ABOVE MESSAGE WILL APPEAR IF A SYSTEM RESET PSW RESTART IS PERFORMED AFTER A HANG UP CONDITION ON AN I-O COMMAND. FOLLOWING THIS LINE WILL BE A PRINTOUT SIMILAR TO THE ABOVE SAMPLE MESSAGE IN 4.2.1.

4.2.6 UNEXPECTED I/O INTERRUPT MESSAGE (F810 THRU F812).

```
*SOO  F8103 02    001254 XXX          EXAMPLE SHOWS F810 AT REVISION LEVEL 3.
UIJ FROM DEVICE  XXXX                 WHERE  XXXX  IS THE DEVICE ADDRESS OF THE INTERRUPT.
CSW 00000000 04000000 ACT
LOG 00 000000 000000 000000           CPU AND CHANNEL LOG OUT  (MODEL 30 ONLY)
```

5. COMMENTS

5.1 LOOPING

IN SOME CASES, IT MAY BE DESIRED TO LOOP ON AN ENTIRE ROUTINE RATHER THAN USE THE SECTION SENSE SWITCH LOOPS PROVIDED. ONE METHOD OF DOING THIS IS TO MANUALLY ENTER THE NUMBER OF THE ROUTINE IN X04C. WHERE X STANDS FOR THE 4K BLOCK RELOCATION ADDRESS. THEN PERFORM A SYSTEM RESET-PSW RESTART, AND THE PROGRAM WILL LOOP ON THE ROUTINE.

SENSE SWITCHES MAY BE SET BY MANUALLY ENTERING THE DESIRED BITS.

LAST PAGE

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

```
8103  TITLE
*************************************************************************
*************************************************************************
*                                                                       *
* MODIFICATIONS                                                         *
*                                                                       *
* REVISION LEVEL 3.  THIS REVISION DIFFERS FROM VERSION 2 AS FOLLOWS..  *
*     1.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE TEST NUMBERS.        *
*     2.  INCREASED TESTING OF THE INTERFACE IS INCLUDED.               *
*     3.  ALL ERROR MESSAGES HAVE BEEN ORGANIZED INTO A COMMON FORMAT   *
*         TO ENABLE A CLEAR DEFINITION OF CONDITIONS AT THE TIME OF     *
*         ERROR DETECTION.                                              *
*     4.  TESTING THE HALT I-O INSTRUCTION HAS BEEN ADDED.              *
*     5.  INVALID COMMAND TESTING HAS BEEN EXPANDED.                    *
*     6.  TESTING PREVIOUSLY REQUIRING MUCH OPERATOR INTERVENTION,      *
*         SUCH AS NOT READY, ETC., WILL NOT BE EXECUTED UNLESS          *
*         SENSE SWITCH 5 IS ON.                                         *
*     7.  OFF LINE TESTING HAS BEEN ADDED AND IS EXECUTED ONLY IF       *
*         SENSE SWITCHES 5 AND 8 ARE ON.                                *
*                                                                       *
* E.C. PREREQUISITES                                                    *
*     MACHINE . . . NONE                                                *
*     PROGRAM . . . NONE                                                *
*                                                                       *
* USE DESCRIPTION F810* AT EC 130498, DATED 15 JUN 67  OR LATER.        *
*                                                                       *
*************************************************************************
XF8103 START 4096
       USING *,15                                              001000
*
*************************************************************************
*                          TEST NUMBER DESCRIPTION                      *
*************************************************************************
*************************************************************************
* TEST       DESCRIPTION
*
*
*                        **************
*                          ROUTINE 01
*                        **************
*
* 0010 - OPERATION ATTEMPTED
*        A TEST I-O IS ISSUED TO A READY TEST DEVICE.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0
*
*        POSSIBLE FAILURE CAUSES
*
*        1. CONDITION CODE 2 INDICATES THE CHANNEL APPEARS TO BE BUSY.
*        2. CONDITION CODE 3 INDICATES THERE IS NO DEVICE FOR THE
*           ADDRESS USED.  THE DN UDT ENTRY COULD BE IN ERROR, THE
*           DEVICE MAY BE OFF LINE, OR IF THE 2821 TWO CHANNEL SWITCH
*           FEATURE IS INSTALLED, THE PARTITIONING SWITCH FOR THIS
*           INTERFACE MAY BE DISABLED.
*        3. IF CONDITION CODE 1 IS SET, THE CSW MUST BE INSPECTED TO
*           DETERMINE THE CAUSE.  UNIT CHECK MIGHT BE DUE TO NOT READY
*           DEVICE.  CHANNEL OR DEVICE END INDICATES THAT AN INTERRUPT
*           WAS PENDING IN THE CHANNEL.  DEVICE OR CONTROL UNIT BUSY
*           COULD INDICATE DEVICE OR CONTROL UNIT IS RESERVED TO THE
*           OTHER INTERFACE, IF THE 2 CHANNEL SWITCH FEATURE IS PRESENT
*
```



```
* 0020 - OPERATION ATTEMPTED
*
*        A TEST I-O IS ISSUED TO THE PUNCH THAT IS HOUSED IN
*        THE SAME PHYSICAL BOX AS THE TEST READER.
*        -THIS MUST BE DONE BECAUSE THE PUNCH IS USED TO ISSUE
*        DIAGNOSTIC WRITE COMMANDS DURING THE TEST- DIAGNOSTIC
*        WRITE TO THE READER MUST BE ISSUED TO THE PUNCH.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0
*
*        POSSIBLE FAILURE CAUSES
*
*        REFER TO POSSIBLE FAILURE CAUSES GIVEN FOR TEST 0010.
*
*
*                        **************
*                          ROUTINE 02
*                        **************
*
* 0030 - OPERATION ATTEMPTED
*
*        A SENSE START I-O IS ISSUED TO READY DEVICE.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 (COMMAND ACCEPTED)
*
*        POSSIBLE FAILURE CAUSES
*
*        1. CONDITION CODE 2 COULD BE DUE TO A PENDING CHANNEL END, OR
*           A BUSY CHANNEL.
*        2. IF CONDITION CODE 1 WAS SET, THE CSW MUST BE INSPECTED TO
*           DETERMINE THE CAUSE.  DEVICE END WITH DEVICE BUSY INDICATES
*           A DEVICE END WAS PENDING IN THE DEVICE.
*
*
* 0040 - OPERATION ATTEMPTED
*
*        A TEST I-O TO PENDING CHANNEL AND DEVICE END FROM PREVIOUS
*        SENSE IS ISSUED.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 1 AND CHANNEL END DEVICE END BOTH IN THE CSW
*        FROM THE PREVIOUS SENSE I/O COMMAND.
*
*        POSSIBLE FAILURE CAUSES
*
*        1. CONDITION CODE 2 INDICATES THE CHANNEL IS BUSY.
*        2. FAILURE TO RECEIVE CHANNEL AND DEVICE END COULD INDICATE
*           THE DEVICE FAILED TO PRESENT ENDING STATUS.
*
*
* 0050 - OPERATION ATTEMPTED
*
*        ANOTHER TIO IS GIVEN.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0.  DEVICE SHOULD BE CLEAR OF PENDING
*        INTERRUPTS.
*
*        POSSIBLE FAILURE CAUSES
*
*        1. CONDITION CODE 1 WITH UNIT CHECK IN THE CSW COULD INDICATE
*           A NOT READY DEVICE.  CHANNEL OR DEVICE END INDICATES THE
```

```
*          PREVIOUS TIO FAILED TO CLEAR THEM.
*
*                    **********
*                     ROUTINE 03
*                    **********
*
* 0060 - OPERATION ATTEMPTED
*
*        A SENSE START I-O IS ISSUED AND THE SYSTEM ENABLED FOR I-O
*        INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        EXPECT CHANNEL END DEVICE END TOGETHER.
*
*        POSSIBLE FAILURE CAUSES
*
*        1. FAILURE TO RECEIVE CHANNEL AND DEVICE END INDICATES THAT
*           ENABLING THE CHANNEL FOR I-O INTERRUPTS FAILED TO BRING IN
*           THE DEVICE STATUS.
*
* 0070 - OPERATION ATTEMPTED
*
*        TEST I-O IS ISSUED.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0.  DEVICE SHOULD BE CLEAR OF PENDING
*        INTERRUPTS.
*
*
*                    **********
*                     ROUTINE 04
*                    **********
*
* 0080 - OPERATION ATTEMPTED
*
*        A NOP SIO IS ISSUED TO READY DEVICE.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 1 WITH CHANNEL END DEVICE END STORED IN
*        THE CSW.  NO INTERRUPT SHOULD OCCUR.
*
*                    **********
*                     ROUTINE 05
*                    **********
*
* 0090 - OPERATION ATTEMPTED
*
*        A DIAGNOSTIC READ IS ISSUED WITH COUNT OF 79.
*
*        EXPECTED RESPONSE
*
*        CONDITION CODE 0 SHOULD BE SET ON THE START I-O.  WHEN THE
*        CCW COUNT IS EXAUSTED, THE DEVICE SHOULD TRY TO SEND ANOTHER
*        BYTE.  THIS SHOULD CAUSE THE INCORRECT LENGTH RECORD BIT TO BE
*        ON IN THE CHANNEL STATUS BYTE OF THE CSW STORED AT CHANNEL
*        AND DEVICE END TIME.
*
*
* 0100 - OPERATION ATTEMPTED
*
*        A DIAGNOSTIC READ IS ISSUED WITH COUNT OF 81.
*
*        EXPECTED RESPONSE
*
*        CONDITION CODE 0 SHOULD BE SET ON THE START I-O.  WHEN THE
```



```
*        DEVICE HAS SENT ALL ITS DATA, THE CCW COUNT IS NOT EXAUSTED.
*        THIS SHOULD CAUSE THE INCORRECT LENGTH RECORD BIT TO BE SET ON
*        IN THE CHANNEL STATUS BYTE OF THE CSW STORED AT CHANNEL AND
*        DEVICE END TIME, AND A RESIDUAL COUNT OF ONE.
*
*
* 0110 - OPERATION ATTEMPTED
*
*        A DIAGNOSTIC WRITE IS ISSUED WITH A CCW COUNT LESS THAN THE
*        NORMAL DEVICE RECORD LENGTH.
*
*        EXPECTED RESPONSE
*
*        CONDITION CODE 0 SHOULD BE SET ON THE START I-O.  WHEN THE
*        CCW COUNT IS EXAUSTED, THE DEVICE SHOULD REQUEST ANOTHER BYTE.
*        THIS SHOULD CAUSE THE INCORRECT LENGTH RECORD BIT TO BE SET
*        ON IN THE CHANNEL STATUS BYTE OF THE CSW STORED AT CHANNEL
*        AND DEVICE END TIME.
*
*        WHEN ISSUING A DIAGNOSTIC WRITE COMMAND TO A 2540 READER, THE
*        CCW MUST BE ADDRESSED TO THE ASSOCIATED 2540 PUNCH.
*        BECAUSE THE DIAGNOSTIC WRITE COMMAND UTILIZES THE CARD IMAGE
*        (COLUMN BINARY) CIRCUITRY, 160 BYTES MUST BE TRANSFERRED TO
*        FILL THE 80 POSITION READ BUFFER.  THE CARD IMAGE FEATURE
*        DOES NOT HAVE TO BE INSTALLED FOR DIAGNOSTIC WRITE TO WORK.
*
*
* 0120 - OPERATION ATTEMPTED
*
*        A DIAGNOSTIC WRITE IS ISSUED WITH COUNT OF 161.
*
*        EXPECTED RESPONSE
*
*        CONDITION CODE 0 SHOULD BE SET ON THE START I-O.  WHEN THE
*        DEVICE HAS RECIEVED ALL ITS DATA, THE CCW COUNT IS NOT
*        EXAUSTED.  THIS SHOULD CAUSE THE INCORRECT LENGTH RECORD BIT
*        TO BE SET ON IN THE CHANNEL STATUS BYTE OF THE CSW STORED AT
*        CHANNEL AND DEVICE END TIME, AND A RESIDUAL COUNT OF ONE.
*
*        WHEN ISSUING A DIAGNOSTIC WRITE COMMAND TO A 2540 READER, THE
*        CCW MUST BE ADDRESSED TO THE ASSOCIATED 2540 PUNCH.
*        BECAUSE THE DIAGNOSTIC WRITE COMMAND UTILIZES THE CARD IMAGE
*        (COLUMN BINARY) CIRCUITRY, 160 BYTES MUST BE TRANSFERRED TO
*        FILL THE 80 POSITION READ BUFFER.  THE CARD IMAGE FEATURE
*        DOES NOT HAVE TO BE INSTALLED FOR DIAGNOSTIC WRITE TO WORK.
*
*                    **********
*                     ROUTINE 06
*                    **********
*
* 0130 - OPERATION ATTEMPTED
*
*        A READ NO FEED COMMAND IS COMMAND CHAINED TO TWO MORE READ NO
*        FEED COMMANDS.  THE SYSTEM IS ENABLED TO RECIEVE INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  UNUSUAL COMMAND
*        SEQUENCE SENSE BIT SHOULD BE SET AT CHANNEL AND DEVICE END
*        TIME OF THE SECOND CCW IN THE CHAIN.  THIS SHOULD BRING UP
*        UNIT CHECK AND BREAK THE CHAIN.  THE CSW SHOULD CONTAIN THE
*        ADDRESS OF THE FIRST CCW + 16.
*
* 0140 - OPERATION ATTEMPTED
*
*        A NO OP COMMAND IS ISSUED.
*
*        EXPECTED RESPONSE
```

```
*
*       COND. CODE 1 SHOULD BE SET ON THE START I-O.  THE CSW SHOULD
*       CONTAIN CHANNEL AND DEVICE END ONLY.  UNUSUAL COMMAND SEQUENCE
*       SENSE BIT SHOULD REMAIN SET, BUT NO UNIT CHECK SHOULD RESULT.
*
* 0150 - OPERATION ATTEMPTED
*
*       A DIAGNOSTIC CHECK READ COMMAND IS ISSUED. THE SYSTEM IS
*       ENABLED FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE SIO.  NORMAL CHANNEL AND
*       DEVICE END INTERRUPT SHOULD OCCUR.  THE UNUSUAL COMMAND
*       SEQUENCE SENSE BIT SHOULD BE RESET.
*
* 0160 - OPERATION ATTEMPTED
*       A FEED AND STACKER SELECT POCKET 1 IS COMMAND CHAINED TO TWO
*       MORE FEED COMMANDS.  THE SYSTEM IS ENABLED FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  COMMAND REJECT
*       SENSE BIT SHOULD BE SET ON INITIAL SELECTION OF THE SECOND
*       FEED COMMAND.  THIS SHOULD BRING UP UNIT CHECK AND BREAK THE
*       COMMAND CHAIN.  THE ADDRESS OF THE FIRST CCW +16 SHOULD BE IN
*       THE CSW.  DEVICE STATUS SHOULD CONTAIN UNIT CHECK ALONE,
*       BECAUSE CHANNEL AND DEVICE END SHOULD HAVE ALREADY OCCURRED
*       AND BEEN SUPPRESSED BY CHAINING.  A RESIDUAL COUNT OF 2 - THE
*       COUNT IN THE REJECTED CCW SHOULD BE IN THE CSW
*
* 0170 - OPERATION ATTEMPTED
*
*       A NO OP COMMAND IS ISSUED.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 1 SHOULD BE SET ON THE START I-O.  THE CSW SHOULD
*       CONTAIN CHANNEL AND DEVICE END ONLY.  COMMAND REJECT SENSE BIT
*       SHOULD REMAIN SET, BUT NO UNIT CHECK SHOULD RESULT.
*
* 0180 - OPERATION ATTEMPTED
*
*       A DIAGNOSTIC CHECK READ COMMAND IS ISSUED. THE SYSTEM IS
*       ENABLED FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE SIO.  NORMAL CHANNEL AND
*       DEVICE END INTERRUPT SHOULD OCCUR.  THE COMMAND REJECT SENSE
*       BIT SHOULD BE RESET.
*
*                    **************
*                      ROUTINE 07
*                    **************
*
* 0190 - OPERATION ATTEMPTED
*
*       A NOP IS COMMAND CHAINED TO ANOTHER NOP WITH A COUNT OF 1.
*
*       EXPECTED RESPONSE
*
*       EXPECT CHANNEL END DEVICE END AND RESIDUAL COUNT OF 1 TOGETHER
*       EXPECT COND. CODE 0 ON THE SIO BECAUSE OF THE CHAIN FLAG.
*       THE ADDRESS OF THE SECOND CCW PLUS 8 IS IN THE CSW.
*
*                    **************
*                      ROUTINE 08
```



```
*                    **************
*
* 0200 - OPERATION ATTEMPTED
*
*       ISSUE INDIVIDUALLY ALL COMMANDS THAT ARE CONSIDERED INVALID
*       TO THE READER.  EACH INVALID COMMAND IS FOLLOWED BY THE
*       EXECUTION OF A DIAGNOSTIC CHECK READ COMMAND TO RESET THE
*       SENSE LATCHES IN THE READER.
*
*       EXPECTED RESPONSE
*
*       EXPECT CONDITION CODE 1, STATUS STORED WITH UNIT CHECK IN THE
*       DEVICE STATUS AND COMMAND REJECT IN THE SENSE BYTE FOR THE
*       INVALID COMMAND CCW.
*
*
* 0210 - OPERATION ATTEMPTED
*
*       ISSUE DIAGNOSTIC CHECK READ FOLLOWING AN INVALID COMMAND
*       START I-O, TO RESET THE READER SENSE LATCHES.
*
*       EXPECTED RESPONSE
*
*       EXPECT CONDITION CODE 0 FOR THE VALID DIAGNOSTIC CHECK READ
*       WHICH FOLLOWS EACH INVALID COMMAND START I-O, AND A SENSE
*       BYTE WITH NO BITS ON.
*
*                    **************
*                      ROUTINE 09
*                    **************
*
*********************************************************************
*      ROUTINE 09 IS BYPASSED WHEN CORRECT PRINTOUTS ARE BEING OUTPUT
*      BECAUSE THE TEST IS DEPENDENT UPON DEVICE BUSY WITHOUT STACKED
*      INTERRUPTS.
*********************************************************************
*
* 0220 - OPERATION ATTEMPTED
*
*       A READ AND FEED COMMAND -02- IS ISSUED AND THE SYSTEM IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  INTERRUPT DUE
*       TO CHANNEL END SHOULD OCCUR.
*
* 0230 - OPERATION ATTEMPTED
*
*       A TEST I-O IS ISSUED TO A DEVICE WITH CHANNEL END CLEARED, BUT
*       DEVICE END HAS NOT OCCURRED YET.  THE SYSTEM IS THEN ENABLED
*       TO CLEAR THE DEVICE END WHEN IT OCCURS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 1 SHOULD BE SET ON THE TEST I-O.  THE DEVICE BUSY
*       BIT SHOULD BE ON IN THE CSW.  INTERRUPT DUE TO DEVICE END
*       SHOULD NOW OCCUR.
*
* 0240 - OPERATION ATTEMPTED
*
*       A READ AND FEED COMMAND -02- IS ISSUED AND THE SYSTEM IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  INTERRUPT DUE
```

```
*          TO CHANNEL END SHOULD OCCUR.
*
* 0250 - OPERATION ATTEMPTED
*
*          A START I-O IS ISSUED TO A DEVICE WITH CHANNEL END CLEARED,
*          BUT DEVICE END HAS NOT OCCURRED YET.  THE SYSTEM IS THEN
*          ENABLED TO CLEAR THE DEVICE END WHEN IT OCCURS.
*
*          EXPECTED RESPONSE
*
*          COND. CODE 1 SHOULD BE SET ON THE START I-O.  THE DEVICE BUSY
*          BIT SHOULD BE ON IN THE CSW.  INTERRUPT DUE TO DEVICE END
*          SHOULD NOW OCCUR.
*
*
* 0260 - OPERATION ATTEMPTED
*
*          A READ AND FEED COMMAND -02- IS ISSUED AND THE SYSTEM IS
*          ENABLED FOR 1 INTERRUPT.
*
*          EXPECTED RESPONSE
*
*          COND. CODE 0 SHOULD BE SET ON THE START I-O.  INTERRUPT
*          DUE TO CHANNEL END SHOULD OCCUR.
*
* 0270 - OPERATION ATTEMPTED
*
*          A HALT I-O IS ISSUED TO A DEVICE WITH CHANNEL END CLEARED, BUT
*          DEVICE END HAS NOT OCCURRED YET.  THE SYSTEM IS THEN ENABLED
*          TO CLEAR DEVICE END WHEN IT OCCURS.
*
*          EXPECTED RESPONSE
*
*          COND. CODE 1 SHOULD BE SET ON THE HALT I-O.  A CSW WITH NO
*          BITS ON SHOULD BE STORED.  INTERRUPT DUE TO DEVICE END SHOULD
*          NOW OCCUR.
*
*                         **************
*                           ROUTINE 10
*                         **************
*
* 0280 - OPERATION ATTEMPTED
*
*          A READ AND FEED COMMAND -02- IS ISSUED AND THE SYSTEM IS
*          ENABLED FOR 1 INTERRUPT.
*
*          EXPECTED RESPONSE
*
*          COND. CODE 0 SHOULD BE SET ON THE START I-O.  INTERRUPT DUE
*          TO CHANNEL END SHOULD OCCUR.
*
* 0290 - OPERATION ATTEMPTED
*
*          AN INVALID COMMAND -0C- IS ISSUED TO A DEVICE WITH A PENDING
*          DEVICE END.
*
*          EXPECTED RESPONSE
*
*          COND. CODE 1 SHOULD BE SET ON THE START I-O.  CSW STORED
*          SHOULD CONTAIN DEVICE END AND DEVICE BUSY.  NO SENSE BITS
*          SHOULD BE ON.
*
*          POSSIBLE ERROR CAUSES
*
*          IF DEVICE END IS RETURNED ALONE, THE CIRCUITRY THAT BLOCKS
*          BUSY FOR TEST I-O SHOULD BE INVESTIGATED TO SEE IF IT IS ALSO
*          BLOCKING BUSY FOR START I-O.
*
```



```
*
*
*                         **************
*                           ROUTINE 11
*                         **************
*
*
* 0300 - OPERATION ATTEMPTED
*
*          A READ AND FEED IS ISSUED TO A READER CONTAINING A BLANK CARD.
*          NO INTERRUPTS ARE CLEARED.
*
*          EXPECTED RESPONSE
*
*          COND. CODE 0 SHOULD BE SET ON THE START I-O, AND A CARD SHOULD
*          FEED INTO STACKER 1.
*
*
* 0310 - OPERATION ATTEMPTED
*
*          ANOTHER READ AND FEED IS ISSUED TO PENDING CHANNEL END.
*
*          EXPECTED RESPONSE
*
*          EXPECT COND. CODE 2 BECAUSE CHANNEL END OF PREVIOUS READ FEED
*          WAS NOT CLEARED.
*
*
* 0320 - OPERATION ATTEMPTED
*
*          A HALT I-O IS ISSUED TO A PENDING CHANNEL END.
*
*          EXPECTED RESPONSE
*
*          EXPECT COND. CODE 0
*
* 0330 - OPERATION ATTEMPTED
*
*          A TEST I-O IS ISSUED TO A PENDING CHANNEL END.
*
*          EXPECTED RESPONSE
*
*          EXPECT COND. CODE 1 AND CHANNEL END FROM PREVIOUS READ FEED
*          TO BE IN CSW.
*
*
* 0340 - OPERATION ATTEMPTED
*
*          A HALT I-O IS ISSUED TO A PENDING DEVICE END.
*
*          EXPECTED RESPONSE
*
*          COND. CODE 1 SHOULD BE SET AND A CSW WITH NO BITS ON STORED.
*
*
* 0350 - OPERATION ATTEMPTED
*
*          A READ AND FEED START I-O IS ISSUED TO A PENDING DEVICE END.
*
*          EXPECTED RESPONSE
*
*          COND. CODE 1.  CSW SHOULD CONTAIN DEVICE BUSY WITH DEVICE END.
*
*
* 0360 - OPERATION ATTEMPTED
*
*          A HALT I-O IS ISSUED TO A READY DEVICE.
*
```

```
*       EXPECTED RESPONSE
*
*       COND. CODE 1 SHOULD BE SET AND A CSW WITH NO BITS ON STORED.
*
* 0370 - OPERATION ATTEMPTED
*
*       A TEST I-O IS ISSUED.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0.  DEVICE SHOULD HAVE NO PENDING STATUS.
*
*                    **************
*                      ROUTINE 12
*                    **************
*
* 0380 - OPERATION ATTEMPTED
*
*       A NOP SIO IS ISSUED TO A NOT READY DEVICE.
*
*       EXPECTED RESPONSE
*
*       EXPECT UNIT CHECK ALONE AND COND. CODE OF 1.  A SENSE IS
*       ISSUED AND INTERVENTION REQUIRED SHOULD BE IN THE SENSE BYTE.
*
* 0390 - OPERATION ATTEMPTED
*
*       A TEST I-O IS ISSUED TO A NOT READY DEVICE.
*
*       EXPECTED RESPONSE
*
*       EXPECT UNIT CHECK ALONE AND COND. CODE OF 1.  A SENSE IS
*       ISSUED AND INTERVENTION REQUIRED SHOULD BE IN THE SENSE BYTE.
*
* 0400 - OPERATION ATTEMPTED
*
*       ISSUE A HALT I-O TO NOT READY DEVICE.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 1 SHOULD BE SET AND A CSW WITH NO BITS ON STORED.
*
* 0410 - OPERATION ATTEMPTED
*
*       A TEST I-O TO A DEVICE THAT JUST WENT FROM NOT READY TO READY.
*
*       EXPECTED RESPONSE
*
*       EXPECT DEVICE END ALONE, WITH A CONDITION CODE 1.
*
* 0420 - OPERATION ATTEMPTED
*
*       ISSUE 5 READ, FEED, STACKER SELECT R1 COMMANDS TO ENABLE
*       TESTING END OF FILE IN THE NEXT TEST.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0 FOR EACH START I-O AND SEPARATE CHANNEL
*       AND DEVICE ENDS FOR EACH IN STATUS.
*
* 0430 - OPERATION ATTEMPTED
*
*       ONE READ, FEED, STACKER SELECT R1 START I-O TO TEST END
```



```
*       OF FILE.
*
*       EXPECTED RESPONSE
*
*       EXPECT UNIT EXCEPTION IN STATUS DUE TO NO MORE CARDS IN
*       THE READER AND READY STILL UP.  AFTER UNIT EXCEPTION IS
*       ACCEPTED BY THE CHANNEL, READY DROPS.  CONDITION CODE 1
*       IS EXPECTED DUE TO UNIT EXCEPTION PENDING IN THE READER.
*
* 0440 - OPERATION ATTEMPTED
*
*       ISSUE A TEST I-O TO THE READER.
*
*       EXPECTED RESPONSE
*
*       EXPECT CONDITION CODE 1 AND UNIT CHECK ALONE IN THE CSW.
*       A SENSE IS ISSUED AND INTERVENTION REQUIRED SHOULD BE IN THE
*       SENSE BYTE.  READY SHOULD HAVE DROPPED ON THE READER DUE TO
*       UNIT EXCEPTION BEING PRESENTED TO THE CHANNEL.
*
*       POSSIBLE ERROR CAUSES
*
*       1.  THERE MAY HAVE BEEN MORE THAN 5 CARDS IN THE READER FOR
*           THE EOF TEST 0430.
*
*       2.  IF THERE WAS NO ERROR INDICATION IN TEST 0430, UNIT
*           EXCEPTION MAY HAVE BEEN PRESENTED TO THE CHANNEL FROM THE
*           READER BUT READY ERRONEOUSLY DID NOT DROP.
*
* 0450 - OPERATION ATTEMPTED
*
*       A NOP SIO IS ISSUED TO A NOT AVAILABLE DEVICE. (OFF LINE)
*
*       EXPECTED RESPONSE
*
*       COND. CODE 3 SHOULD BE SET (NOT OPERATIONAL)
*
* 0460 - OPERATION ATTEMPTED
*
*       A TEST I-O IS ISSUED TO A NOT AVAILABLE DEVICE. (OFF LINE)
*
*       EXPECTED RESPONSE
*
*       COND. CODE 3 SHOULD BE SET (NOT OPERATIONAL)
*
* 0470 - OPERATION ATTEMPTED
*
*       A HALT I-O IS ISSUED TO A NOT AVAILABLE DEVICE. (OFF LINE)
*
*       EXPECTED RESPONSE
*
*       COND. CODE 3 SHOULD BE SET (NOT OPERATIONAL).
*
* 0480 - OPERATION ATTEMPTED
*
*       A TEST I-O TO A DEVICE THAT JUST WENT FROM NOT READY TO READY.
*
*       EXPECTED RESPONSE
*
*       EXPECT DEVICE END ALONE, WITH A COND. CODE 1.
*
********************************************************************************
********************                                ********************
```

```
                        * SECTION PREFACE ********************************** SECTION PREFACE *
                        ********************                  ********************
001000   F8103000       SECNO   DC    XL4'F8103000'      PROGRAM,SECTION AND REVISION NOS.  *
001004   00000000       SNSW    DC    XL4'00'            SECTION SENSE SWITCHES             *
001008   0000                   DC    XL2'00'                                               *
00100A   0000           ICM     DC    XL2'00'            INTERRUPTION CONDITION MASK        *
00100C   00             SDMF    DC    XL1'00'            SECTION DM FLAGS                   *
00100D   02             NIOU    DC    XL1'02'            NUMBER OF UNIT TABLE ENTRYS        *
00100E   C0             FLAG1   DC    X'C0'              EXCLUSIVE CPU                      *
00100F   00             FLAG2   DC    X'00'              I/O INT ARE ERR, EXT INT TO PROG   *
001010   0104000000     INPSW   DC    X'0104000000'      DISABLED, SPVSR STATE, NO PGM MASK *
001015   0017FC                 DC    AL3(ROUT01)        ADR OF 1ST ROUTINE PREFIX          *
001018   0000000000000000       EXOPSW  DC    XL8'0'     SECTION OLD EXTERNAL PSW           *
001020   0000000000000000       SVOPSW  DC    XL8'00'    CLEAR ALL OLD PSWS                 *
001028   0000000000000000       PGOPSW  DC    XL8'00'    PROGRAM OLD PSW                    *
001030   0000000000000000       MCOPSW  DC    XL8'00'    MACHINE CHECK OLD PSW              *
001038   0000000000000000       IOOPSW  DC    XL8'00'    I/O OLD PSW                        *
001040   0000000000000000       CSW     DC    XL8'00'    CHANNEL STATUS WORD                *
001048   00000000       CAW     DC    XL4'00'            CAW                                *
00104C   00000000000000000000         DC    XL12'00'           RESERVED FOR DM USE        *
001055   000000
001058   0004000000     EXNPSW  DC    X'00040000000'     EXTERNAL NEW PSW                   *
00105D   000000         SRET    DC    XL3'0'             ADR OF EXT INTRPT ROUTINE          *
001060   0000000000000000       SVNPSW  DC    XL8'00'    SUPERVISOR NEW PSW                 *
001068   0000000000000000       PGNPSW  DC    XL8'00'    PROGRAM NEW PSW                    *
001070   0000000000000000       MCNPSW  DC    XL8'00'    MACHINE CHECK NEW PSW              *
001078   01040000       IONPSW  DC    XL4'01040000'      I/O NEW PSW                        *
00107C   00001226               DC    AL4(IRETRN)        ADDRESS OF I/O INTRPT ROUTINE      *
001080                   DS    96C                      96 BYTE REG DUMP AREA FOR DM USE   *
0010E0   81             UNIT1   DC    X'81'              UNIT TYPE - 2540 READER
0010E1   00             U1OP    DC    X'00'              OPTIONAL FEATURES BYTE             *
0010E2   8000           U1ADDR  DC    X'8000'            FLAGS AND CHAN/UNIT ADDRESS        *
0010E4   82             UNIT2   DC    X'82'              UNIT TYPE - 2540 PUNCH
0010E5   00             U2OP    DC    X'00'              OPTIONAL FEATURES BYTE
0010E6   8000           U2ADDR  DC    X'8000'            FLAGS AND CHAN/UNIT ADDRESS

*****************************************************************************
*      OPTIONAL FEATURE BYTE DEFINITION
*****************************************************************************
*  * BIT 0 * BIT 1 * BIT 2 * BIT 3 * BIT 4 * BIT 5 * BIT 6 * BIT 7 *
*  * HEX 8 * HEX 4 * HEX 2 * HEX 1 * HEX 8 * HEX 4 * HEX 2 * HEX 1 *
*  * ASCII * CARD  *       *  51   * 1400  *       *       * 2821  *
*  *       * IMAGE *       * COL RD* COMP  *       *       * 2 CHN *
*  *       *       *       *       *       *       *       *  SW.  *
*****************************************************************************
*                    2540 READER SENSE BYTE
*****************************************************************************
*      BIT   MEANING
*       0    COMMAND REJECT
*       1    INTERVENTION REQUIRED
*       2    BUS OUT CHECK
*       3    EQUIPMENT CHECK
*       4    DATA CHECK - VALIDITY CHECK - INVALID CARD CODE
*       5    OVERRUN - NOT USED
*       6    UNUSUAL COMMAND SEQUENCE-2 READS WITHOUT INTERVENING FEED
*       7    NOT USED
*****************************************************************************
*                 2540 READER STATUS BYTE
*****************************************************************************
*      BIT   MEANING
*       0    ATTENTION - 1400 COMPATIBILITY FEATURE ONLY - INDICATES
*                        SENSE WAS ISSUED BEFORE 6 MS TIME OUT AFTER
*                        A 1400 COMPATIBILITY READ.
*       1    STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
*       2    CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
*       3    DEVICE BUSY
*       4    CHANNEL END
*       5    DEVICE END
*       6    UNIT CHECK
```



```
*       7    UNIT EXCEPTION - LAST CARD PREVIOUSLY READ, AND END OF
*                             FILE WAS ON.
*****************************************************************************
*****************************************************************************
*****************************************************************************
*                        PARAMETERS USED TO ENTER
*                        THE I-O HANDLER ROUTINE
*****************************************************************************
*       BAL   R11,ISIO              LINK TO I-O HANDLER
*       DC    XL2'0000'             CONTROL SWITCHES
*       DC    X'0014'               TEST NO. IN DEC EXPRESSED IN HEX
*       DC    X'F0'                 EXPECTED COND. CODE
*       DC    X'00'                 EXPECTED SENSE DATA
*       DC    AL2(ADR-BASE+REG)     ADDR. OF EXPECTED CSW IF NEEDED
*****************************************************************************
*****************************************************************************
*                        I-O HANDLER CONTROL SWITCHES
*                        2 BYTE PARAMETER FOLLOWING BAL
*****************************************************************************
* SWITCH     DESCRIPTION
*   0  ----  OFF - ISSUE AN I-O COMMAND
*            ON  - DO NOT ISSUE AN I-O COMMAND
*   1  ----  OFF - ENABLE
*            ON  - DO NOT ENABLE
*   2  ----  OFF - EXPECT NO INTERRUPT
*            ON  - EXPECT AN INTERRUPT
*   3  ----  OFF - DO NOT EXPECT 2 INTERRUPTS
*            ON  - EXPECT 2 INTERRUPTS
*   4  ----  OFF - EXPECT NO CSWS
*            ON  - EXPECT A CSW
*   5  ----  OFF - DO NOT EXPECT 2 CSWS
*            ON  - EXPECT 2 CSWS
*   6  ----  OFF - ALWAYS TRY TO ISSUE SENSE
*            ON  - SENSE ON UNIT CHECK ONLY
*   8  ----  OFF - NOT EXECUTING INVALID COMMAND
*            ON  - EXECUTING INVALID COMMAND
*
*****************************************************************************
*****************************************************************************
*                        SWITCHES USED BY I-O HANDLER
*****************************************************************************
* SWITCH     DESCRIPTION
*   0  ----  OFF - NO HANGUP ON INTERFACE
*            ON  - HANGUP OCCURRED
*   1  ----  OFF - NO CSWS STORED
*            ON  - ONE CSW STORED
*   2  ----  OFF - SECOND CSW NOT RECEIVED
*            ON  - SECOND CSW RECEIVED
*   3  ----  OFF - DID NOT ENABLE
*            ON  - ENABLED ONCE
*   4  ----  OFF - DID NOT ENABLE TWICE
*            ON  - ENABLED TWICE
*   5  ----  OFF - NO SENSE DATA RECEIVED
*            ON  - SENSE DATA RECEIVED
*   6  ----  OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*            ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*   7  ----  OFF - NO ERROR DETECTED
*            ON  - AN ERROR WAS DETECTED
*****************************************************************************
*                        REGISTERS USED IN I-O HANDLER
*****************************************************************************
*      REG          COMMENTS
*       5    USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
*            PREVIOUS HANGUP ON INTERFACE DETECTED.
*
*       8    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       9    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
```

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                                *
                                *       10   MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
                                *
                                *       11   MUST BE USED AS LINK REG TO THIS ROUTINE
                                *
                                *       12   MUST CONTAIN DEVICE ADDRESS
                                *
                                ********************************************************************************
0010E8   0000                   ISW     DC      XL2'0'
                                ********************************************************************************
                                ********************************************************************************
                                *                        * I-O HANDLER SUB-ROUTINE *
                                ********************************************************************************
0010EA   92 9E F 1AC            IHIO    MVI     ISSUE,X'9E'             SET UP FOR HALT I-O
0010EE   92 C8 F 661                    MVI     IOPT1+25,X'C8'          MOVE -H- TO OPTION MSG.
0010F2   92 C8 F 5C8                    MVI     IOADDR+12,X'C8'
0010F6   92 9E F 15E                    MVI     ILOOP,X'9E'
0010FA   47 F0 F 122                    BC      UNC,IEYEOH              BR. UNCONDITIONAL
0010FE   92 9D F 1AC            ITIO    MVI     ISSUE,X'9D'             SET UP FOR TEST I-O
001102   92 9D F 15E                    MVI     ILOOP,X'9D'
001106   92 E3 F 661                    MVI     IOPT1+25,X'E3'          MOVE -T- TO OPTION MSG.
00110A   92 E3 F 5C8                    MVI     IOADDR+12,X'E3'
00110E   47 F0 F 122                    BC      UNC,IEYEOH              BR. UNCONDITIONAL
001112   92 9C F 1AC            ISIO    MVI     ISSUE,X'9C'             SET UP FOR START I-O
001116   92 9C F 15E                    MVI     ILOOP,X'9C'
00111A   92 E2 F 661                    MVI     IOPT1+25,X'E2'          MOVE -S- TO OPTION MSG.
00111E   92 E2 F 5C8                    MVI     IOADDR+12,X'E2'
001122   D2 01 F 644 B 002    IEYEOH  MVC     ITSTNO+5(2),2(R11)      SAVE TEST NUMBER
001128   90 AB F 698                    STM     R10,R11,ISLAVE          SAVE REG 10 AND REG 11
00112C   90 89 F 588                    STM     R8,R9,ISAVE             SAVE REGS 8 AND 9
001130   D2 00 F 6A5 F 003              MVC     RTSV(1),SECNO+3         SAVE RT NO. FOR HANGUP.
001136   50 AD 0 048            IRETRY  ST      R10,HCAW(R13)           STORE COMMAND ADDRESS.
00113A   D7 07 D 040 D 040              XC      HCSW(8,R13),HCSW(R13)
001140   D7 0B E 080 E 080              XC      LOGOUT(12,R14),LOGOUT(R14)
001146   91 80 B 000                    TM      0(R11),X'80'            CHECK CONTROL SWITCH FOR NO I-O
00114A   47 10 F 1F6                    BC      ALL,INOW                BR. IF ON
00114E   91 C0 F 004                    TM      SNSW,X'C0'
001152   47 80 F 19A                    BC      NONE,JOHN
                                ********************************************************************************
                                *                              SENSE SWITCH LOOPS
                                ********************************************************************************
001156   91 80 F 004            ITRY1   TM      SNSW,X'80'              CHECK SECTION SENSE SWITCH 0
00115A   47 80 F 166                    BC      NONE,ITRY2              BR. IF OFF
00115E   9C 00 C 000            ILOOP   SIO     0(R12)                  SIO, TIO, OR HIO
001162   47 F0 F 156                    BC      UNC,ITRY1               BR. UNCONDITIONAL
001166   91 40 F 004            ITRY2   TM      SNSW,X'40'              CHECK SECTION SENSE SWITCH 1
00116A   47 80 F 186                    BC      NONE,IHI                BR. IF OFF
00116E   9D 00 C 000            IHANG   TIO     0(R12)                  TEST I-O
001172   47 70 F 156                    BC      NCC0,ITRY1              BR. IF NOT COND. CODE 0
001176   91 40 F 004                    TM      SNSW,X'40'              CHECK SECTION SENSE SWITCH 1
00117A   47 80 F 186                    BC      NONE,IHI                BR. IF OFF
00117E   9C 00 C 000                    SIO     0(R12)                  START I-O
001182   47 F0 F 16E                    BC      UNC,IHANG               BR. UNCONDITIONAL
001186   58 9E 0 198            IHI     L       R9,WT(R14)              PICK UP DM WAIT FACTOR.
00118A   88 90 0 003                    SRL     R9,3                    CUT IT DOWN TO 1.25 SECS.
00118E   9D 00 C 000            GREG    TIO     0(R12)                  TEST I-O TO DEVICE.
001192   47 80 F 19A                    BC      CC0,JOHN                BR IF AVAILABLE.
001196   46 90 F 18E                    BCT     R9,GREG                 LOOP UNTIL TIME OUT.
00119A   D7 01 F 0E8 F 0E8      JOHN    XC      ISW(2),ISW              ZERO THE I-O HANDLER SWITCHES.
0011A0   96 80 F 0E8                    OI      ISW,X'80'               TURN ON THE HANG SWITCH.
0011A4   92 E7 F 61D                    MVI     IACSNS+5,C'X'           MOVE AN X INTO ACTUAL SENSE BYTE.
0011A8   92 E7 F 5B7                    MVI     IACTCC+5,C'X'           MOVE IN A -X-
0011AC   9C 00 C 000            ISSUE   SIO     0(R12)                  I-O COMMAND- SIO, TIO, OR HIO
0011B0   47 80 F 1F2                    BC      CC0,IZERO               BR. IF COND. CODE 0
0011B4   47 40 F 1CC                    BC      CC1,IONE                BR. IF COND. CODE 1
0011B8   47 20 F 1C4                    BC      CC2,ITWO                BR. IF COND. CODE 2
0011BC   92 F3 F 5B7                    MVI     IACTCC+5,X'F3'          INDICATE COND. CODE 3
0011C0   47 F0 F 1F6                    BC      UNC,INOW                BR. UNCONDITIONAL
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0011C4   92 F2 F 5B7            ITWO    MVI     IACTCC+5,X'F2'          INDICATE COND. CODE 2
0011C8   47 F0 F 1F6                    BC      UNC,INOW                BR. UNCONDITIONAL
0011CC   92 F1 F 5B7            IONE    MVI     IACTCC+5,X'F1'          INDICATE COND. CODE 1
0011D0   D2 07 F 67E D 040              MVC     ICSW1(8),HCSW(R13)      SAVE CSW
0011D6   96 40 F 0E8                    OI      ISW,X'40'               INDICATE 1 CSW
0011DA   91 80 B 001                    TM      1(R11),X'80'            SEE IF INVALID CMDS TEST.
0011DE   47 80 F 1F6                    BC      NONE,INOW               BR IF NOT.
0011E2   91 08 F 682                    TM      ICSW1+4,X'08'           SEE IF CHANNEL END IN STATUS.
0011E6   47 10 F 1F6                    BC      ALL,INOW                BR IF YES.
0011EA   96 40 B 000                    OI      0(R11),X'40'            DO NOT ALLOW ENABLING FOR INTERRUPT.
0011EE   47 F0 F 1F6                    BC      UNC,INOW                BR. UNCONDITIONAL
0011F2   92 F0 F 5B7            IZERO   MVI     IACTCC+5,X'F0'          INDICATE COND. CODE 0
0011F6   94 7F F 0E8            INOW    NI      ISW,X'7F'               TURN OFF HANG UP SWITCH
0011FA   91 40 B 000                    TM      0(R11),X'40'            CHECK CONTROL SWITCH FOR NO ENABLE
0011FE   47 10 F 29A                    BC      ALL,ISEN                BR. IF ON
001202   96 10 F 0E8                    OI      ISW,X'10'               INDICATE ENABLED ONCE
001206   58 9E 0 198            IWAIT   L       R9,WT(R14)              LOAD DM WAIT FACTOR
00120A   88 90 0 003                    SRL     R9,3                    ADJUST
00120E   96 80 F 0E8                    OI      ISW,X'80'               TURN ON HANG UP SW
001212   80 00 F 6A3                    SSM     MSK1                    ENABLE
001216   46 90 F 216                    BCT     R9,*                    WAIT
00121A   80 00 F 6A4                    SSM     MSK2                    DISABLE
00121E   94 7F F 0E8                    NI      ISW,X'7F'               TURN OFF HANG SW
001222   47 F0 F 29A                    BC      UNC,ISEN                BR. UNCONDITIONAL
                                ********************************************************************************
                                *                          ALL I-O INTERRUPTS RETURN HERE
                                ********************************************************************************
001226   49 C0 F 03A            IRETRN  CH      R12,IOOPSW+2            COMPARE FOR CURRENT I-O ADDRESS
00122A   47 60 F 248                    BC      UNEQ,IUIO               BR. IF UNEQUAL
00122E   94 7F F 0E8                    NI      ISW,X'7F'               RESET HANG UP SW
001232   91 40 F 0E8                    TM      ISW,X'40'
001236   47 10 F 278                    BC      ALL,ISV2                BR. IF 1 CSW ALREADY STORED
00123A   D2 07 F 67E F 040              MVC     ICSW1(8),HCSW(R15)      SAVE CSW 1
001240   96 40 F 0E8                    OI      ISW,X'40'               INDICATE 1 CSW STORED
001244   47 F0 F 282                    BC      UNC,INT3                BR. UNCONDITIONAL
001248   D2 07 F 590 F 040      IUIO    MVC     WORK(8),HCSW(R15)
00124E   0A DD                         SVC     X'DD'                   CONVERT ADDRESS
001250   0002                          DC      AL2(2)                  2 BYTES OF I-O OLD PSW.
001252   003A                          DC      AL2(IOOPSW+2-SECNO)     FROM HERE.
001254   06B8                          DC      AL2(IUNEX+17-SECNO)     TO HERE
001256   0A D0                         SVC     X'D0'                   PRINT UNEXPECTED INTERRUPT DEVICE
001258   64                            DC      X'64'                   ADDRESS
001259   15                            DC      X'15'
00125A   F6A7                          DC      AL2(IUNEX-SECNO+REG)
00125C   D2 02 F 5EE F 5E7              MVC     IBLAH+1(3),ICSW         MOVE -CSW- TO MESSAGE
001262   92 1A F 43D                    MVI     ICNT,X'1A'              ADJUST COUNT
001266   D2 02 F 604 F 607              MVC     IBLAH+23(3),IACT        MOVE -ACT- TO MESSAGE
00126C   45 90 F 426                    BAL     R9,ICOUT                BR. TO OUTPUT CSW
001270   96 02 F 0E8                    OI      ISW,X'02'               INDICATE UIO
001274   47 F0 F 500                    BC      UNC,ILOGED              BR. UNCONDITIONAL
001278   D2 07 F 686 F 040      ISV2    MVC     ICSW2(8),HCSW(R15)      SAVE CSW 2
00127E   96 20 F 0E8                    OI      ISW,X'20'               INDICATE 2 CSWS STORED
001282   91 10 B 000            INT3    TM      0(R11),X'10'            CHECK CTRL SW FOR 2 INTR EXPECTED
001286   47 80 F 29A                    BC      NONE,ISEN               BR. IF NOT
00128A   91 08 F 0E8                    TM      ISW,X'08'
00128E   47 10 F 29A                    BC      ALL,ISEN                BR. IF ALREADY ENABLED TWICE
001292   96 08 F 0E8                    OI      ISW,X'08'               INDICATE ENABLED TWICE
001296   47 F0 F 206                    BC      UNC,IWAIT
00129A   91 02 B 000            ISEN    TM      0(R11),X'02'            CHECK CONTROL SWITCH FOR SNS ON UC
00129E   47 80 F 2C2                    BC      NONE,IDOSNS             BR. IF OFF TO ISSUE SENSE
0012A2   91 40 F 0E8                    TM      ISW,X'40'               SEE IF 1ST CSW IN.
0012A6   47 80 F 318                    BC      NONE,IBSN               BR. IF NO CSW STORED TO BYPASS SENSE
0012AA   91 02 F 682                    TM      ICSW1+4,X'02'           CHECK FOR UNIT CHECK
0012AE   47 10 F 2C2                    BC      ALL,IDOSNS              IF YES BR. TO ISSUE SENSE
0012B2   91 20 F 0E8                    TM      ISW,X'20'               CHECK FOR SECOND CSW
0012B6   47 80 F 318                    BC      NONE,IBSN               BR. IF NOT TO BYPASS SENSE
0012BA   91 02 F 68A                    TM      ICSW2+4,X'02'           CHECK FOR UNIT CHECK
0012BE   47 80 F 318                    BC      NONE,IBSN               BR. IF NOT TO BYPASS SENSE
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0012C2  58 9E 0 198        IDOSNS L    R9,WT(R14)      LOAD DM WAIT FACTOR
0012C6  88 90 0 002            SRL     R9,2            CUT IT DOWN TO 2.5 SECS.
0012CA  41 80 F 690            LA      R8,ISENSE       LOAD SENSE COMMAND ADDRESS
0012CE  50 8D 0 048            ST      R8,HCAW(R13)    STORE IN CAW
0012D2  9C 00 C 000            SIO     0(R12)          ISSUE SENSE
0012D6  47 70 F 366            BC      NCC0,INDER      BR. IF NOT ACCEPTED
0012DA  9D 00 C 000        ITIOLP TIO     0(R12)          TEST I-O
0012DE  47 40 F 302            BC      CC1,ILOKE       BR. IF CSW STORED
0012E2  46 90 F 2DA        ITIC   BCT     R9,ITIOLP
0012E6  47 F0 F 318            BC      UNC,IBSN        BR. UNCONDITIONAL
0012EA  91 40 F 0E8        INOEX1 TM      ISW,X'40'
0012EE  47 10 F 366            BC      ALL,INDER       BR. IF CSW STORED
0012F2  47 F0 F 36A            BC      UNC,IDUNCK      BR. UNCONDITIONAL
0012F6  91 20 F 0E8        INOEX2 TM      ISW,X'20'
0012FA  47 10 F 366            BC      ALL,INDER       BR. IF CSW 2 STORED
0012FE  47 F0 F 36A            BC      UNC,IDUNCK      BR. UNCONDITIONAL
001302  95 0C D 044        ILOKE  CLI     HCSW+4(R13),X'0C'  CHECK FOR CE DE ONLY
001306  47 70 F 2E2            BC      NCC0,ITIC       BR. IF NOT
00130A  96 04 F 0E8            OI      ISW,X'04'       INDICATE SENSE DATA RECIEVED
00130E  D5 00 F 61D B 005      CLC     IACSNS+5(1),5(R11)  COMPARE FOR EXPECTED SENSE
001314  47 60 F 366            BC      UNEQ,INDER      BR. IF UNEQUAL
001318  D5 00 F 5B7 B 004    IBSN   CLC     IACTCC+5(1),4(R11)  COMPARE FOR EXPECTED COND. CODE
00131E  47 60 F 366            BC      UNEQ,INDER      BR. IF UNEQUAL
001322  91 08 B 000            TM      0(R11),X'08'
001326  47 80 F 2EA            BC      NONE,INOEX1     BR. IF NO CSW EXPECTED
00132A  91 40 F 0E8            TM      ISW,X'40'
00132E  47 80 F 366            BC      NONE,INDER      BR. IF NO CSW RECIEVED
001332  48 8B 0 006            LH      R8,6(R11)       LOAD CSW ADDR
001336  40 80 F 33E            STH     R8,ICCSW1+4     STORE IN COMPARE INSTR.
00133A  D5 07 F 67E F 67E  ICCSW1 CLC     ICSW1(8),ICSW1  COMPARE FOR EXPECTED CSW
001340  47 60 F 366            BC      UNEQ,INDER      BR. IF UNEQUAL
001344  91 04 B 000            TM      0(R11),X'04'
001348  47 80 F 2F6            BC      NONE,INOEX2     BR. IF NO CSW 2 EXPECTED
00134C  91 20 F 0E8            TM      ISW,X'20'
001350  47 80 F 366            BC      NONE,INDER      BR. IF NO CSW 2 RECIEVED
001354  41 88 0 008            LA      R8,8(R8)        UPDATE TO SECOND CSW
001358  40 80 F 360            STH     R8,ICCSW2+4
00135C  D5 07 F 686 F 686  ICCSW2 CLC     ICSW2(8),ICSW2  COMPARE FOR EXPECTED CSW 2
001362  47 80 F 36A            BC      EQ,IDUNCK       BR. IF EQUAL
001366  96 01 F 0E8        INDER  OI      ISW,X'01'       INDICATE AN ERROR
00136A  92 64 F 3B2        IDUNCK MVI     IFLAG1,X'64'    SET UP FOR ERROR PRINTOUT
00136E  92 C0 F 53E            MVI     IFLAG2,X'C0'
001372  91 01 F 0E8            TM      ISW,X'01'       CHECK FOR A DETECTED ERROR
001376  47 10 F 38A            BC      ALL,IOUTIT      BR. IF ERROR DETECTED
00137A  91 01 F 004            TM      SNSW,X'01'      CHECK SECTION SENSE SWITCH 7
00137E  47 80 F 55A            BC      NONE,ILEAVE     BR. IF OFF
001382  92 24 F 3B2            MVI     IFLAG1,X'24'    SET UP FOR CORRECT PRINTOUT
001386  92 80 F 53E            MVI     IFLAG2,X'80'
00138A  91 80 F 6A6        IOUTIT TM      SWCH,X'80'      SEE IF IN INTERVENTION TESTS.
00138E  47 10 F 3A2            BC      ALL,SPRT        BR IF YES.
001392  95 40 F 61D            CLI     IACSNS+5,X'40'  SEE IF INTERVENTION REQUIRED.
001396  47 80 F 570            BC      EQ,RDYM         BR IF YES.
00139A  91 01 F 682            TM      ICSW1+4,X'01'   SEE IF UNIT EXCEPTION.
00139E  47 10 F 570            BC      ALL,RDYM        BR IF YES.
0013A2  D2 01 F 644 B 802  SPRT   MVC     ITSTNO+5(2),2(R11)  MOVE TEST NO. TO PRINT AREA.
0013A8  0A DD                  SVC     X'DD'           CONVERT TEST NUMBER
0013AA  0002                   DC      AL2(2)
0013AC  0644                   DC      AL2(ITSTNO+5-SECNO)
0013AE  0644                   DC      AL2(ITSTNO+5-SECNO)
0013B0  0A D0                  SVC     X'D0'           PRINT TEST NUMBER
0013B2  64                 IFLAG1 DC      X'64'
0013B3  09                     DC      X'09'
0013B4  F63F                   DC      AL2(ITSTNO-SECNO+REG)
0013B6  41 80 0 004            LA      R8,4            ADJUST LINK ADDRESS FOR PRINTOUT
0013BA  1B 88                  SR      R11,R8
0013BC  50 80 F 5D0            ST      R11,ILINK+5
0013C0  0A DD                  SVC     X'DD'           CONVERT LINK ADDRESS
0013C2  0003                   DC      AL2(3)
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0013C4  05D1                   DC      AL2(ILINK+6-SECNO)
0013C6  05D0                   DC      AL2(ILINK+5-SECNO)
0013C8  0A D0                  SVC     X'D0'           PRINT LINK ADDRESS
0013CA  A0                     DC      X'A0'
0013CB  10                     DC      X'10'
0013CC  F5CB                   DC      AL2(ILINK-SECNO+REG)
0013CE  41 BB 0 004            LA      R11,4(R11)
0013D2  91 80 B 000            TM      0(R11),X'80'
0013D6  47 10 F 454            BC      ALL,IOCSW       BR. IF NO I-O COMMAND ISSUED
0013DA  0A DD                  SVC     X'DD'           CONVERT I-O ADDRESS
0013DC  0003                   DC      AL2(3)
0013DE  06A0                   DC      AL2(IOADR-SECNO)
0013E0  05C1                   DC      AL2(IOADDR+5-SECNO)
0013E2  0A D0                  SVC     X'D0'           PRINT I-O ADDRESS
0013E4  A0                     DC      X'A0'
0013E5  0F                     DC      X'0F'
0013E6  F5BC                   DC      AL2(IOADDR-SECNO+REG)
0013E8  95 9C F 1AC            CLI     ISSUE,X'9C'     COMPARE FOR SIO COMMAND
0013EC  47 60 F 442            BC      UNEQ,ICCOUT     BR. IF NOT
0013F0  50 A0 F 5E0            ST      R10,ICAW+5      STORE CCW ADDR.
0013F4  0A DD                  SVC     X'DD'           CONVERT CAW
0013F6  0003                   DC      AL2(3)
0013F8  05E1                   DC      AL2(ICAW+6-SECNO)
0013FA  05E0                   DC      AL2(ICAW+5-SECNO)
0013FC  0A D0                  SVC     X'D0'           PRINT CAW
0013FE  A0                     DC      X'A0'
0013FF  0B                     DC      X'0B'
001400  F5DB                   DC      AL2(ICAW-SECNO+REG)
001402  D2 02 F 5EE F 5EA      MVC     IBLAH+1(3),ICCW MOVE -CCW- TO MESSAGE
001408  92 16 F 43D            MVI     ICNT,X'16'      ADJUST COUNT
00140C  D2 07 F 590 A 000  ICWOUT MVC     WORK(8),0(R10)  MOVE CCW TO WORK AREA
001412  45 90 F 426            BAL     R9,ICOUT        BR. TO OUTPUT CCW
001416  91 C0 A 004            TM      4(R10),X'C0'    CHECK FOR ANY CHAIN FLAGS
00141A  47 80 F 442            BC      NONE,ICCOUT     BR. IF NONE
00141E  41 AA 0 008            LA      R10,8(R10)      UPDATE TO NEXT CCW
001422  47 F0 F 40C            BC      UNC,ICWOUT      BR. UNCONDITIONAL
001426  0A DD              ICOUT  SVC     X'DD'           CONVERT
001428  0008                   DC      AL2(8)
00142A  0590                   DC      AL2(WORK-SECNO)
00142C  0590                   DC      AL2(WORK-SECNO)
00142E  D2 07 F 5F2 F 590      MVC     IBLAH+5(8),WORK MOVE TO MESSAGE
001434  D2 07 F 5F8 F 598      MVC     IBLAH+14(8),WORK+8
00143A  0A D0                  SVC     X'D0'           PRINT
00143C  A0                     DC      X'A0'
00143D  1A                 ICNT   DC      X'1A'
00143E  F5ED                   DC      AL2(IBLAH-SECNO+REG)
001440  07 F9                  BCR     UNC,R9          RETURN VIA REG 9
001442  D2 00 F 5AD B 004  ICCOUT MVC     IEXPCC+5(1),4(R11)  MOVE EXP CC TO MESSAGE
001448  0A D0                  SVC     X'D0'           PRINT EXPECTED COND. CODE
00144A  A0                     DC      X'A0'
00144B  0A                     DC      X'0A'
00144C  F5A8                   DC      AL2(IEXPCC-SECNO+REG)
00144E  0A D0                  SVC     X'D0'           PRINT ACTUAL COND. CODE
001450  A0                     DC      X'A0'
001451  0A                     DC      X'0A'
001452  F5B2                   DC      AL2(IACTCC-SECNO+REG)
001454  D2 02 F 5EE F 5E7  IOCSW  MVC     IBLAH+1(3),ICSW MOVE -CSW- TO MESSAGE
00145A  92 1A F 43D            MVI     ICNT,X'1A'      ADJUST COUNT
00145E  91 08 B 000            TM      0(R11),X'08'
001462  47 80 F 486            BC      NONE,IDIDI      BR. IF NO CSW EXPECTED
001466  D2 02 F 604 F 60A      MVC     IBLAH+23(3),IEXP MOVE -EXP- TO MESSAGE
00146C  48 8B 0 006            LH      R8,6(R11)
001470  40 80 F 480            STH     R8,ICHNG1+4
001474  41 88 0 008            LA      R8,8(R8)
001478  40 80 F 480            STH     R8,ICHNG2+4
00147C  D2 07 F 590 F 590  ICHNG1 MVC     WORK(8),WORK    MOVE EXPECTED CSW TO WORK AREA
001482  45 90 F 426            BAL     R9,ICOUT        BR. TO OUTPUT EXPECTED CSW
001486  91 40 F 0E8        IDIDI  TM      ISW,X'40'
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00148A   47 80 F 49E              BC    NONE,IMORST          BR. IF NO CSW STORED
00148E   D2 02 F 604 F 607        MVC   IBLAH+23(3),IACT     MOVE -ACT- TO MESSAGE
001494   D2 07 F 590 F 67E        MVC   WORK(8),ICSW1        MOVE ACTUAL CSW TO WORK AREA
00149A   45 90 F 426              BAL   R9,ICOUT             BR. TO OUTPUT ACTUAL CSW
00149E   91 04 B 000        IMORST TM    0(R11),X'04'
0014A2   47 80 F 4B6              BC    NONE,IDID            BR. IF NOT EXPECTING 2 CSWS
0014A6   D2 02 F 604 F 60A        MVC   IBLAH+23(3),IEXP     MOVE -EXP- TO MESSAGE
0014AC   D2 07 F 590 F 590  ICHNG2 MVC   WORK(8),WORK         MOVE EXPECTED CSW TO WORK AREA
0014B2   45 90 F 426              BAL   R9,ICOUT             BR. TO OUTPUT EXPECTED CSW 2
0014B6   91 20 F 0E8        IDID  TM    ISW,X'20'
0014BA   47 80 F 4CE              BC    NONE,IPAS            BR. IF NO SECOND CSW STORED
0014BE   D2 02 F 604 F 607        MVC   IBLAH+23(3),IACT     MOVE -ACT- TO MESSAGE
0014C4   D2 07 F 590 F 686        MVC   WORK(8),ICSW2        MOVE CSW TO WORK AREA
0014CA   45 90 F 426              BAL   R9,ICOUT
0014CE   D2 00 F 612 B 005  IPAS  MVC   IEXSNS+5(1),5(R11)   MOVE EXP SENSE TO MESSAGE
0014D4   91 04 F 0E8              TM    ISW,X'04'
0014D8   47 80 F 4F8              BC    NONE,IPASS           BR. IF NO SENSE DATA RECIEVED
0014DC   0A DD                    SVC   X'DD'                CONVERT EXPECTED SENSE
0014DE   0001                     DC    AL2(1)
0014E0   0612                     DC    AL2(IEXSNS+5-SECNO)
0014E2   0612                     DC    AL2(IEXSNS+5-SECNO)
0014E4   0A D0                    SVC   X'D0'                PRINT EXPECTED SENSE
0014E6   A0                       DC    X'A0'
0014E7   0B                       DC    X'0B'
0014E8   F60D                     DC    AL2(IEXSNS-SECNO+REG)
0014EA   0A DD                    SVC   X'DD'
0014EC   0001                     DC    AL2(1)
0014EE   061D                     DC    AL2(IACSNS+5-SECNO)
0014F0   061D                     DC    AL2(IACSNS+5-SECNO)
0014F2   0A D0                    SVC   X'D0'                PRINT ACTUAL SENSE DATA
0014F4   A0                       DC    X'A0'
0014F5   0B                       DC    X'0B'
0014F6   F618                     DC    AL2(IACSNS-SECNO+REG)
0014F8   95 30 E 181        IPASS CLI   SYSMOD(R14),X'30'     CHECK FOR MODEL 30
0014FC   47 60 F 52C              BC    UNEQ,ICUIO           BR IF NOT.
001500   D2 0B F 590 E 080  ILOGED MVC   WORK(12),LOGOUT(R14) MOVE LOG OUT TO WORK AREA
001506   0A DD                    SVC   X'DD'                CONVERT
001508   000C                     DC    AL2(12)
00150A   0590                     DC    AL2(WORK-SECNO)
00150C   0590                     DC    AL2(WORK-SECNO)
00150E   D2 01 F 628 F 590        MVC   IOLOG+5(2),WORK      MOVE LOG OUT TO MESSAGE
001514   D2 05 F 628 F 592        MVC   IOLOG+8(6),WORK+2
00151A   D2 05 F 632 F 59A        MVC   IOLOG+15(6),WORK+10
001520   D2 05 F 639 F 5A2        MVC   IOLOG+22(6),WORK+18
001526   0A D0                    SVC   X'D0'                PRINT LOG OUT
001528   A0                       DC    X'A0'
001529   1C                       DC    X'1C'
00152A   F623                     DC    AL2(IOLOG-SECNO+REG)
00152C   91 02 F 0E8        ICUIO TM    ISW,X'02'            SEE IF UIO.
001530   47 80 F 53C              BC    NONE,IOPOUT          BR. IF NOT UIO
001534   94 FD F 0E8              NI    ISW,X'FD'            RESET UIO SWITCH
001538   47 F0 F 206              BC    UNC,IWAIT            BR. UNCONDITIONAL
00153C   0A D0              IOPOUT SVC   X'D0'               PRINT LOOP OPTIONS
00153E   C0                 IFLAG2 DC    X'C0'
00153F   36                       DC    X'36'
001540   F648                     DC    AL2(IOPT1-SECNO+REG)
001542   0A D0                    SVC   X'D0'                SPACE A LINE
001544   A0                       DC    X'A0'
001545   01                       DC    X'01'
001546   F5CB                     DC    AL2(ILINK-SECNO+REG)
001548   50 AD 0 048              ST    R10,HCAW(R13)        STORE CAW
00154C   91 C0 F 004              TM    SNSW,X'C0'           CHECK SECTION SENSE SWITCH 0 AND 1
001550   47 50 F 156              BC    ANY,ITRY1            BR. IF ANY ON
001554   91 80 F 0E8              TM    ISW,X'80'
001558   07 15                    BCR   ALL,R5               RETURN VIA REG 5 IF HANG UP
00155A   91 08 B 000        ILEAVE TM   0(R11),X'08'
00155E   47 80 F 566              BC    NONE,IUP             BR. IF NO CSW EXPECTED
001562   41 BB 0 002              LA    R11,2(R11)           UPDATE LINK ADDRESS FOR RETURN
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001566   41 BB 0 006        IUP   LA    R11,6(R11)
00156A   98 89 F 588             LM    R8,R9,ISAVE          RESTORE REGS 8 AND 9
00156E   07 FB                   BCR   UNC,R11              RETURN VIA REG 11
                          ********************************************************************************
                          *      INTERVENTION REQUIRED MESSAGE
                          ********************************************************************************
001570   0A D0              RDYM  SVC   X'D0'                PRINT -MAKE DEVICE READY-
001572   2410                     DC    X'2410'
001574   FFEB                     DC    AL2(MDR-SECNO+REG)
001576   0A DA                    SVC   X'DA'                -HALT-
001578   9D 00 C 000              TIO   0(R12)               TEST I-O
00157C   0A D0                    SVC   X'D0'                PRINT A BLANK.
00157E   8001                     DC    X'8001'
001580   FFEB                     DC    AL2(MDR-SECNO+REG)
001582   47 F0 F 136              BC    UNC,IRETRY           BR TO CONTINUE.
                          ********************************************************************************
                          *      I-O HANDLER WORK AREA.
                          ********************************************************************************
001586                            CNOP  0,8
001586   07 00                BCR   0,0
001588   0000000000000000   ISAVE  DC    XL8'0'
001590                       WORK   DS    24C
0015A8   40C3C34040E740C5E7 IEXPCC DC    C' CC  X EXP'
0015B1   D7
0015B2   40C3C34040E740C1C3 IACTCC DC    C' CC  X ACT'
0015B8   E3
0015BC   40C1C4D940E7E7E7E7 IOADDR DC    C' ADR XXXXXX XIO'
0015C5   E7E740E7C9D6
0015CB   00                       DC    X'00'
0015CC                            CNOP  0,4
                                  ORG   *-1
0015CB   40C1C4D940E7E7E7E7 ILINK  DC    C' ADR XXXXXX LINK'
0015D4   E7E740D3C9D5D2
0015DB   00                       DC    X'00'
0015DC                            CNOP  0,4
                                  ORG   *-1
0015DB   40C3C1E640E7E7E7E7 ICAW   DC    C' CAW XXXXXX '
0015E4   E7E740
0015E7   C3E2E6             ICSW   DC    C'CSW'
0015EA   C3C3E6             ICCW   DC    C'CCW'
0015ED   40C3E2E640E7E7E7E7 IBLAH  DC    C' CSW XXXXXXXX XX'
0015F6   E7E7E7E740E7E7
0015FD   E7E7E7E7E7E740C5E7        DC    C'XXXXXX EXP'
001606   D7
001607   C1C3E3             IACT   DC    C'ACT'
00160A   C5E7D7             IEXP   DC    C'EXP'
00160D   40E2D5E240E7E740C5 IEXSNS DC    C' SNS XX EXP'
001616   E7D7
001618   40E2D5E240E7E740C1 IACSNS DC    C' SNS XX ACT'
001621   C3E3
001623   40D3D6C740E7E740E7 IOLOG  DC    C' LOG XX XXXXXX X'
00162C   E7E7E7E7E740E7
001633   E7E7E7E7E740E7E7E7        DC    C'XXXXX XXXXXX'
00163C   E7E7E7
00163F   40E3E2E340E7E7E7E7 ITSTNO DC    C' TST XXXX'
001648   40E2C5E340E2E240F0 IOPT1  DC    C' SET SS 0 ON FOR'
001651   40D6D540C6D6D9
001658   40D3D6D6D740D6D540        DC    C' LOOP ON XIO, SS'
001661   E7C9D66B40E2E2
001668   40F140D6D540C6D6D9        DC    C' 1 ON FOR TIO SI'
001671   40E3C9D640E2C9
001678   D640D3D6D6D7              DC    C'O LOOP'
00167E   0000000000000000   ICSW1  DC    XL8'0'
001686   0000000000000000   ICSW2  DC    XL8'0'
001690   04 00161D 0000 0001 ISENSE CCW   X'04',IACSNS+5,X'00',1
001698   0000000000000000   ISLAVE DC    XL8'0'                REGISTER SAVE AREA
0016A0   0011AC             IOADR  DC    AL3(ISSUE)
0016A3   FE                 MSK1   DC    X'FE'
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0016A4   01                      MSK2   DC    X'01'
0016A5   00                      RTSV   DC    X'00'              SAVE RT NO. FOR HANGUP.
0016A6   00                      SWCH   DC    X'00'
0016A7   40E4C9D640C6D9D6D4      IUNEX  DC    C' UIO FROM DEVICE'
0016B0   40C4C5E5C9C3C5
0016B7   40E7E7E7E7                     DC    C' XXXX'
                                 ********************************************************************************
                                 *                          INITIALIZE ROUTINE
                                 ********************************************************************************
0016BC   1B DD                   INIT   SR    R13,R13            ZERO REG 13
0016BE   91 40 E 196                    TM    406(R14),X'40'     CHECK FOR FORCED PROBLEM STATE
0016C2   47 80 F 6C8                    BC    NONE,NITWIT        BR. IF NOT
0016C6   18 DF                          LR    R13,R15            SET UP FOR PROBLEM STATE
0016C8   58 C0 F 0E4             NITWIT L     R12,UNIT2          PUT PCH UNIT TABLE IN 12.
0016CC   54 C0 F 73C                    N     R12,MOD50          AND OUT ALL BUT ADDRESS.
0016D0   50 C0 F E1C                    ST    R12,PCH            SAVE IT.
0016D4   58 C0 F 0E0                    L     R12,UNIT1          PUT RDR UNIT TABLE INTO 12.
0016D8   54 C0 F 73C                    N     R12,MOD50          AND OUT UNUSED BITS
0016DC   50 C0 F E18                    ST    R12,RDR            SAVE IT.
0016E0   92 00 F E22                    MVI   LDSW,X'00'         ZERO THE LOADER SW BYTE.
0016E4   1B 66                          SR    R6,R6              ZERO REG 6.
0016E6   43 6E 0 1B9                    IC    R6,DMIOL(R14)      PUT LENGTH OF DMIO TABLE INTO 6.
0016EA   4A 6E 0 1BC                    AH    R6,DMPTR(R14)      ADD OFFSET ADDRESS TO LENGTH.
0016EE   1A 6E                          AR    R6,R14             ADD BASE REG VALUE.
0016F0   4B 60 F E20                    SH    R6,H2              SUBTRACT 2 FROM IT TO POINT TO ADDR.
0016F4   49 C6 0 000                    CH    R12,0(R6)          SEE IF READER IS LOADER.
0016F8   47 60 F 700                    BC    UNEQ,BLOOP         BR IF NOT.
0016FC   96 80 F E22                    OI    LDSW,X'80'         TURN ON LOADER SW.
001700   91 80 F 0E8             BLOOP  TM    ISW,X'80'          CHECK FOR HANG UP
001704   47 10 F 720                    BC    ALL,HANGUP         BR. IF DETECTED
001708   92 40 F 740                    MVI   RDAR,C' '          CLEAR WORK AREA.
00170C   D2 9E F 741 F 740              MVC   RDAR+1(159),RDAR
001712   92 00 F 6A6                    MVI   SWCH,X'00'         ZERO INTERV SWITCH.
001716   92 03 F D10                    MVI   CCW,X'03'          PUT A NOOP INTO CCW.
00171A   41 A0 F D10                    LA    R10,CCW
00171E   07 F4                          BCR   UNC,R4             RETURN VIA REG 4
001720   D2 00 F 003 F 6A5       HANGUP MVC   SECNO+3(1),RTSV    RESTORE RT NO.
001726   0A D0                          SVC   X'D0'              PRINT
001728   64                             DC    X'64'              -PREVIOUS HANGUP DETECTED-
001729   1A                             DC    X'1A'
00172A   F7E0                           DC    AL2(HUNG-SECNO+REG)
00172C   96 01 F 0E8                    OI    ISW,X'01'          TURN ON ERROR SWITCH.
001730   45 50 F 2C2                    BAL   R5,IDOSNS          BR. TO OUTPUT AVAILABLE INFO
001734   92 00 F 0E8                    MVI   ISW,X'00'          RESET HANGUP SWITCH
001738   47 F0 F 700                    BC    UNC,BLOOP
00173C                                  CNOP  0,4
00173C   00003FFF               MOD50  DC    X'00003FFF'
001740                           RDAR   DS    160C
0017E0   40D7D9C5E5C9D6E4E2      HUNG   DC    C' PREVIOUS HANG U'
0017E9   40C8C1D5C740E4
0017F0   D740C4C5E3C5C3E3C5             DC    C'P DETECTED'
0017F9   C4
0017FA                                  CNOP  0,4
0017FA   07 00                       BCR   0,0
                                 ********************************************************************************
                                 * ROUTINE 01 - ISSUE A TEST I-O TO AN AVAILABLE AND IDLE DEVICE.
                                 *              EXPECT CONDITION CODE 0.
                                 ********************************************************************************
0017FC   01                      ROUT01 DC    X'01'              ROUTINE NUMBER
0017FD   000820                         DC    AL3(ROUT02-SECNO)  ADDRESS OF NEXT ROUTINE
001800   45 40 F 6BC                    BAL   R4,INIT            BR. TO INITIALIZE
001804   45 B0 F 0FE             START  BAL   R11,ITIO           BR TO ISSUE TEST I-O.
001808   0200                           DC    X'0200'            CTRL SWITCHES
00180A   0010                           DC    X'0010'            T E S T   N U M B E R
00180C   F000                           DC    X'F000'            EXP COND. CODE AND SENSE
00180E   58 C0 F E1C             GTN    L     R12,PCH            PUT PCH ADDR INTO REG 12.
001812   45 B0 F 0FE                    BAL   R11,ITIO           BR TO ISSUE TEST I-O
001816   0200                           DC    X'0200'            CTRL SWITCHES
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001818   0020                           DC    X'0020'            T E S T   N U M B E R
00181A   F000                           DC    X'F000'            EXP COND. CODE AND SENSE.
00181C   0A D6                          SVC   X'D6'              ROUTINE EXIT
00181E                                  CNOP  0,4
00181E   07 00                       BCR   0,0
                                 ********************************************************************************
                                 * ROUTINE 02 - ISSUE SENSE COMMAND -04-. EXPECT COND. CODE 0 ON THE SIO
                                 *              ISSUE A TEST I-O. EXPECT COND. CODE 1, AND CHANNEL AND
                                 *              DEVICE END IN THE CSW. ISSUE TEST I-O. EXPECT CONDITION
                                 *              CODE 0
                                 ********************************************************************************
001820   02                      ROUT02 DC    X'02'              ROUTINE NUMBER
001821   000850                          DC    AL3(ROUT03-SECNO)  ADDRESS OF NEXT ROUTINE
001824   45 40 F 6BC                    BAL   R4,INIT            BR. TO INITIALIZE
001828   41 A0 F 690                    LA    R10,ISENSE         LOAD SENSE CCW ADDRESS
00182C   45 B0 F 112                    BAL   R11,ISIO           BR. TO ISSUE SENSE SIO
001830   4200                           DC    X'4200'            CTRL SWITCHES
001832   0030                           DC    X'0030'            T E S T   N U M B E R
001834   F000                           DC    X'F000'            EXP COND. CODE AND SENSE
001836   45 B0 F 0FE                    BAL   R11,ITIO           BR. TO ISSUE TEST I-O
00183A   4A00                           DC    X'4A00'            CTRL SWITCHES
00183C   0040                           DC    X'0040'            T E S T   N U M B E R
00183E   F100                           DC    X'F100'            EXP COND. CODE AND SENSE
001840   FDD0                           DC    AL2(SNSCSW-SECNO+REG) EXP CSW ADDRESS
001842   45 B0 F 0FE                    BAL   R11,ITIO           BR. TO ISSUE TEST I-O
001846   0200                           DC    X'0200'            CTRL SWITCHES
001848   0050                           DC    X'0050'            T E S T   N U M B E R
00184A   F000                           DC    X'F000'            EXP COND. CODE AND SENSE
00184C   0A D6                          SVC   X'D6'              ROUTINE EXIT
00184E                                  CNOP  0,4
00184E   07 00                       BCR   0,0
                                 ********************************************************************************
                                 * ROUTINE 03 - ISSUE SENSE COMMAND -04-. ENABLE FOR AN EXPECTED CHANNEL
                                 *              DEVICE END INTERRUPT. ISSUE TIO. EXPECT COND. CODE 0.
                                 ********************************************************************************
001850   03                      ROUT03 DC    X'03'              ROUTINE NUMBER
001851   000874                          DC    AL3(ROUT04-SECNO)  ADDRESS OF NEXT ROUTINE
001854   45 40 F 6BC                    BAL   R4,INIT            BR. TO INITIALIZE
001858   41 A0 F 690                    LA    R10,ISENSE         SET UP FOR SENSE COMMAND
00185C   45 B0 F 112                    BAL   R11,ISIO           BR. TO ISSUE SENSE SIO
001860   2A00                           DC    X'2A00'            CTRL SWITCHES
001862   0060                           DC    X'0060'            T E S T   N U M B E R
001864   F000                           DC    X'F000'            EXP COND. CODE AND SENSE
001866   FDD0                           DC    AL2(SNSCSW-SECNO+REG) EXP CSW ADDRESS
001868   45 B0 F 0FE                    BAL   R11,ITIO           BR. TO ISSUE TEST I-O
00186C   0200                           DC    X'0200'            CTRL SWITCHES
00186E   0070                           DC    X'0070'            T E S T   N U M B E R
001870   F000                           DC    X'F000'            EXP COND. CODE AND SENSE
001872   0A D6                          SVC   X'D6'              ROUTINE EXIT
001874                                  CNOP  0,4
                                 ********************************************************************************
                                 * ROUTINE 04 - ISSUE NOP -03-. EXPECT COND. CODE 1 ON THE SIO, WITH
                                 *              CHANNEL AND DEVICE END STORED IN THE CSW. NO INTERRUPT
                                 *              SHOULD OCCUR.
                                 ********************************************************************************
001874   04                      ROUT04 DC    X'04'              ROUTINE NUMBER
001875   000890                          DC    AL3(ROUT05-SECNO)  ADDRESS OF NEXT ROUTINE
001878   45 40 F 6BC                    BAL   R4,INIT            BR. TO INITIALIZE
00187C   92 03 F D10                    MVI   CCW,X'03'          SET UP FOR NOP
001880   45 B0 F 112                    BAL   R11,ISIO           BR. TO ISSUE NOP SIO
001884   0800                           DC    X'0800'            CTRL SWITCHES
001886   0080                           DC    X'0080'            T E S T   N U M B E R
001888   F100                           DC    X'F100'            EXP COND. CODE AND SENSE
00188A   FDD8                           DC    AL2(NOPCSW-SECNO+REG) EXP CSW ADDRESS
00188C   0A D6                          SVC   X'D6'              ROUTINE EXIT
00188E                                  CNOP  0,4
00188E   07 00                       BCR   0,0
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                                * ROUTINE 05 - ISSUE A DIAGNOSTIC CHECK READ -C6- WITH A SHORT CCW
                                *              COUNT.  EXPECT INCORRECT LENGTH RECORD TO BE INDICATED.
                                *              ISSUE SAME COMMAND WITH A LONG CCW COUNT.  EXPECT SAME
                                *              INDICATION.  ISSUE DIAGNOSTIC WRITE WITH A SHORT, THEN
                                *              A LONG CCW COUNT.  EXPECT SAME INDICATIONS.
                                ********************************************************************************
001890  05                    ROUT05 DC    X'05'                  ROUTINE NUMBER
001891  0008E0                      DC    AL3(ROUT06-SECNO)      ADDRESS OF NEXT ROUTINE
001894  45 40 F 6BC                 BAL   R4,INIT                BR. TO INITIALIZE
001898  41 A0 F D18                 LA    R10,RDSH               LOAD ADDR OF SHORT READ CCW.
00189C  45 B0 F 112                 BAL   R11,ISIO               BR. TO ISSUE SIO
0018A0  2A00                        DC    X'2A00'                CONTROL SWITCHES
0018A2  0090                        DC    X'0090'                T E S T   N U M B E R
0018A4  F000                        DC    X'F000'                EXP COND. CODE AND SENSE
0018A6  FD70                        DC    AL2(RSCSW-SECNO+REG)   EXP SHRT READ CSW ADDRESS.
0018A8  41 A0 F D20                 LA    R10,RDLG               LOAD ADDR OF LONG READ CCW.
0018AC  45 B0 F 112                 BAL   R11,ISIO               BR. TO ISSUE SIO
0018B0  2A00                        DC    X'2A00'                CONTROL SWITCHES
0018B2  0100                        DC    X'0100'                T E S T   N U M B E R
0018B4  F000                        DC    X'F000'                EXP COND. CODE AND SENSE
0018B6  FD78                        DC    AL2(RLCSW-SECNO+REG)   EXP LONG READ CSW.
0018B8  41 A0 F D28           6005  LA    R10,WRSH               LOAD ADDRESS OF SHORT WRITE CCW.
0018BC  58 C0 F E1C                 L     R12,PCH                PUT ADDR OF PUNCH INTO 12.
0018C0  45 B0 F 112                 BAL   R11,ISIO               BR. TO ISSUE SIO
0018C4  2A00                        DC    X'2A00'                CONTROL SWITCHES
0018C6  0110                        DC    X'0110'                T E S T   N U M B E R
0018C8  F000                        DC    X'F000'                EXP COND. CODE AND SENSE
0018CA  FD80                        DC    AL2(WSCSW-SECNO+REG)   EXP SHRT WRITE CSW.
0018CC  41 A0 F D30                 LA    R10,WRLG               LOAD ADDR OF LONG WRITE CCW.
0018D0  45 B0 F 112                 BAL   R11,ISIO               BR. TO ISSUE LONG READ
0018D4  2A00                        DC    X'2A00'                CONTROL SWITCHES
0018D6  0120                        DC    X'0120'                T E S T   N U M B E R
0018D8  F000                        DC    X'F000'                EXP COND. CODE AND SENSE
0018DA  FD88                        DC    AL2(WLCSW-SECNO+REG)   EXP LONG WRITE CSW.
0018DC  0A D6                       SVC   X'D6'                  ROUTINE EXIT
0018DE                              CNOP  0,4
0018DE  07 00                     BCR     0,0
                                ********************************************************************************
                                * ROUTINE 06 - A READ NO FEED COMMAND IS COMMAND CHAINED TO TWO MORE
                                *              READ NO FEED COMMANDS.  THE SYSTEM IS ENABLED TO RECEIVE
                                *              INTERRUPTS.  COND. CODE 0 SHOULD BE SET ON THE SIO.
                                *              UNUSUAL COMMAND SEQUENCE SENSE BIT SHOULD BE SET AT
                                *              CHANNEL AND DEVICE END TIME OF THE SECOND CCW IN THE
                                *              CHAIN.  THIS SHOULD BRING UP UNIT CHECK AND BREAK THE
                                *              CHAIN.  THE CSW SHOULD CONTAIN THE ADDRESS OF THE FIRST
                                *              CCW IN THE CHAIN + 16.
                                *
                                *              A NOP IS NOW ISSUED, FOLLOWED BY A SENSE.  EXPECT NO
                                *              UNIT CHECK, BUT SENSE BIT SHOULD STILL BE SET.  ISSUE
                                *              A DIAGNOSTIC CHECK READ FOLLOWED BY A SENSE.  EXPECT
                                *              SENSE BIT TO BE RESET.
                                *              A FEED AND STACKER SELECT POCKET 1 IS COMMAND CHAINED TO
                                *              TWO MORE FEED COMMANDS.  THE SYSTEM IS ENABLED FOR
                                *              INTERRUPTS.  COND. CODE 0 SHOULD BE SET ON THE SIO.
                                *              COMMAND REJECT SHOULD BE SET ON INITIAL SELECTION OF THE
                                *              SECOND FEED COMMAND.  THIS SHOULD BRING UP UNIT CHECK
                                *              AND BREAK THE COMMAND CHAIN.  THE ADDRESS OF THE FIRST
                                *              CCW IN THE CHAIN + 16 SHOULD BE IN THE CSW.  DEVICE
                                *              STATUS SHOULD CONTAIN UNIT CHECK ALONE.  A RESIDUAL
                                *              COUNT OF 2 - THE COUNT IN THE REJECTED CCW - SHOULD BE
                                *              IN THE CSW.
                                *              A NOP IS NOW ISSUED, FOLLOWED BY A SENSE.  EXPECT NO
                                *              UNIT CHECK, BUT SENSE BIT SHOULD STILL BE SET.  ISSUE
                                *              A DIAGNOSTIC CHECK READ FOLLOWED BY A SENSE.  EXPECT
                                *              SENSE BIT TO BE RESET.
                                *
                                *       A DIAGNOSTIC CHECK READ COMMAND IS ISSUED LAST IN THIS ROUTINE
                                *       TO RESET THE SENSE LATCHES BEFORE ENTERING THE NEXT ROUTINE.
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                                *
                                ********************************************************************************
0018E0  06                    ROUT06 DC    X'06'                  ROUTINE NUMBER
0018E1  00094C                      DC    AL3(ROUT07-SECNO)      ADDRESS OF NEXT ROUTINE
0018E4  45 40 F 6BC                 BAL   R4,INIT                BR. TO INITIALIZE
0018E8  41 A0 F D38                 LA    R10,RNOF               LOAD CCW ADDRESS.
0018EC  45 B0 F 112                 BAL   R11,ISIO               BR. TO ISSUE SIO
0018F0  2800                        DC    X'2800'                CONTROL SWITCHES
0018F2  0130                        DC    X'0130'                T E S T   N U M B E R
0018F4  F002                        DC    X'F002'                EXP COND. CODE AND SENSE.
0018F6  FDF0                        DC    AL2(SEQCSW-SECNO+REG)  EXP CSW ADDRESS.
0018F8  41 A0 F 970                 LA    R10,CHNNOP+8           LOAD NOP CCW ADDRESS
0018FC  45 B0 F 112                 BAL   R11,ISIO               BR. TO ISSUE SIO
001900  0800                        DC    X'0800'                CONTROL SWITCHES
001902  0140                        DC    X'0140'                T E S T   N U M B E R
001904  F102                        DC    X'F102'                EXP. COND. CODE AND SENSE
001906  FDD8                        DC    AL2(NOPCSW-SECNO+REG)  EXP. CSW ADDRESS.
001908  41 A0 F D68                 LA    R10,DCRD               PICK UP ADDR OF DIAG CHK RD
00190C  45 B0 F 112                 BAL   R11,ISIO               BR. TO ISSUE SIO
001910  0800                        DC    X'0800'                CTRL SWITCHES
001912  0150                        DC    X'0150'                T E S T   N U M B E R
001914  F000                        DC    X'F000'                EXP. COND. CODE AND SENSE
001916  FE08                        DC    AL2(DCRCSW-SECNO+REG)  EXP. CSW ADDR
001918  41 A0 F D50                 LA    R10,FNOR               LOAD CCW ADDRESS.
00191C  45 B0 F 112                 BAL   R11,ISIO               BR. TO ISSUE SIO
001920  2800                        DC    X'2800'                CONTROL SWITCHES
001922  0160                        DC    X'0160'                T E S T   N U M B E R
001924  F080                        DC    X'F080'                EXP COND. CODE AND SENSE.
001926  FDF8                        DC    AL2(REJCSW-SECNO+REG)  EXP CSW ADDRESS.
001928  41 A0 F 970                 LA    R10,CHNNOP+8           PICK UP ADDRESS OF SINGLE NOOP.
00192C  45 B0 F 112                 BAL   R11,ISIO               BR TO ISSUE SIO.
001930  0800                        DC    X'0800'                CTRL SWITCHES
001932  0170                        DC    X'0170'                T E S T   N U M B E R
001934  F180                        DC    X'F180'                EXP COND. CODE AND SENSE.
001936  FDD8                        DC    AL2(NOPCSW-SECNO+REG)  EXP CSW ADDRESS.
001938  41 A0 F D68                 LA    R10,DCRD               PICK UP ADDR OF DIAG CHECK RD.
00193C  45 B0 F 112                 BAL   R11,ISIO               BR TO ISSUE SIO.
001940  0800                        DC    X'0800'                CTRL SWITCHES
001942  0180                        DC    X'0180'                T E S T   N U M B E R
001944  F000                        DC    X'F000'                EXP COND. CODE AND SENSE.
001946  FE08                        DC    AL2(DCRCSW-SECNO+REG)  EXP CSW ADDRESS.
001948  0A D6                       SVC   X'D6'                  ROUTINE EXIT
00194A                              CNOP  0,4
00194A  07 00                     BCR     0,0
                                ********************************************************************************
                                * ROUTINE 07 - COMMAND CHAIN A NOP -03-, TO ANOTHER NOP.  EXPECT COND.
                                *              CODE 0 ON THE SIO, DUE TO CHAIN FLAG.  EXPECT CHANNEL
                                *              AND DEVICE END INTERRUPT WITH ADDRESS OF THE SECOND
                                *              CCW PLUS 8 STORED IN THE CSW.
                                ********************************************************************************
00194C  07                    ROUT07 DC    X'07'                  ROUTINE NUMBER
00194D  000980                      DC    AL3(ROUT08-SECNO)      ADDRESS OF NEXT ROUTINE
001950  45 40 F 6BC                 BAL   R4,INIT                BR. TO INITIALIZE
001954  41 A0 F 968                 LA    R10,CHNNOP             SET UP TO CHAIN NOP
001958  45 B0 F 112                 BAL   R11,ISIO               BR. TO ISSUE SIO
00195C  3800                        DC    X'3800'                CTRL SWITCHES
00195E  0190                        DC    X'0190'                T E S T   N U M B E R
001960  F000                        DC    X'F000'                EXP COND. CODE AND SENSE
001962  F978                        DC    AL2(CHNST-SECNO+REG)   EXP CSW ADDRESS
001964  0A D6                       SVC   X'D6'                  ROUTINE EXIT
001968  03 001740 4000 0001   CHNNOP CCW   X'03',RDAR,X'40',1
001970  03 001740 0000 0001           CCW   X'03',RDAR,X'00',1
001978  00001978               CHNST  DC    A(CHNST)
00197C  0C000001                      DC    X'0C000001'
                                ********************************************************************************
                                * ROUTINE 08 - ISSUE ALL COMMANDS THAT ARE INVALID TO THE READER.  EACH
                                *              INVALID COMMAND IS ISSUED IN A SINGLE CCW.  EXPECT COND.
                                *              CODE 1 WITH UNIT CHECK IN THE DEVICE STATUS BYTE AND
```

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                        *          COMMAND REJECT IN THE SENSE BYTE. EACH INVALID COMMAND
                        *          ISSUED IS FOLLOWED BY A DIAGNOSTIC CHECK READ -C6- TO
                        *          RESET THE COMMAND REJECT LATCH. OPTIONAL FEATURE
                        *          COMMANDS WILL BE ISSUED AS INVALID COMMANDS. IF THE
                        *          FEATURE IS NOT DEFINED IN THE DEVICE UDT ENTRY IN CM.
                        ********************************************************************************
001980   08             ROUT08 DC   X'08'              ROUTINE NUMBER
001981   000A78                 DC   AL3(ROUT09-SECNO)  ADDRESS OF NEXT ROUTINE
001984   45 40 F 68C            BAL  R4,INIT           BR TO INITIALIZE.
001988   41 30 0 079            LA   R3,121            PUT THE NO. OF VALID CMDS IN REG 3.
00198C   42 30 F A73    BY2C    STC  R3,SAVCNT         SAVE NO. OF VALID COMMANDS.
001990   18 66                  SR   R6,R6             ZERO REG 6.
001992   92 00 F A74            MVI  CMDBYT,X'00'      PUT ZERO INTO COMMAND BYTE.
001996   41 40 F 9FA    SIV     LA   R4,VALCOM         PUT ADDR. OF VALID CMDS INTO REG 4.
00199A   43 30 F A73            IC   R3,SAVCNT         PUT CMD COUNT INTO REG 3.
00199E   43 60 F A74            IC   R6,CMDBYT         PICK UP THE CMD BYTE
0019A2   95 FF F A74    ADD1    CLI  CMDBYT,X'FF'      SEE IF LAST CMD.
0019A6   47 80 F 9F8            BC   EQ,FINIS          BR IF YES.
0019AA   41 66 0 001            LA   R6,1(R6)          ADD 1 TO THE COMMAND BYTE.
0019AE   42 60 F A74            STC  R6,CMDBYT         SAVE IT.
0019B2   91 0F F A74            TM   CMDBYT,X'0F'      SEE IF NO BITS ON IN BITS 4 THRU 8.
0019B6   47 80 F 9A2            BC   NONE,ADD1         BR IF NONE ON.
0019BA   D5 00 F A74 4 000 TOT  CLC  CMDBYT(1),0(R4)   SEE IF CMD BYTE IS VALID.
0019C0   47 80 F 996            BC   EQ,SIV            BR IF YES.
0019C4   41 44 0 001            LA   R4,1(R4)          ADD 1 TO VALID CMDS ADDR.
0019C8   46 30 F 9BA            BCT  R3,TOT            BRANCH UNTIL ALL VALID CMDS CHKED.
0019CC   41 A0 F E00            LA   R10,INVCCW        PICK UP ADDR. OF CCW.
0019D0   42 60 F E00            STC  R6,INVCCW         PUT INV CMD BYTE INTO CCW.
0019D4   92 38 F 9DC            MVI  CS,X'38'          INITIALIZE CTRL SWITCHES.
0019D8   45 B0 F 112            BAL  R11,ISIO          BR TO ISSUE SIO.
0019DC   3880           CS      DC   X'3880'           CTRL SWITCHES
0019DE   0200                   DC   X'0200'           T E S T   N U M B E R
0019E0   F180                   DC   X'F180'           EXP COND. CODE AND SENSE.
0019E2   FDB8                   DC   AL2(UC-SECNO+REG) ADDRESS OF CSW.
0019E4   41 A0 F D68            LA   R10,DCRD          PICK UP ADDR OF DIAG CHK READ CCW.
0019E8   45 B0 F 112            BAL  R11,ISIO          BR TO START I-O.
0019EC   2800                   DC   X'2800'           CTRL SWITCHES
0019EE   0210                   DC   X'0210'           T E S T   N U M B E R
0019F0   F000                   DC   X'F000'           EXP COND. CODE AND SENSE.
0019F2   FE08                   DC   AL2(DCRCSW-SECNO+REG) EXP CSW ADDRESS.
0019F4   47 F0 F 996            BC   UNC,SIV           BR TO CHECK ALL INVALID CMDS.
0019F8   0A D6          FINIS   SVC  X'D6'             ROUTINE EXIT
                        ********************************************************************************
                        *     VALID COMMAND BYTES
                        ********************************************************************************
0019FA   04142434       VALCOM DC   X'04142434'
0019FE   44546474              DC   X'44546474'
001A02   8494A4B4              DC   X'8494A4B4'
001A06   C4D4E4F4              DC   X'C4D4E4F4'
001A0A   02060A0E              DC   X'02060A0E'
001A0E   12161A1E              DC   X'12161A1E'
001A12   42464A4E              DC   X'42464A4E'
001A16   52565A5E              DC   X'52565A5E'
001A1A   82868A8E              DC   X'82868A8E'
001A1E   92969A9E              DC   X'92969A9E'
001A22   C2C6CACE              DC   X'C2C6CACE'
001A26   D2D6DADE              DC   X'D2D6DADE'
001A2A   23272B2F              DC   X'23272B2F'
001A2E   33373B3F              DC   X'33373B3F'
001A32   63676B6F              DC   X'63676B6F'
001A36   73777B7F              DC   X'73777B7F'
001A3A   A3A7ABAF              DC   X'A3A7ABAF'
001A3E   B3B7BBBF03            DC   X'B3B7BBBF03'
001A43   081828384858687888    DC   X'0818283848586878888' COMMANDS THAT ANSWER
001A4C   98A888C8D8E8F8        DC   X'98A8B8C8D8E8F8'      AS TICS.
001A53   22262A2E       COLBIN DC   X'22262A2E'
001A57   32363A3E              DC   X'32363A3E'
001A5B   62666A6E              DC   X'62666A6E'
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001A5F   72767A7E              DC   X'72767A7E'
001A63   A2A6AAAE              DC   X'A2A6AAAE'
001A67   B2B6BABE              DC   X'B2B6BABE'
001A6B   E2E6EAEE              DC   X'E2E6EAEE'
001A6F   F2F6FAFE              DC   X'F2F6FAFE'
001A73   00             SAVCNT DC   X'00'
001A74   00             CMDBYT DC   X'00'
001A76                         CNOP 0,4
001A76   07 00                 BCR  0,0
                        ********************************************************************************
                        * ROUTINE 09 - ISSUE A READ AND FEED COMMAND -02-. CLEAR CHANNEL END.
                        *              ISSUE TIO BEFORE DEVICE END OCCURS. EXPECT COND. CODE
                        *              1, WITH DEVICE BUSY ONLY IN THE CSW. REPEAT FOR START
                        *              I-O. EXPECT SAME RESULTS. REPEAT FOR HALT I-O. EXPECT
                        *              COND. CODE 1 WITH A ZEROED CSW STORED. EACH DEVICE END
                        *              FROM EACH READ AND FEED WILL BE CLEARED BY ENABLING THE
                        *              CHANNEL AFTER THE I-O OPERATION BETWEEN CHANNEL AND
                        *              DEVICE END TIME, IS PERFORMED. THIS ROUTINE WILL BE
                        *              BYPASSED IF SECTION SENSE SWITCH 7 IS ON.
                        ********************************************************************************
001A78   09             ROUT09 DC   X'09'              ROUTINE NUMBER
001A79   000ADC                 DC   AL3(ROUT10-SECNO)  ADDRESS OF NEXT ROUTINE
001A7C   45 40 F 6BC            BAL  R4,INIT
001A80   41 A0 F D08            LA   R10,RDFD          SET UP FOR READ AND FEED
001A84   91 01 F 004            TM   SNSW,X'01'        CHECK SECTION SENSE SWITCH 7
001A88   47 10 F B94            BC   ALL,SOLONG        BR. IF ON TO BYPASS ROUTINE
001A8C   92 02 F D10            MVI  CCW,X'02'         SET UP PRINT AND SKIP TO 1
001A90   45 B0 F 112            BAL  R11,ISIO          BR. TO ISSUE SIO
001A94   2A00                   DC   X'2A00'           CTRL SWITCHES
001A96   0220                   DC   X'0220'           T E S T   N U M B E R
001A98   F000                   DC   X'F000'           EXP COND. CODE AND SENSE
001A9A   FDE0                   DC   AL2(NORM-SECNO+REG) EXP CSW ADDRESS
001A9C   45 B0 F 0FE            BAL  R11,ITIO          BR. TO ISSUE TEST I-O
001AA0   3C00                   DC   X'3C00'           CTRL SWITCHES
001AA2   0230                   DC   X'0230'           T E S T   N U M B E R
001AA4   F100                   DC   X'F100'           EXP COND. CODE AND SENSE
001AA6   FDA0                   DC   AL2(DBIZ-SECNO+REG) EXP CSW ADDRESS
001AA8   45 B0 F 112            BAL  R11,ISIO          BR. TO ISSUE SIO
001AAC   2A00                   DC   X'2A00'           CTRL SWITCHES
001AAE   0240                   DC   X'0240'           T E S T   N U M B E R
001AB0   F000                   DC   X'F000'           EXP COND. CODE AND SENSE
001AB2   FDE0                   DC   AL2(NORM-SECNO+REG) EXP CSW ADDRESS
001AB4   45 B0 F 112            BAL  R11,ISIO          BR. TO ISSUE SIO
001AB8   3C00                   DC   X'3C00'           CTRL SWITCHES
001ABA   0250                   DC   X'0250'           T E S T   N U M B E R
001ABC   F100                   DC   X'F100'           EXP COND. CODE AND SENSE
001ABE   FDA0                   DC   AL2(DBIZ-SECNO+REG) EXP CSW ADDRESS
001AC0   45 B0 F 112            BAL  R11,ISIO          BR. TO ISSUE START I-O
001AC4   2A00                   DC   X'2A00'           CTRL SWITCHES
001AC6   0260                   DC   X'0260'           T E S T   N U M B E R
001AC8   F000                   DC   X'F000'           EXP COND CODE AND SENSE
001ACA   FDE0                   DC   AL2(NORM-SECNO+REG) EXP CSW ADDRESS
001ACC   45 B0 F 0EA            BAL  R11,IHIO          BR. TO ISSUE HALT I-O
001AD0   3C00                   DC   X'3C00'           CTRL SWITCHES
001AD2   0270                   DC   X'0270'           T E S T   N U M B E R
001AD4   F100                   DC   X'F100'           EXP COND CODE AND SENSE
001AD6   FDC0                   DC   AL2(CSW0-SECNO+REG) EXP CSW ADDRESS
001AD8   0A D6                  SVC  X'D6'             ROUTINE EXIT
001ADA                          CNOP 0,4
001ADA   07 00                 BCR  0,0
                        ********************************************************************************
                        ********************************************************************************
                        * ROUTINE 10 - ISSUE A READ AND FEED COMMAND -02-. CLEAR CHANNEL END
                        *              ONLY. ISSUE AN INVALID COMMAND TO THE DEVICE. EXPECT
                        *              COND. CODE 1, WITH DEVICE END AND DEVICE BUSY ONLY IN
                        *              THE CSW. EXPECT NO SENSE BITS TO BE SET.
                        ********************************************************************************
001ADC   10             ROUT10 DC   X'10'              ROUTINE NUMBER
```

```
001ADD    000B16                  DC    AL3(ROUT11-SECNO)     ADDRESS OF NEXT ROUTINE.
001AE0    45 40 F 68C             BAL   R4,INIT               GO INITIALIZE
001AE4    41 A0 F D08             LA    R10,RDFD              SET UP FOR READ AND FEED
001AE8    45 B0 F 112             BAL   R11,ISIO              GO TO I-O HANDLER- DIAG WRITE
001AEC    2A00                    DC    XL2'2A00'             CONTROL SWITCHES
001AEE    0280                    DC    X'0280'               T E S T   N U M B E R
001AF0    F0                      DC    X'F0'                 CONDITION CODE EXPECTED
001AF1    00                      DC    X'00'                 SENSE DATA EXPECTED
001AF2    FDE0                    DC    AL2(NORM-SECNO+REG)   ADDRESS OF CSW
001AF4    92 0C F D10             MVI   CCW,X'0C'             SET UP FOR INVALID COMMAND
001AF8    58 4E 0 198             L     R4,WT(R14)            LOAD WAIT FACTOR
001AFC    88 40 0 004             SRL   R4,4                  ADJUST WAIT FACTOR
001B00    46 40 F B00             BCT   R4,*                  WAIT
001B04    41 A0 F D10             LA    R10,CCW
001B08    45 B0 F 112             BAL   R11,ISIO              GO TO I-O HANDLER - INVALID COMMAND
001B0C    3800                    DC    XL2'3800'             EXPECTED A CSW
001B0E    0290                    DC    X'0290'               T E S T   N U M B E R
001B10    F1                      DC    X'F1'                 EXPECTED CONDITION CODE
001B11    00                      DC    X'00'                 EXPECTED SENSE
001B12    FDB0                    DC    AL2(DBZY-SECNO+REG)   ADDRESS OF CSW
001B14    0A D6                   SVC   X'D6'                 ROUTINE EXIT
```

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*************************************************************************
* ROUTINE 11 - A READ AND FEED -02- IS ISSUED.  NO INTERRUPTS ARE
*              CLEARED.  THE SAME COMMAND IS ISSUED AGAIN.  EXPECT
*              CONDITION CODE 2 DUE TO PENDING CHANNEL END.  ISSUE A
*              HALT I-O.  EXPECT CONDITION CODE 0.  ISSUE A TEST I-O
*              EXPECT COND. CODE 1, WITH CHANNEL END IN THE CSW.
*              ISSUE A HALT I-O.  EXPECT COND. CODE 1 WITH A ZEROED
*              CSW STORED.  ISSUE READ AND FEED START I-O AGAIN.
*              EXPECT COND. CODE 1 WITH DEVICE END AND DEVICE BUSY
*              STORED IN THE CSW.  ISSUE HALT I-O.  EXPECT COND. CODE 1
*              WITH A ZEROED CSW STORED.  ISSUE TEST I-O.  EXPECT
*              COND. CODE 0.
*************************************************************************
```

```
001B16    11                      ROUT11 DC    X'11'                ROUTINE NUMBER
001B17    000B88                         DC    AL3(ROUT12-SECNO)    ADDRESS OF NEXT ROUTINE
001B1A    45 40 F 68C                    BAL   R4,INIT              BR. TO INITIALIZE
001B1E    41 A0 F D08                    LA    R10,RDFD             SET UP FOR READ AND FEED
001B22    45 B0 F 112                    BAL   R11,ISIO             BR. TO ISSUE SIO
001B26    4200                           DC    X'4200'              CTRL SWITCHES
001B28    0300                           DC    X'0300'              T E S T   N U M B E R
001B2A    F000                           DC    X'F000'              EXP COND. CODE AND SENSE
001B2C    45 B0 F 112                    BAL   R11,ISIO             BR. TO ISSUE SIO
001B30    4200                           DC    X'4200'              CTRL SWITCHES
001B32    0310                           DC    X'0310'              T E S T   N U M B E R
001B34    F200                           DC    X'F200'              EXP COND. CODE AND SENSE
001B36    58 9E 0 198                    L     R9,WT(R14)           LOAD WAIT FACTOR
001B3A    88 90 0 004                    SRL   R9,4                 ADJUST
001B3E    46 90 F B3E                    BCT   R9,*                 LOOP UNTIL COUNT OF ZERO
001B42    45 B0 F 0EA                    BAL   R11,IHIO             BR. TO ISSUE HALT I-O
001B46    4200                           DC    X'4200'              CTRL SWITCH
001B48    0320                           DC    X'0320'              T E S T   N U M B E R
001B4A    F000                           DC    X'F000'              EXP COND. CODE AND SENSE
001B4C    45 B0 F 0FE                    BAL   R11,ITIO             BR. TO ISSUE TEST I-O
001B50    4A00                           DC    X'4A00'              CTRL SWITCHES
001B52    0330                           DC    X'0330'              T E S T   N U M B E R
001B54    F100                           DC    X'F100'              EXP COND. CODE AND SENSE
001B56    FDE0                           DC    AL2(NORM-SECNO+REG)  EXP CSW ADDRESS
001B58    45 B0 F 0EA                    BAL   R11,IHIO             BR. TO ISSUE HALT I-O
001B5C    4A00                           DC    X'4A00'              CTRL SWITCHES
001B5E    0340                           DC    X'0340'              T E S T   N U M B E R
001B60    F100                           DC    X'F100'              EXP COND COSE AND SENSE
001B62    FDC0                           DC    AL2(CSW0-SECNO+REG)  EXP CSW ADDRESS
001B64    45 B0 F 112                    BAL   R11,ISIO             BR. TO ISSUE SIO
001B68    0800                           DC    X'0800'              CTRL SWITCHES
001B6A    0350                           DC    X'0350'              T E S T   N U M B E R
001B6C    F100                           DC    X'F100'              EXP COND. CODE AND SENSE
001B6E    FDB0                           DC    AL2(DBZY-SECNO+REG)  EXP CSW ADDRESS
```



```
001B70    45 B0 F 0EA             BAL   R11,IHIO              BR. TO ISSUE HALT I-O
001B74    4A00                    DC    X'4A00'               CTRL SWITCHES
001B76    0360                    DC    X'0360'               T E S T   N U M B E R
001B78    F100                    DC    X'F100'               EXP COND CODE AND SENSE
001B7A    FDC0                    DC    AL2(CSW0-SECNO+REG)   EXP CSW ADDRESS
001B7C    45 B0 F 0FE             BAL   R11,ITIO              BR. TO ISSUE TEST I-O
001B80    4200                    DC    X'4200'               CTRL SWITCHES
001B82    0370                    DC    X'0370'               T E S T   N U M B E R
001B84    F000                    DC    X'F000'               EXP COND CODE AND SENSE
001B86    0A D6                   SVC   X'D6'                 ROUTINE EXIT
001B88                            CNOP  0,4
```

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*************************************************************************
* ROUTINE 12 - INTERVENTION ROUTINES
*              THESE ROUTINES ARE BYPASSED UNLESS SECTION SENSE SWITCH
*              5 IS ON.  THE FOLLOWING ACTION OCCURS WHEN THIS PROGRAM
*              IS EXECUTED-
*
*              NOT READY TESTING.
*              A START I-O NOOP CMD IS ISSUED. EXPECTED STATUS IS
*              UNIT CHECK ALONE. CONDITION CODE 1 EXPECTED.
*              A SENSE START I-O ISSUED. EXPECT INTERVENTION REQUIRED.
*              IN THE SENSE BYTE. CONDITION CODE 0 FOR START I-O.
*              A TEST I-O IS ISSUED. EXPECTED STATUS IS UNIT CHECK
*              ALONE. EXPECTED CONDITION CODE IS 1.
*              A SENSE START I-O IS ISSUED. EXPECT INTERVENTION
*              REQUIRED IN SENSE. EXPECT CONDITION CODE 0 FOR SENSE
*              START I-O.
*              A HALT I-O IS ISSUED. EXPECT ZERO STATUS RETURNED.
*              EXPECT CONDITION CODE 1.
*              END OF FILE TESTING.
*              A TEST I-O IS ISSUED. EXPECT CONDITION CODE 1. EXPECT
*              DEVICE END ALONE IN STATUS DUE TO PENDING INTERRUPT
*              GENERATED BY NOT READY TO READY STATE CHANGE WHEN
*              OPERATOR MADE READER READY FOR EOF TEST.
*              A SENSE START I-O IS ISSUED IF UNIT CHECK IS IN STATUS.
*              5 READ, FEED, STACKER SELECT R1 COMMANDS ARE ISSUED
*              IN PREPARATION TO RECEIVE UNIT EXCEPTION ON THE NEXT
*              READ, FEED, STACKER SELECT R1. CONDITION CODE 0 IS
*              EXPECTED FOR EACH COMMAND. EXPECTED STATUS FOR EACH IS
*              CHANNEL END AND DEVICE END SEPERATE.
*              ANOTHER READ, FEED, STACKER SELECT R1 IS ISSUED.
*              EXPECT UNIT EXCEPTION ALONE IN STATUS. CONDITION CODE
*              1 EXPECTED.
*              OFF LINE TESTING -BYPASSED UNLESS SSWS 5 AND 8 ARE ON.
*              A START I-O -NOOP-, A TEST I-O, AND A HALT I-O ARE
*              ISSUED IN SEPERATE TESTS. EXPECT CONDITION CODE 3.
*              NO STATUS EXPECTED BECAUSE NO DEVICE SHOULD BE ABLE TO
*              ANSWER THE ISSUED INSTRUCTIONS.
*              EXIT FROM THIS ROUTINE.
*              A TEST I-O IS ISSUED AFTER OPERATOR PREPARE EXIT FROM
*              THIS TEST BY EITHER PLACING BLANK CARDS IN THE READER
*              OR THE NEXT TEST DECKS. CONDITION CODE 1 IS EXPECTED.
*              DEVICE END ALONE IS EXPECTED IN STATUS DUE TO NOT READY
*              TO READY INTERRUPT.
*************************************************************************
```

```
001B88    12                      ROUT12 DC    X'12'                ROUTINE NUMBER
001B89    00FFFF                         DC    X'00FFFF'            LAST ROUTINE
001B8C    91 04 F 004                    TM    SNSW,X'04'           CHECK SECTION SENSE SWITCH 5
001B90    47 10 F B9C                    BC    ALL,GO07             BR- IF ON
001B94    0A D0                  SOLONG  SVC   X'D0'                 PRINT -BYPASSED-
001B96    04                             DC    X'04'
001B97    0D                             DC    X'0D'
001B98    FE23                           DC    AL2(BYPASS-SECNO+REG)
001B9A    0A D6                          SVC   X'D6'                 EXIT FROM ROUTINE
001B9C    45 40 F 6BC            GO07    BAL   R4,INIT              BR. TO INITIALIZE
001BA0    96 80 F 6A6                    OI    SWCH,X'80'           TURN ON INTERV SWITCH.
001BA4    91 80 F E22                    TM    LDSW,X'80'           SEE IF ON LOADER DEVICE
001BA8    47 80 F BD8                    BC    NONE,NRM             BR IF NOT.
```

```
001BAC  0A D0                    SVC   X'D0'              PRINT A BLANK
001BAE  8001                     DC    X'8001'
001BB0  FEA7                     DC    AL2(RTD1-SECNO+REG)
001BB2  0A D0                    SVC   X'D0'              PRINT REMOVE CDS FROM
001BB4  2429                     DC    X'2429'             STACKER OF LOADER DEVICE
001BB6  FEA7                     DC    AL2(RTD1-SECNO+REG)
001BB8  0A D0                    SVC   X'D0'              PRINT REMOVE REMAINING TEST DECKS
001BBA  A03C                     DC    X'A03C'             FROM THE LOADER HOPPER.
001BBC  FED0                     DC    AL2(RTD2-SECNO+REG)
001BBE  0A D0                    SVC   X'D0'              PRINT RUN CDS OUT OF READER AND
001BC0  A040                     DC    X'A040'             PUT THEM ON FRONT OF REMAINING
001BC2  FF0C                     DC    AL2(RTD3-SECNO+REG)  TEST DECKS.
001BC4  0A D0                    SVC   X'D0'              PRINT SAVE REMAINING TEST DECKS
001BC6  8045                     DC    X'8045'             UNTIL A MSG REQUESTS THEM.
001BC8  FF4C                     DC    AL2(RTD4-SECNO+REG)
001BCA  47 F0 F BDE              BC    UNC,HLT1            BR TO HALT
001BCE  0A D0            P5I     SVC   X'D0'              PRINT -PUT 5 CDS IN RDR-
001BD0  242D                     DC    X'242D'
001BD2  FE6A                     DC    AL2(PCIR-SECNO+REG)
001BD4  47 F0 F C1E              BC    UNC,HLT11           BR TO HALT.
001BD8  0A D0            NRM     SVC   X'D0'              PRINT -MAKE READER NOT READY-
001BDA  04                       DC    X'04'
001BDB  16                       DC    X'16'
001BDC  FE30                     DC    AL2(MNR-SECNO+REG)
001BDE  0A DA            HLT1    SVC   X'DA'              HALT TO PERFORM INTERVENTION
001BE0  0A D0                    SVC   X'D0'              PRINT A BLANK
001BE2  8001                     DC    X'8001'
001BE4  FEA7                     DC    AL2(RTD1-SECNO+REG)
*********************************************************************************
*       NOT READY TESTS  -ROUTINE 12-
*********************************************************************************
001BE6  45 B0 F 112              BAL   R11,ISIO           BR. TO ISSUE SIO
001BEA  0800                     DC    X'0800'            CONTROL SWITCHES
001BEC  0380                     DC    X'0380'            T E S T   N U M B E R
001BEE  F140                     DC    X'F140'            EXP COND. CODE AND SENSE
001BF0  FDB8                     DC    AL2(UC-SECNO+REG)  EXP CSW ADDRESS
001BF2  45 B0 F 0FE              BAL   R11,ITIO           BR. TO ISSUE TIO
001BF6  4800                     DC    X'4800'            CTRL SWITCHES
001BF8  0390                     DC    X'0390'            T E S T   N U M B E R
001BFA  F140                     DC    X'F140'            EXP COND. CODE AND SENSE
001BFC  FDB8                     DC    AL2(UC-SECNO+REG)  EXP CSW ADDRESS
001BFE  45 B0 F 0EA              BAL   R11,IHIO           BR. TO ISSUE HIO
001C02  0800                     DC    X'0800'            CONTROL SWITCHES
001C04  0400                     DC    X'0400'            T E S T   N U M B E R
001C06  F140                     DC    X'F140'            EXP COND. CODE AND SENSE
001C08  FDC0                     DC    AL2(CSW0-SECNO+REG)
*********************************************************************************
*       END OF FILE TEST  -ROUTINE 12-
*********************************************************************************
001C0A  D2 07 F E6F F E9F        MVC   OVLY(8),P5         MOVE -5- TO MSG.
001C10  91 80 F E22              TM    LDSW,X'80'         SEE IF ON LOADER DEVICE.
001C14  47 10 F BCE              BC    ALL,P5I            BR IF YES.
001C18  0A D0                    SVC   X'D0'              PRINT DO NOPRO,PLACE 5 CDS IN RDR.
001C1A  2437                     DC    X'2437'            HPR,MAKE RDY, EOF ON.
001C1C  FE60                     DC    AL2(DONPRO-SECNO+REG) MSG ADDRESS.
001C1E  0A DA            HLT11   SVC   X'DA'              -HALT-
001C20  0A D0                    SVC   X'D0'              PRINT A BLANK
001C22  8001                     DC    X'8001'
001C24  FEA7                     DC    AL2(RTD1-SECNO+REG)
001C26  45 B0 F 0FE              BAL   R11,ITIO           BR TO ISSUE TEST I-O
001C2A  4A00                     DC    X'4A00'            CTRL SWITCHES
001C2C  0410                     DC    X'0410'            T E S T   N U M B E R
001C2E  F100                     DC    X'F100'            EXP COND. CODE AND SENSE
001C30  FDE8                     DC    AL2(DONLY-SECNO+REG) EXP CSW ADDRESS.
001C32  41 A0 F D08              LA    R10,RDFD           PUT ADDR. OF RD FD CCW INTO REG 10.
001C36  41 60 0 005              LA    R6,5               PUT 5 INTO REG 6.
001C3A  45 B0 F 112      NSIO    BAL   R11,ISIO           BR TO ISSUE START I-O.
001C3E  3C00                     DC    X'3C00'            CTRL SWITCHES
```



```
001C40  0420                     DC    X'0420'            T E S T   N U M B E R
001C42  F000                     DC    X'F000'            EXP COND. CODE AND SENSE.
001C44  FDE0                     DC    AL2(NORM-SECNO+REG) EXP 1ST CSW ADDR.
001C46  46 60 F C3A              BCT   R6,NSIO            BR BACK 5 TIMES.
001C4A  45 B0 F 112              BAL   R11,ISIO           BR TO ISSUE START I-O.
001C4E  2800                     DC    X'2800'            CTRL SWITCHES
001C50  0430                     DC    X'0430'            T E S T   N U M B E R
001C52  F140                     DC    X'F140'            EXP COND. CODE AND SENSE.
001C54  FE10                     DC    AL2(UNEX-SECNO+REG) EXP CSW ADDRESS.
001C56  45 B0 F 0FE              BAL   R11,ITIO           BR TO ISSUE TEST I-O.
001C5A  4800                     DC    X'4800'            CTRL SWITCHES.
001C5C  0440                     DC    X'0440'            T E S T   N U M B E R
001C5E  F140                     DC    X'F140'            EXP COND. CODE AND SENSE.
001C60  FDB8                     DC    AL2(UC-SECNO+REG)
*********************************************************************************
*       OFF LINE TESTS  -ROUTINE 12-
*********************************************************************************
001C62  91 80 F 005              TM    SNSW+1,X'80'       TEST SSW 8.
001C66  47 80 F CC8              BC    NONE,SUMF          BR IF OFF.
001C6A  D2 02 F E52 F E5A        MVC   MUA+12(3),OFF      MOVE -OFF- TO MSG
001C70  0A D0                    SVC   X'D0'              PRINT -PUT READER OFF LINE-
001C72  24                       DC    X'24'
001C73  14                       DC    X'14'
001C74  FE46                     DC    AL2(MUA-SECNO+REG)
001C76  0A DA                    SVC   X'DA'              HALT TO PERFORM INTERVENTION
001C78  0A D0                    SVC   X'D0'              PRINT A BLANK
001C7A  8001                     DC    X'8001'
001C7C  FEA7                     DC    AL2(RTD1-SECNO+REG)
001C7E  45 B0 F 112              BAL   R11,ISIO           BR. TO ISSUE SIO
001C82  0200                     DC    X'0200'            CTRL SWITCHES
001C84  0450                     DC    X'0450'            T E S T   N U M B E R
001C86  F300                     DC    X'F300'            EXP COND. CODE AND SENSE
001C88  45 B0 F 0FE              BAL   R11,ITIO           BR. TO ISSUE TIO
001C8C  4200                     DC    X'4200'            CTRL SWITCHES
001C8E  0460                     DC    X'0460'            T E S T   N U M B E R
001C90  F300                     DC    X'F300'            EXP. COND. CODE AND SENSE
001C92  45 B0 F 0EA              BAL   R11,IHIO           BR. TO ISSUE HIO
001C96  0200                     DC    X'0200'            CTRL SWITCHES
001C98  0470                     DC    X'0470'            T E S T   N U M B E R
001C9A  F300                     DC    X'F300'            EXP COND. CODE AND SENSE
001C9C  D2 02 F E52 F E5D        MVC   MUA+12(3),ON       MOVE -ON- TO MSG
001CA2  0A D0                    SVC   X'D0'              PRINT -PUT READER ON  LINE-
001CA4  24                       DC    X'24'                    READY-
001CA5  14                       DC    X'14'
001CA6  FE46                     DC    AL2(MUA-SECNO+REG)
001CA8  92 A0 F CBA              MVI   F1,X'A0'           SET UP MSG FLAGS.
001CAC  92 A0 F CDC              MVI   F2,X'A0'           SET UP MSG FLAGS.
001CB0  91 80 F E22      NMSG    TM    LDSW,X'80'         SEE IF ON LOADER.
001CB4  47 80 F CD4              BC    NONE,NOTD          BR IF NO.
001CB8  0A D0                    SVC   X'D0'              PRINT REMOVE THE 5 CDS FROM STKR.
001CBA  A01C             F1      DC    X'A01C'
001CBC  FFCF                     DC    AL2(R5C-SECNO+REG)
001CBE  0A D0                    SVC   X'D0'              PRINT
001CC0  A03E                     DC    X'A03E'
001CC2  FF91                     DC    AL2(PTDB-SECNO+REG)
001CC4  47 F0 F CE0              BC    UNC,HLT2           BR TO HALT.
001CC8  92 04 F CBA      SUMF    MVI   F1,X'04'           SET UP MSG FLAGS.
001CCC  92 04 F CDC              MVI   F2,X'04'           SET UP MSG FLAGS.
001CD0  47 F0 F CB0              BC    UNC,NMSG           BR TO MSG.
001CD4  D2 07 F E6F F E97        MVC   OVLY(8),AB30       MOVE -ABOUT 30- TO MSG.
001CDA  0A D0            NOTD    SVC   X'D0'              PRINT -DO NOPRO, PLACE BLNK CDS IN
001CDC  A02D             F2      DC    X'A02D'            HPR, MAKE RDY,EOF ON.
001CDE  FE6A                     DC    AL2(PCIR-SECNO+REG)
001CE0  0A DA            HLT2    SVC   X'DA'              HALT TO PERFORM INTERVENTION
001CE2  0A D0                    SVC   X'D0'              PRINT A BLANK
001CE4  8001                     DC    X'8001'
001CE6  FEA7                     DC    AL2(RTD1-SECNO+REG)
*********************************************************************************
```

```
001CE8   45 B0 F 0FE
001CEC   0A00
001CEE   0480
001CF0   F100
001CF2   FDE8
001CF4   0A D6

001CF8   03 001740 4000 0001
001D00   08 001CF8 0000 0001
001D08   02 001740 0000 0050
001D10   03 001740 0000 0001
001D18   C6 001740 0000 004F
001D20   C6 001740 0000 0051
001D28   25 001740 0000 009F
001D30   25 001740 0000 00A1
001D38   C2 001740 6000 0001
001D40   C2 001740 6000 0001
001D48   C2 001740 0000 0001
001D50   23 001740 6000 0001
001D58   23 001740 0000 0002
001D60   23 001740 0000 0003
001D68   C6 001740 0000 0050

001D70   00001D20
001D74   0C400000
001D78   00001D28
001D7C   0C400001
001D80   00001D30
001D84   0C400000
001D88   00001D38
001D8C   0C400001
001D90   0000000000000000
001D98   00001D90
001D9C   0C000000
001DA0   00000000
001DA4   10000000
001DA8   00000000
001DAC   04000000
001DB0   00000000
001DB4   14000000
001DB8   00000000
001DBC   02000000
001DC0   0000000000000000
001DC8   00000000
001DCC   04000000
001DD0   00001698
001DD4   0C000000
001DD8   00000000
001DDC   0C000000
001DE0   00001D10
001DE4   08000000
001DE8   00000000
001DEC   04000000
001DF0   00001D48
001DF4   0E000000
001DF8   00001D60
001DFC   02000000
001E00   01
001E01   001740
001E04   00000050
001E08   00001D70
001E0C   0C000000
```

```
*      NOT READY TO READY TEST  -ROUTINE 12-
*****************************************************************
       BAL   R11,ITIO            BR. TO ISSUE TIO
       DC    X'0A00'             CTRL SWITCHES
       DC    X'0480'             T E S T   N U M B E R
       DC    X'F100'             EXP COND. CODE AND SENSE
       DC    AL2(DONLY-SECND+REG) EXP CSW ADDRESS
       SVC   X'D6'               ROUTINE EXIT
*****************************************************************
*      CCW AREA
*****************************************************************
NOPTRN CCW   X'03',RDAR,X'40',1
       CCW   X'08',NOPTRN,X'00',1
RDFD   CCW   X'02',RDAR,X'00',80   READ AND FEED CCW.
CCW    CCW   X'03',RDAR,X'00',1
RDSH   CCW   X'C6',RDAR,X'00',79   SHORT COUNT  READ CCW.
RDLG   CCW   X'C6',RDAR,X'00',81   LONG COUNT  READ CCW.
WRSH   CCW   X'25',RDAR,X'00',159  SHORT COUNT  WRITE CCW.
WRLG   CCW   X'25',RDAR,X'00',161  LONG COUNT  WRITE CCW.
RNOF   CCW   X'C2',RDAR,X'60',1
       CCW   X'C2',RDAR,X'60',1
       CCW   X'C2',RDAR,X'00',1
FNOR   CCW   X'23',RDAR,X'60',1
       CCW   X'23',RDAR,X'00',2
       CCW   X'23',RDAR,X'00',3
DCRD   CCW   X'C6',RDAR,X'00',80   DIAG CHK RD CCW.
*****************************************************************
*      EXP CSW AREA
*****************************************************************
RSCSW  DC    A(RDSH+8)
       DC    X'0C400000'
RLCSW  DC    A(RDLG+8)
       DC    X'0C400001'
WSCSW  DC    A(WRSH+8)
       DC    X'0C400000'
WLCSW  DC    A(WRLG+8)
       DC    X'0C400001'
R12CSW DC    XL8'0'
       DC    A(R12CSW)
       DC    X'0C000000'
DBIZ   DC    XL4'0'
       DC    X'10000000'
       DC    XL4'0'
       DC    X'04000000'
DBZY   DC    XL4'0'
       DC    X'14000000'
UC     DC    XL4'0'
       DC    X'02000000'
CSWO   DC    XL8'0'
       DC    XL4'0'
       DC    X'04000000'
SNSCSW DC    A(ISENSE+8)
       DC    X'0C000000'
NOPCSW DC    XL4'0'
       DC    X'0C000000'
NORM   DC    A(RDFD+8)
       DC    X'08000000'
DONLY  DC    XL4'0'
       DC    X'04000000'
SEQCSW DC    A(RNOF+16)
       DC    X'0E000000'
REJCSW DC    A(FNOR+16)
       DC    X'02000002'
INVCCW DC    X'01'
       DC    AL3(RDAR)
       DC    X'00000050'
DCRCSW DC    A(DCRD+8)
       DC    X'0C000000'

INVALID CCW.
```



```
001E10   00000000
001E14   01000000

001E18   00000000
001E1C   00000000
001E20   0002
001E22   00

001E23   40D9E3D540C2E8D7C1
001E2C   E2E2C5C4
001E30   40D4C1D2C540D9C5C1
001E39   C4C5D940D5D6E3
001E40   40D9C5C1C4E8
001E46   40D7E4E340D9C5C1C4
001E4F   C5D940D6C6C640
001E56   D3C9D5C5
001E5A   D6C6C6
001E5D   D6D540
001E60   40C4D640D5D6D7D9D6
001E69   6B
001E6A   40D7E4E340
001E6F   C1C2D6E4E340F3F040
001E78   C2D3D5D240C3C4
001E7F   E240C9D540D9C4D96B
001E88   D4C1D2C540D9C4
001E8F   E86BC5D6C640D6D5
001E97   C1C2D6E4E340F3F0
001E9F   40404040F5404040
001EA7   40D9C5D4D6E5C540C3
001EB0   C4E240C6D9D6D4
001EB7   40E2E3C1C3D2C5D940
001EC0   D6C640D3D6C1C4
001EC7   C5D940C4C5E5C9C3C5
001ED0   40D9C5D4D6E5C540E3
001ED9   C8C540D9C5D4C1
001EE0   C9D5C9D5C740E3C5E2
001EE9   E340C4C5C3D2E2
001EF0   6BC9C640C1D5E86B40
001EF9   C6D9D6D440E3C8
001F00   C540D3D6C1C4C5D940
001F09   C8D7D9
001F0C   40C4D640D5D6D7D9D6
001F15   40C1D5C440D7D3
001F1C   C1C3C540C3C4E240D9
001F25   E4D540D6E4E340
001F2C   C9D540C6D9D6D5E340
001F35   D6C640D9C5D4C1
001F3C   C9D5C9D5C740E3C5E2
001F45   E340C4C5C3D2E2
001F4C   40E2C1E5C540D9C5D4
001F55   C1C9D5C9D5C740
001F5C   E3C5E2E340C4C5C3D2
001F65   E240E4D5E3C9D3
001F6C   40C140D4E2C740D9C5
001F75   D8E4C5E2E3E240
001F7C   E3C8C5D440E3D640C2
001F85   C540D7E4E340C9
001F8C   D540C8D7D9
001F91   40D7E4E340D9C5D4C1
001F9A   C9D5C9D5C740E3
001FA1   C5E2E340C4C5C3D2E2
001FAA   40C9D5E3D640D9
001FB1   C4D940C8D7D940C1D5
001FBA   C440D4C1D2C540
```

```
UNEX   DC    XL4'00'
       DC    X'01000000'
*****************************************************************
*      CONSTANTS
*****************************************************************
RDR    DC    F'0'
PCH    DC    F'0'
H2     DC    X'0002'
LDSW   DC    X'00'                SWITCHES.
*****************************************************************
*      MESSAGES
*****************************************************************
BYPASS DC    C' RTN BYPASSED'

MNR    DC    C' MAKE READER NOT'

       DC    C' READY'
MUA    DC    C' PUT READER OFF '

       DC    C'LINE'
OFF    DC    C'OFF'
ON     DC    C'ON '
DONPRO DC    C' DO NOPRO,'

PCIR   DC    C' PUT '
OVLY   DC    C'ABOUT 30 BLNK CD'

       DC    C'S IN RDR,MAKE RD'

       DC    C'Y,EOF ON'
AB30   DC    C'ABOUT 30'
P5     DC    C'    5   '
RTD1   DC    C' REMOVE CDS FROM'

       DC    C' STACKER OF LOAD'

       DC    C'ER DEVICE'
RTD2   DC    C' REMOVE THE REMA'

       DC    C'INING TEST DECKS'

       DC    C',IF ANY, FROM TH'

       DC    C'E LOADER HPR'

RTD3   DC    C' DO NOPRO AND PL'

       DC    C'ACE CDS RUN OUT '

       DC    C'IN FRONT OF REMA'

       DC    C'INING TEST DECKS'

RTD4   DC    C' SAVE REMAINING '

       DC    C'TEST DECKS UNTIL'

       DC    C' A MSG REQUESTS '

       DC    C'THEM TO BE PUT I'

       DC    C'N HPR'
PTDB   DC    C' PUT REMAINING T'

       DC    C'EST DECKS INTO R'

       DC    C'DR HPR AND MAKE '
```

```
001FC1  D9C4D940D9C4E86BC5          DC    C'RDR RDY,EOF ON'
001FCA  D6C640D6D5
001FCF  40D9C5D4D6E5C540C2    R5C   DC    C' REMOVE BLNK CDS'
001FD8  D3D5D240C3C4E2
001FDF  40C6D9D6D440D9C5C1          DC    C' FROM READER'
001FE8  C4C5D9
001FEB  40D4C1D2C540C4C5E5    MDR   DC    C' MAKE DEVICE RDY'
001FF4  C9C3C540D9C4E8
                              ********************************************************************************
                              *      EQUATES
                              ********************************************************************************
                    000000    NEVER EQU   0
                    000007    NCCO  EQU   7
                    00000F    UNC   EQU   15
                    000008    NONE  EQU   8
                    000004    SOME  EQU   4
                    000001    ALL   EQU   1
                    000005    ANY   EQU   5
                    000008    CCO   EQU   8
                    000004    CC1   EQU   4
                    000002    CC2   EQU   2
                    000001    CC3   EQU   1
                    000008    EQ    EQU   8
                    000004    LO    EQU   4
                    000002    HI    EQU   2
                    000006    UNEQ  EQU   6
                    00000C    EQLO  EQU   12
                    00000A    EQHI  EQU   10
                    000080    LOGOUT EQU  X'80'
                    000181    SYSMOD EQU  X'181'
                    00F000    REG   EQU   X'F000'
                    00005A    WHAT  EQU   90
                    000000    R0    EQU   0
                    000001    R1    EQU   1
                    000002    R2    EQU   2
                    000003    R3    EQU   3
                    000004    R4    EQU   4
                    000005    R5    EQU   5
                    000006    R6    EQU   6
                    000007    R7    EQU   7
                    000008    R8    EQU   8
                    000009    R9    EQU   9
                    00000A    R10   EQU   10
                    00000B    R11   EQU   11
                    00000C    R12   EQU   12
                    00000D    R13   EQU   13
                    00000E    R14   EQU   14
                    00000F    R15   EQU   15
                    000198    WT    EQU   408
                    000040    HCSW  EQU   64
                    000048    HCAW  EQU   72
                    0001A0    DMSSW EQU   X'01A0'
                    0001B9    DMIOL EQU   X'01B9'
                    0001BC    DMPTR EQU   X'01BC'
                              END   ROUT01
```


POST ASSEMBLY DATA.

REFERENCES TO DEFINED SYMBOLS.

```
   2  19DC    CS    19D4
   1     8    EQ    1362,  1396,  19A6,  19C0
   2  1CBA    F1    1CA8,  1CC8
   2  1CDC    F2    1CAC,  1CCC
   2  1E20    H2    16F0
   1     2    HI
   1     4    LO
   3  1E5D    ON    1C9C
   8  1E9F    P5    1C0A
   1     0    R0
   1     1    R1
   1     2    R2
   1     3    R3    1988,  198C,  199A,  19C8
   1     4    R4    171E,  1800,  1824,  1854,  1878,  1894,  18E4
                    1950,  1984,  1996,  19BA,  19C4,  19C4,  1A7C
                    1AE0,  1AF8,  1AFC,  1B00,  1B1A,  1B9C
   1     5    R5    1558,  1730
   1     6    R6    16E4,  16E4,  16E6,  16EA,  16EE,  16F0,  16F4
                    1990,  1990,  199E,  19AA,  19AA,  19AE,  19D0
                    1C36,  1C46
   1     7    R7
   1     8    R8    112C,  12CA,  12CE,  1332,  1336,  1354,  1354
                    1358,  13B6,  13BA,  146C,  1470,  1474,  1474
                    1478,  156A
   1     9    R9    112C,  1186,  118A,  1196,  1206,  120A,  1216
                    126C,  12C2,  12C6,  12E2,  1412,  1440,  1482
                    149A,  14B2,  14CA,  156A,  1B36,  1B3A,  1B3E
   4  1DB8    UC    19E2,  1BF0,  1BFC,  1C60
   1   198    WT    1186,  1206,  12C2,  1AF8,  1B36
   1     1    ALL   114A,  11E6,  11FE,  1236,  128E,  12AE,  12EE
                    12FA,  1376,  138E,  139E,  13D6,  1558,  1704
                    1A88,  1B90,  1C14
   1     5    ANY   1550
   4  1048    CAW
   1     8    CCO   1192,  1180
   1     4    CC1   1184,  12DE
   1     2    CC2   1188
   1     1    CC3
   8  1D10    CCW   1716,  171A,  187C,  1A8C,  1AF4,  1B04
   8  1040    CSW
   4  180E    GTN
   2  100A    ICM
   4  1186    IHI   116A,  117A
   2  10E8    ISW   119A,  119A,  11A0,  11D6,  11F6,  1202,  120E
                    121E,  122E,  1232,  1240,  1270,  127E,  128A
                    1292,  12A2,  12B2,  12EA,  12F6,  130A,  132A
                    134C,  1366,  1372,  1486,  1486,  14D4,  152C
                    1534,  1554,  1700,  172C,  1734
   4  1566    IUP   155E
  16  1FEB    MDR   1574,  1580
  16  1E30    MNR   18DC
  16  1E46    MUA   1C6A,  1C74,  1C9C,  1CA6
   2  18D8    NRM   18A8
   3  1E5A    OFF   1C6A
   2  18CE    P5I   1C14
   4  1E1C    PCH   16D0,  180E,  18BC
   1     A    R10   1128,  1136,  13F0,  140C,  1416,  141E,  141E
                    1548,  171A,  1828,  1858,  1898,  18A8,  1888
                    18CC,  18E8,  18F8,  1908,  1918,  1928,  1938
                    1954,  19CC,  19E4,  1A80,  1AE4,  1B04,  1B1E
                    1C32
```

2540 READER FUNCTION TESTS - SECTION 1 F810

1	B	R11	1122, 1128, 1146, 11DA, 11EA, 11FA, 1282
			129A, 130E, 1318, 1322, 1332, 1344, 13A2
			13BA, 13BC, 13CE, 13CE, 13D2, 1442, 145E
			146C, 149E, 14CE, 155A, 1562, 1562, 1566
			1566, 156E, 1804, 1812, 182C, 1836, 1842
			185C, 1868, 1880, 189C, 18AC, 18C0, 18D0
			18EC, 18FC, 190C, 191C, 192C, 193C, 1958
			19D8, 19E8, 1A90, 1A9C, 1AA8, 1AB4, 1AC0
			1ACC, 1AE8, 1B08, 1B22, 1B2C, 1B42, 1B4C
			1B58, 1B64, 1B70, 1B7C, 1BE6, 1BF2, 1BFE
			1C26, 1C3A, 1C4A, 1C56, 1C7E, 1C88, 1C92
			1CE8
1	C	R12	115E, 116E, 117E, 118E, 11AC, 1226, 12D2
			12DA, 1578, 16C8, 16CC, 16D0, 16D4, 16D8
			16DC, 16F4, 180E, 188C
1	D	R13	1136, 113A, 113A, 11D0, 12CE, 1302, 1548
			16BC, 16BC, 16C6
1	E	R14	1140, 1140, 1186, 1206, 12C2, 14F8, 1500
			16BE, 16E6, 16EA, 16EE, 1AF8, 1B36
1	F	R15	123A, 1248, 1278, 16C6
16	1FCF	R5C	1CBC
4	1E18	RDR	16DC
1	F000	REG	125A, 13B4, 13CC, 13E6, 1400, 143E, 144C
			1452, 14E8, 14F6, 152A, 1540, 1546, 1574
			1580, 172A, 1840, 1866, 188A, 18A6, 1886
			18CA, 18DA, 18F6, 1906, 1916, 1926, 1936
			1946, 1962, 19E2, 19F2, 1A9A, 1AA6, 1AB2
			1ABE, 1ACA, 1AD6, 1AF2, 1B12, 1B56, 1B62
			1B6E, 1B7A, 1B98, 1B80, 1B86, 1B8C, 1BC2
			1BC8, 1BD2, 1BDC, 1BE4, 1BF0, 1BFC, 1C08
			1C1C, 1C24, 1C30, 1C44, 1C54, 1C60, 1C74
			1C7C, 1CA6, 1CBC, 1CC2, 1CDE, 1CE6, 1CF2
4	1996	SIV	19C0, 19F4
6	198A	TOT	19C8
1	F	UNC	10FA, 110E, 1162, 1182, 11C0, 11C8, 11EE
			1222, 1244, 1274, 1296, 12E6, 12F2, 12FE
			1422, 1440, 1538, 156E, 1582, 171E, 1738
			19F4, 1BCA, 1BD4, 1CC4, 1CD0
8	1E97	AB30	1CD4
4	19A2	ADD1	1986
4	198C	BY2C	
8	1DC0	CSWO	1AD6, 1B62, 1B7A, 1C08
4	1DA0	DBIZ	1AA6, 1ABE
4	1DB0	DBZY	1B12, 1B6E
8	1D68	DCRD	1908, 1938, 19E4, 1E08
1	A	EQHI	
1	C	EQLO	
8	1D50	FNOR	1918, 1DF8
4	1B88	GO05	
4	1B9C	GO07	1B90
4	118E	GREG	1196
1	48	HCAW	1136, 12CE, 1548
1	40	HCSW	113A, 113A, 11D0, 123A, 1248, 1278, 1302
2	1BDE	HLT1	1BCA
2	1CE0	HLT2	1CC4
16	17E0	HUNG	172A
3	1607	IACT	1266, 148E, 148E
6	1318	IBSN	12A6, 12B6, 12BE, 12E6
12	15DB	ICAW	13F0, 13F8, 13FA, 1400
3	15EA	ICCW	1402
1	143D	ICNT	1262, 1408, 145A
3	15E7	ICSW	125C, 1454
4	14B6	IDID	14A2
3	160A	IEXP	1466, 14A6
4	10EA	IHIO	1ACC, 1B42, 1B58, 1B70, 1BFE, 1C92
2	16BC	INIT	1800, 1824, 1854, 1878, 1894, 18E4, 1950
			1984, 1A7C, 1AE0, 1B1A, 1B9C
4	11F6	INOW	114A, 11C0, 11C8, 11DE, 11E6, 11EE

2540 READER FUNCTION TESTS - SECTION 1 F810

4	1282	INT3	1244
4	11CC	IONE	1184
6	14CE	IPAS	148A
4	129A	ISEN	11FE, 1222, 1286, 128E
4	1112	ISIO	182C, 185C, 1880, 189C, 18AC, 18C0, 18D0
			18EC, 18FC, 190C, 191C, 192C, 193C, 1958
			19D8, 19E8, 1A90, 1AA8, 1AB4, 1AC0, 1AE8
			1B08, 1B22, 1B2C, 1B64, 1BE6, 1C3A, 1C4A
			1C7E
6	1278	ISV2	1236
4	12E2	ITIC	1306
4	10FE	ITIO	1804, 1812, 1836, 1842, 1868, 1A9C, 1B4C
			1B7C, 1BF2, 1C26, 1C56, 1C88, 1CE8
4	11C4	ITWO	1188
6	1248	IUIO	122A
6	119A	JOHN	1152, 1192
1	1E22	LDSW	16E0, 16FC, 1BA4, 1C10, 1CB0
1	16A3	MSK1	1212
1	16A4	MSK2	121A
1	7	NCCO	1172, 12D6, 1306
1	100D	NIOU	
4	1CB0	NMSG	1CD0
1	8	NONE	1152, 115A, 116A, 117A, 11DE, 1286, 129E
			12A6, 12B6, 12BE, 1326, 132E, 1348, 1350
			137E, 141A, 1462, 148A, 14A2, 148A, 14D8
			1530, 155E, 16C2, 19B6, 1BA8, 1C66, 1CB4
4	1DE0	NORM	1A9A, 1AB2, 1ACA, 1AF2, 1B56, 1C44
6	1CD4	NOTD	1CB4
4	1C3A	NSIO	1C46
16	1E6F	OVLY	1C0A, 1CD4
5	1E6A	PCIR	1BD2, 1CDE
16	1F91	PTDB	1CC2
1	1740	RDAR	1708, 170C, 170C, 1968, 1970, 1CF8, 1D08
			1D10, 1D18, 1D20, 1D28, 1D30, 1D38, 1D40
			1D48, 1D50, 1D58, 1D60, 1D68, 1E01
8	1D08	RDFD	1A80, 1AE4, 1B1E, 1C32, 1DE0
8	1D20	RDLG	18A8, 1D78
8	1D18	RDSH	1898, 1D70
2	1570	RDYM	1396, 139E
8	1D38	RNOF	18E8, 1DF0
16	1EA7	RTD1	1B80, 1B86, 1BE4, 1C24, 1C7C, 1CE6
16	1ED0	RTD2	1B8C
16	1F0C	RTD3	1BC2
16	1F4C	RTD4	1BC8
1	16A5	RTSV	1130, 1720
1	100C	SDMF	
4	1004	SNSW	114E, 1156, 1166, 1176, 137A, 154C, 1A84
			188C, 1C62
1	4	SOME	
6	13A2	SPRT	138E
3	105D	SRET	
4	1CC8	SUMF	1C66
1	16A6	SWCH	138A, 1712, 1BA0
1	10E1	U1OP	
1	10E5	U2OP	
1	6	UNEQ	122A, 1314, 131E, 1340, 13EC, 14FC, 16F8
4	1E10	UNEX	1C54
1	5A	WHAT	
1	1590	WORK	1248, 140C, 142A, 142C, 142E, 1434, 147C
			147C, 1494, 14AC, 14AC, 14C4, 1500, 150A
			150C, 150E, 1514, 151A, 1520
8	1D30	WRLG	18CC, 1D88
8	1D28	WRSH	1888, 1D80
4	1700	BLOOP	16F8, 1738
4	1978	CHNST	1962, 1978
1	189	DMIOL	16E6
1	1BC	DMPTR	16EA
1	1A0	DMSSW	

4	1DE8	DONLY	1C30, 1CF2
2	19F8	FINIS	19A6
1	100E	FLAG1	
1	100F	FLAG2	
2	1C1E	HLT11	1BD4
16	15ED	IBLAH	125C, 1266, 1402, 142E, 1434, 143E, 1454 1466, 148E, 14A6, 14BE
2	1426	ICOUT	126C, 1412, 1482, 149A, 14B2, 14CA
8	167E	ICSW1	11D0, 11E2, 123A, 12AA, 133A, 133A, 139A 1494
8	1686	ICSW2	1278, 12BA, 135C, 135C, 14C4
4	152C	ICUIO	14FC
4	1486	IDIDI	1462
4	116E	IHANG	1182
16	15CB	ILINK	13BC, 13C4, 13C6, 13CC, 1546
4	1302	ILOKE	12DE
4	115E	ILOOP	10F6, 1102, 1116
4	1366	INDER	12D6, 12EE, 12FA, 1314, 131E, 132E, 1340 1350
5	1010	INPSW	
3	16A0	IOADR	13DE
6	1454	IOCSW	13D6
16	1623	IOLOG	150E, 1514, 151A, 1520, 152A
16	1648	IOPT1	10EE, 1106, 111A, 1540
4	14F8	IPASS	14D8
8	1588	ISAVE	112C, 156A
4	11AC	ISSUE	10EA, 10FE, 1112, 13E8, 16A0
4	1156	ITRY1	1162, 1172, 1550
4	1166	ITRY2	115A
16	16A7	IUNEX	1254, 125A
4	1206	IWAIT	1296, 1538
4	11F2	IZERO	11B0
4	173C	MOD50	16CC, 16D8
1	0	NEVER	
4	1D78	RLCSW	1886
4	1D70	RSCSW	18A6
4	1000	SECNO	1130, 1252, 1254, 125A, 13AC, 13AE, 13B4 13C4, 13C6, 13CC, 13DE, 13E0, 13E6, 13F8 13FA, 1400, 142A, 142C, 143E, 144C, 1452 14E0, 14E2, 14E8, 14EE, 14F0, 14F6, 150A 150C, 152A, 1540, 1546, 1574, 1580, 1720 172A, 17FD, 1821, 1840, 1851, 1866, 1875 188A, 1891, 18A6, 18B6, 18CA, 18DA, 18E1 18F6, 1906, 1916, 1926, 1936, 1946, 194D 1962, 1981, 19E2, 19F2, 1A79, 1A9A, 1AA6 1AB2, 1ABE, 1ACA, 1AD6, 1ADD, 1AF2, 1B12 1B17, 1B56, 1B62, 1B6E, 1B7A, 1B98, 1B80 1BB6, 1BBC, 1BC2, 1BC8, 1BD2, 1BDC, 1BE4 1BF0, 1BFC, 1C08, 1C1C, 1C24, 1C30, 1C44 1C54, 1C60, 1C74, 1C7C, 1CA6, 1CBC, 1CC2 1CDE, 1CE6, 1CF2
4	1804	START	
1	10E0	UNIT1	16D4
1	10E4	UNIT2	16C8
4	1D88	WLCSW	18DA
4	1D80	WSCSW	18CA
13	1E23	BYPASS	1B98
8	1968	CHNNOP	18F8, 1928, 1954
1	1A74	CMDBYT	1992, 199E, 19A2, 19AE, 19B2, 198A
4	1A53	COLBIN	
4	1E08	DCRCSW	1916, 1946, 19F2
10	1E60	DONPRO	1C1C
5	1058	EXNPSW	
8	1018	EXOPSW	
6	1720	HANGUP	1704
11	1618	IACSNS	11A4, 130E, 1392, 14EE, 14F0, 14F6, 1690
10	15B2	IACTCC	11A8, 11BC, 11C4, 11CC, 11F2, 1318, 1452
6	1442	ICCOUT	13EC, 141A

6	133A	ICCSW1	1336
6	135C	ICCSW2	1358
6	147C	ICHNG1	1470
6	14AC	ICHNG2	1478
6	140C	ICWOUT	1422
4	12C2	IDOSNS	129E, 12AE, 1730
4	136A	IDUNCK	12F2, 12FE, 1362
10	15A8	IEXPCC	1442, 144C
11	160D	IEXSNS	14CE, 14E0, 14E2, 14E8
6	1122	IEYEOH	10FA, 110E
1	13B2	IFLAG1	136A, 1382
1	153E	IFLAG2	136E, 1386
4	155A	ILEAVE	137E
6	1500	ILOGED	1274
4	149E	IMORST	148A
4	12EA	INOEX1	1326
4	12F6	INOEX2	1348
1	1E00	INVCCW	19CC, 19D0
15	15BC	IOADDR	10F2, 110A, 111E, 13E0, 13E6
4	1078	IONPSW	
8	1038	IOOPSW	1226, 1252
2	153C	IOPOUT	1530
4	138A	IOUTIT	1376
4	1226	IRETRN	107C
4	1136	IRETRY	1582
8	1690	ISENSE	12CA, 1828, 1858, 1DD0
8	1698	ISLAVE	1128
4	12DA	ITIOLP	12E2
9	163F	ITSTNO	1122, 13A2, 13AC, 13AE, 13B4
1	80	LOGOUT	1140, 1140, 1500
8	1070	MCNPSW	
8	1030	MCOPSW	
4	16C8	NITWIT	16C2
4	1DD8	NOPCSW	188A, 1906, 1936
8	1CF8	NOPTRN	1D00
8	1068	PGNPSW	
8	1028	PGOPSW	
8	1D90	R12CSW	1D98
4	1DF8	REJCSW	1926
1	17FC	ROUT01	1015, 1FF8
1	1820	ROUT02	17FD
1	1850	ROUT03	1821
1	1874	ROUT04	1851
1	1890	ROUT05	1875
1	18E0	ROUT06	1891
1	194C	ROUT07	18E1
1	1980	ROUT08	194D
1	1A78	ROUT09	1981
1	1ADC	ROUT10	1A79
1	1B16	ROUT11	1ADD
1	1B88	ROUT12	1B17
1	1A73	SAVCNT	198C, 199A
4	1DF0	SEQCSW	18F6
4	1DD0	SNSCSW	1840, 1866
2	1B94	SOLONG	1A88
8	1060	SVNPSW	
8	1020	SVOPSW	
1	181	SYSMOD	14F8
2	10E2	U1ADDR	
2	10E6	U2ADDR	
4	19FA	VALCOM	1996
1	1000	XF8103	

NO ERROR DETECTED IN ABOVE ASSEMBLY

F810 2540 RD FUNCTION SEC 1

PERIODS CORRESPOND TO BLANK COLUMNS.

COLS. 1 THROUGH 20	COLS. 21 THROUGH 40	COLS. 41 THROUGH 60	COLS. 61 THROUGH 80
BESD.....AA..AAXF81 9 YQ Y9 99 9	03..AAAA.AGC..... YYQY Y8Q 9999 99Z	840	187.130498..81030001
BTXT.AAA..A8..AA8AAA 9 YQY Y9 Y9 QQY 999 9 9 9Z9	AAAAAAAAABOAADAAAAPD YYYYYYYYY9+Y99YYYY9Q 999999999 9 9999 Z	AAAAAAAAAAAAAAAAAAA YYYYYYYYYYYYYYYYYYY 99999999999999999999	AAAAAAAAAAA81030002 YYYYYYYYYYY 999999999999
BTXT.AA8..A8..AAAAAA 9 YQ9 Y9 Y9YYYY 99 9 9 9999	AAAAAAAAAAAAAAAAAAA YYYYYYYYYYYYYYYYYYY 99999999999999999999	AAAAAAAAADAAAAAAAAA YYYYYYYYY9YYYYYYYYY 999999999 9999999999	AAAAAAAAAAA81030003 YYYYYYYYYYY 999999999999
BTXT.AAO..AA..AAAAAA 9 YQ+ YQ Y9YYYY 99- 99 9 9999	AAAAADAAAAKW..... YYYY99YYYY99 9999 9999	.....	81030004
BTXT.AAS..A8..AAAAAA 9 YQ8 Y9 Y90YYY 99 9 9 9 9	BAAAAABF1MBH6/BH5HBF OYYYYY-Q Y- - -Q 9 999	1OGO1SBE1MBE1OBT6/BT 8Z 9-Q Y-Q 8- -	5HGO1S8D1MBD81030005 Z 9-Q Y-Q
BTXT.AJQ..A8..AA1OBS 9 Y99 Y9 Y9 8- 9 9 9	6/BS5HKA6DABAL6HAI5H - 9 ZQ9QY.-Q0 0 0	KA6NOC+NAHPGO.O.PCSA Y 0 9 YYZ 9- - 88Y 9 9 9	SAAAAAGA16AO81030006 8Y-YQYZQ -+ 09 9
BTXT.AJ+..A8..AAODGA 9 Y9 Y9 Y9 9ZY 9 9 9	1BAAODGA1ODAOAGO1FA. Q-Y 9ZY ZQY+YZ R- 9 9	ODGA1FEAOAGO1FA.ODGA 9ZY OQY+YZ+ R- 9ZY 9 9 -	1FDAOAGO1WHF81030007 OQY+YZ 8RQ 9 9
BTXT.AJH..A8..AAAHHA 9 Y90 Y9 Y99-0Q 9 9 9	ACEAOAGA18FA1FPAOYOY Y9QY+YZY QZQ Y 9 9 9 9	FAOYBX6NBX5GDAOAGA12 -Y - 8- OQY+YZY 9 - 9 9	G.1DGJ1DB35G81030008 Z YZY - 0 9 9 -
BTXT.AJO..A8..AAGO16 9 Y9+ Y9 Y9Z 9 9 9	B25GGO16B15GKG660.F. - OZ - 0 9 8- - - -	OYAAAAGA16AH6BGA16F. -YQ9ZY -9 OZQ - 0 9	AAGO16B05GD781030009 QYZ - 0-8 09 -
BTXT.AJ8..A8..AAOYA. 9 Y9 Y9 Y9 - 9 9 9	AAGA2BFAOYHFAHHAACFA QYZQ Q-Q RQ9-OQY9-Y 09 9 9 9	OYAA6LFA2OAA6MD7OYGO YY OZQ 9YY O-8 Z 9 9	2BAOO2G-2HD781030010 Q8+ 8Z Z-8 9
BTXT.AKA..A8..AAOYA. 9 Y9Q Y9 Y9 - 9 Z 9 9	OYGA2HKG660.F.OYGO2B ZQ R 9 8 - Z 0 9 0	KG5AO.BEABA2FHBOMN6P 9 Q 8QY9Y89O8-Z9 O 999 99 -9	KB5O5XBK45KB81030011 9 Y -8 8 9 9 9 9
BTXT.AKQ..A8..AA6D6G 9 Y9Z Y9 Y9 9 9 9 9 9	EA4WFBOYGO5AKG6FO.FJ ZQ 9-9 Z Y 9 0 -Y 9 9	OYAAAAGA2BAHOYGA2BFH -QQYZY Q-9 ZQ Q-9 9O9 9	OYGO2FABAAGA81030012 Z 9-9QYZY 09
BTXT.AKJ..A8..AA2BA. 9 Y9Y Y9 Y9 - 9 9 9	OYGA3QAB6BGA2BAJOYGA ZY 9-9 OZQ -Y ZY 9 9	3QAB6BGA3QHFAHHAABAA 9-9 YZY 9RQ9-OQY9ZY 9	6A+EAHDAOAGO81030013 Q YYZQY+YZ+ 9 9 9 -
BTXT.AKQ..A8..AA3OEA 9 Y9 Y9 Y9 ZQY 9 9 9 9	OAG.3BFA2BGO3QA.OYGA +YZ 9ZQ QZ 9- ZQ 9 9 9	3OGO3+AJOYGA3OGO3+ED ZZ --Y ZQ ZZ --8 9 9 9	ODGO2SFDOYNA81030014 -ZZ+ -9 Y - 9
BTXT.ALA..A8..AA6NAE 9 Y9Q Y9 Y9.8Q9 9 9 9 9.90	G-3ONA5GADG-3OAHAAGA Z Z Y OQ9Z Z-9QYZY 9 -0 09	2KA.OYGA3OHCAF.A36NG Y- ZY ZZYY9 Y 8 9 9 9 9	6666G-3OADAA81030015 8 8Z Z-9QY 09
BTXT.ALH..A8..AAGA26 9 Y9Z Y9 Y9ZY 9 9 9	AJOYGA3OAHAH.A3-NG6F -Y ZY ZZOY9 Y 9 0 9 9	6FGA3+FAOYBM3BBO56AA OZY --9 -Z O-+ 8-9 - 9	OYGA3BAAODGA81030016 ZQ Y-9 9ZY 9

F810 2540 RD FUNCTION SEC 1

BTXT.ALA..A8..AA5KBU 9 Y9Y Y9 Y9 8-9 9 9 9	3BBA56AA6OGA3KE.6NGA O-Y 8-Y OZQ O- 8ZY - 9 9 9	5OAA6BGA5OKA6DABBEAB +-9 OZQ + 9 ZQ98QY9 - 9 - 0 999	FDFDBOMA67AA81030017 9Z9Z8-Z8 8ZY 9 9 9
BTXT.ALH..A8..AAADLH 9 Y9O Y9 Y9Y98O 9 - 9 9 9 9-	+A5OBEACEJEOBOJA5CAC Q -8QY99 9-8-YQ YZQ O 999 9 9 9 O	ADAAAAGA4DBEACFJEABO Y9-YQYZQ R8QY99Y9 8- 9 09 9 999 9	JG5DED1MG-4B81030018 Y8 Q-Q YZ Z 9 O
BTXT.ALO..A8..AA+J5S 9 Y9 Y9 Y9 Y 8 9 9 9	BEACEJESBOJC5CKB5O5K 8QY99Z988-Y8 Q 9 Y Y 999 9 9 9 9 9	BO45KG5AJAEA4WAOJDGA -9 8 9 QYYZQ 9-+Y9ZY 9 9	4BAKAHGO4DBE81030019 ZZYY9Z 88Q 9 999
BTXT.AMY..A8..AAAHEA 9 Y99 Y9 Y9Y99Q 9 9 9 9	EAKG525AKG5C5HBOJK5N 9Q 9 Q 9 Q -8-Y8 Y Z 9 9 9	G9KA5NADBOJB5QBOJB5B 9 Y YQ98-Y8 O8-Y8 O 9 O 9 9 9 9 -	KB5O5XBK45AH81030020 9 Y -8 8-9 9 9 9
BTXT.AM-..A8..AAAAGA 9 Y9 Y9 Y9QYZY 9 9 9 09	4FKB6D6BHCAF.A4AAHAH O 9 9 8ZYY9 Y YZOY9 9 9 9	.A4AKG5A5AEA4WA.OYGA Y Q 9 Q QZQ 9- ZY O	4FKB6D6GKG5A81030021 Q 9 9 9 9 Q
BTXT.AMH..A8..AA66EA 9 Y9- Y9 Y9 8ZQ 9 9 9	4WADAAGA4FKB6D6BKG5A 9-9QYZY O 9 9 8 9 Q 09 - 9	5AEA4WAJOYGA4FKB6D6G QZQ 9-Y ZY Y 9 9 9 9 9	KG5A6FEA4WKA81030022 9 Q OZQ 9 Y 9
BTXT.AMO..A8..AA6KAE 9 Y9- Y9 Y9 9Q9 9 9 9 O	ADOYGA48BEAAFKFKBOJC -9 ZY 8QY999998-Y8 999 9 9	6EBEAAFNFNBOJC6QEAJA 88QY998988-Y8 9-QZO 9999 9 99 9 Z	G-5UKC5ASABE81030023 Z 8 8 Q8Y8Q 9 9 99
BTXT.ANH..A8..AAADEA 9 Y99 Y9 Y9Y89Q 9 9 9 99	EAKA6Y5AKE6T5BKE625B 9Q 9 9 Q 9 8 - 9 9 Q 9	KE615KBOJM6TABOYGA54 9 8 O8-Y8 9-9 ZY 8 9 9 9 9	DEOYGO2FBOO681030024 -Q Z 98-+9 Z 9
BTXT.AN...A8..AA6HBO 9 Y9 Y9 Y9 Z8- 9 9 9 9	JA5C+NAHAOODG+1FAAOY Y9 Y YYZ-+ 9Z R-Y 9 9	GNAHAAGA5OACABACAFHI 99-9QYZY ZZQY9ZQY9-O 09 09 09	5HGCBOUAGLBB81030025 09Q8-9QQY8Q Z9 9Z999
BTXT.ANH..AQ..AAEAOA 9 Y9R Y9 Y9QY+Y 9 O 9 9 9 9	BOAAGLGO16GAAAAAAAAA 8-Y9QYZ 99YYYYYYYYY 9 Z9 999999999	.....	81030026
BTXT.ANQ..AU..AA.CC. 9 Y9O Y9 Y9 9 9 9	.X.EXP.CC..X.ACT.ADR	.XXXXXX.XIOA..... Y 9	81030027
BTXT.ANC..AJ..AA.ADR 9 Y9Y Y9 Y9 9 9 9	.XXXXXX.LINKA..... Y 9	.....	81030028
BTXT.ANC..A8..AA.CAW 9 Y9Q Y9 Y9 9 9 9	.XXXXXX.CSWCCW.CSW.X	XXXXXXX.XXXXXXXX.EXP	ACTEXP.SNS.X81030029
BTXT.AOL..A8..AAX.EX 9 Y99 Y9 Y9 9 9 9	P.SNS.XX.ACT.LOG.XX.	XXXXXX.XXXXXX.XXXXXX	.TST.XXXX.SE81030030
BTXT.AOC..A8..AAT.SS 9 Y98 Y9 Y9 9 9 9	.O.ON.FOR.LOOP.ON.XI	OT.SS.1.ON.FOR.TIO.S 8	IO.LOOPAAAAA81030031 YYYYY 99999
BTXT.AOC..A8..AAAAAA 9 Y90 Y9 Y9YYYY 9 9 9 9999	AAAAAAAAADAONAAAAAAA YYYYYYYYY9Y98YYY9YYY 999999999 9 9999 999	AAAAAAJMFAAA.UIO.FRO YYYYYY9YQ9YY 999999 Z 99	M.DEVICE.XXX81030032
BTXT.AOC..A8..AAXLEA 9 Y9Q Y9 Y9 8Q- 9 O 9 9 99	.JFGA6HQGHOOUDO74+OF Z-ZY 9QR+ R+ 8 +Q 9 9 Z	MHOOSDO74+OFQBAFSLOC 8R+ 8R+ 8 +Q9-YQ98ZZ 9 9 Z 9Z 9	WAIBWADKWC-F81030033 890889Q888 Q - 09 Z

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BTXT.A03..A8..AAJAFA   AG-7AFAFSAA0YGA7JB.7   .KF7A7.BA60BCEAAJEAG   4KA0C6NB0MK781030034
9   Y9  Y9  Y9Y8 Y     YZ  Y-YQ9-Y  ZQ Y-       Q Z  -Y 0-9QQZYQQ9     Y 9 08-Z8
    9   9   9 9  9     9   9  Z       9 9                9    Z9  Z9    9    9  9

BTXT.APT..AN..AASFA0   YE+2BBA0YG07AAA7G...   ....................   ...........81030035
9   Y98 Y9  Y98-9       Z   -Y  Z  YYY8Q
    9 9 9   9                 9     9999Z

BTXT.APS..A8..AA.PRE   VIOUS.HANG.UP.DETECT   EDGAAAHJE.6DEA0FBAAA   0AH0FMEA0FBA81030036
9   Y98 Y9  Y9                                  9Y9Y9YZ  QZQ Q9YYQ     YR+Q8ZQ Q9Y
    9   9   9                                    9 9 9   0 0 Z 999     9  Z9 0 Z 9

BTXT.AQQ..A8..AAAJ0A   B0GABAH+E.6DAJ6AEA1K   BAAA0AEA0FBAA.1AE0EA   0FBAA+0AB0GA81030037
9   Y99 Y9  Y9YY Y     8 9Y9Y9 Z  QZY QZQ 9   ZYYQ YZQ Q8YY  YQ-ZQ     Q9YY  Y8 9Y
    9   9   9 99 9     9  9 9      0     0     99Z 9 0 Z 99  9Z  0     Z 99  99  9

BTXT.AQ+..A8..AACAHD   E.6DAJ6AEA1KSAA-0AE0   EA0FBAA00AB0DAHAE.6D   BCEAEA1KHAAA81030038
9   Y9  Y9  Y99Y9R     Z  QZY QZQ 98YY  YQ-   ZQ Q9YY+ Y8 9Y9QZ  Q    -9QQZQ 99YYY
    9   9   9  9 0        0     0  999  9Z     0 Z 99- 99  9     0      Z9 0   99

BTXT.AQH..A8..AA1AEQ   B0GAEAHSE.6DAJEQEA1K   SAAA0AE0AJEJEA1KSAAA   0AEHAJEYH0FM81030039
9   Y90 Y9  Y9 YQ      8 9Y9Y98Z  QZYQ9ZQ 9   8YYQ YQ+ZYQYZQ 98Y9Y     YQRZYQ9R+Q8
    9   9   9  9Z      9  9 9     0  Z  0     999  9Z-  Z9 0  99 9     9Z0  Z   Z9

BTXT.AQ0..A8..AAEA1K   SAAA0AEAAJEAEA1KSAAJ   0AEHB0GAFAADE.6DAJE8   EA1KYAAA0BE081030040
9   Y9+ Y9  Y9ZQ 9     8Y9Q YQYZYQQZQ 98Y9Y    YQ08 9Y9Y88Z  QZYQ9    ZQ 99Y9Q 9Q
    9   9   9  0       99 9 9Z   ZZ 0  99 9    9Z 9  9 99    0  Z     0   9 Z  Z

BTXT.AQ8..A8..AAAJ90   EA1KHAA.1BEQAJEQEA1K   HAA+0AFHAJE+EA1KYAA-   0AE8AJ90EA1K81030041
9   Y9  Y9  Y9ZY +     ZQ 99Y9  9Q ZYQZZQ 9   9Y9  YQ9ZYQ ZQ 99Y9      YQ ZY +ZQ 9
    9   9   9    -      0  9    Z  Z  0        9  9Z   Z  0  9          Z   - 0

BTXT.AJA..A8..AAHAA0   1AEQAJEQEA1KHAAA0AFH   B0GAGAAAE.6DAJ9QEA1K   8AAA0A9HB0AA81030042
9   Y8Q Y9  Y99Y9+      YQ ZYQZZQ 99Y9Y YQ9   8 9Y9Y8YZ  QZY ZZQ 9   9Y9Q Y R8 YY
    99Z 9   9  9 -       Z  Z  0  9   9Z      9  9 99    0     0      9   9 09 99

BTXT.AJQ..A8..AACAP.   .AAACAP.AAAAAAJHDAAA   HABHE.6DAAA1BABCL0BA   BDA.9BCABCC-81030043
9   Y8Z Y9  Y99Y9       YY99Y9 YYY9YY8R8YY9   9Y8RZ  QZQY8ZQQR8Z-Y   QRZ  QZQQRZ
    99  9   9  9        99  9  999 9990999     990   0 Z9  ZZ09  9   Z0   Z ZZ0

BTXT.AJJ..A8..AABDEG   BDGA98A0AAB-BDAGBDGA   9KNABD.AGA9FADAAFA9B   AJFAB-FAB89D81030044
9   Y8Y Y9  Y9QR-Q     QRZY  ZZY9Z QR-8QRZY    0 YQR YZY -ZZY9ZQ Q   ZYQYZ QY-9 Q
    99  9   9 Z0 Z     Z0      9   Z0 9Z0        9Z0 9       9 Z 0     Z9  Z9   9

BTXT.AJQ..A8..AAEA1K   8ABA1AEHAJEQEA1KYABA   0AFHG09FB0DMU4DDMDDD   MDDMU4BFBFK081030045
9   Y8  Y9  Y9ZQ 9     9Y9Y YQ0ZYQZZQ 99Y9Q    YQ9Z  -8 9999ZRZR0-   00     998899
    99  9   9  0           9 Z-  Z  0  9 9     9Z     9         0     -       99

BTXT.AKA..A8..AAK0BF   BFBFK0BFBFBFBFBFBFK0   BFTXTX3737LPTXCG37LP   LPCGCGCHQY8H81030046
9   Y8Q Y9  Y988ZZ     88RR8800YY--QQ   YY    QQ9988998ZZ88RR8800   YY00QQ99999Z
    999 9   9 99                        99    99  99  99     00       --00

BTXT.AKH..A8..AAHQHH   HQHHQY8SWSW2626K0+WB   F26K0K0BFBFSWK026BFA   AAGAAABDE.6D81030047
9   Y8Z Y9  Y9RZR0     -00     99889988ZZ-8R  R8800YY00QQ  YY  QQY   YY9Y8Y8QZ  Q
    99  9   9   0       -        99  99    0  0       --00  99  ZZ9   99 99999   0

BTXT.AKA..A8..AAAJEH   AA0DGACDBBEAEA1KSABJ   0AESEA0F4ABA1AEJEA1K   SAB.0AESEA1K81030048
9   Y8Y Y9  Y9ZYQ9     -9 9ZQQ--9QQZQ 98Y9Y    YQ8ZQ Q8Y9Q YQYZQ 9   8Y9  YQ8ZQ 9
    99  9   9   Z            9Z   Z9 0  99 9    9Z  0 Z99 Z 9Z  0    99   9Z  0

BTXT.AKH..A8..AA4AB+   1AEJEA1KSAB-0AESEA0K   4AB01AE0B0GAAAC0E.6D   AJEHEA1KSABA81030049
9   Y80 Y9  Y98Y9       YQYZQ 98Y9  YQ8ZQ Y   8Y9+ YQ+8 9YQY89Z  Q   ZYQ9ZQ 98Y9Y
    99- 9   9 99        9Z  0  99   9Z  0 9   99 - 9Z 9  9999    0     Z  0  99

BTXT.AK0..A8..AA0AES   BDEAHFAHH.ADF.CAAJEA   EA1K8ABA1AEAB0JACHE.   6DAJEHEA1KBA81030050
9   Y8  Y9  Y9 YQ8     -8QQR89-0 Y9Z QYZYQQ   ZQ 99Y9Q YQQ8 9Y80Z     QZYQ9ZQ 9ZY
    99  9   9  9Z       9Z9       9  Z9  Z9    0  9   9Z09  99        0  Z  0   9
```



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BTXT.ALY..A8..AACA0A   EA1KBACA2AHFAHHAADFA   C6EA0KBACJ0AEA0FBACA   1AESEA0KBAC.81030051
9   Y89 Y9  Y99Y Y     ZQ 9ZY9Q YRQ9-0QY9ZQ   Q8ZQ YZY9Y YZQ Q8Y9Q     YQ8ZQ Y8Y9
    99  9   9  9 9      0  9 9 9       9      Z9 0 9 9 9 9 0 Z 9 Z     9Z  0 9 9

BTXT.AL-..A8..AA1AE0   EA1KHAC+1AEAEA0KBAC-   1AE0EA0FBAC00AB0KAGG   AD0DGACDB0DE81030052
9   Y8  Y9  Y9 YQ+     ZQ 99Y9  YQQZQ Y8Y9     YQ+ZQ QZY9+ Y8 9YQQ   -9 9ZQQQ8-98
    99  9   9  9Z       0   9   9Z0 0 9 9      9Z  0 Z 9 - 99  9ZZ        9Z 9  9

BTXT.ALH..A8..AAFTB0   E.6DFA6DAAFSGACQB0AA   FPB0U/FPB0J4F0B0J.GD   B0AEGDG0CFB081030053
9   Y8- Y9  Y9Q98      Z  Q-Y 0-YQ9ZYQ 8-Y9   Q08-98Q08-Y8Q-8-Y Q8   8-YZQ8Z QQ8-
    99  9   9 Z 9         0      Z   Z 9      Z 9  9Z 9  9Z 9   Z9   9   Z    Z99

BTXT.AL0..A8..AAUVF+   G0D0B0D0FABBB0AAFPEA   1KHACA1.EHEA0FHACA1.   EHEA0KHADA1.81030054
9   Y8- Y9  Y998Q-     Z Q88-99QQ8Q8-Y9Q0ZQ    99Y9Y  Q0ZQ QZY9Q     Q0ZQ Y9Y9Y
    99  9   9  9Z        Z99   ZZ999   Z  0      9    Z- 0 Z 9       Z- 0 9 9 9

BTXT.AMH..A8..AAE0KG   FXFGAAFSGACFB0U7F-BB   B0AAFPEA0FBADA1AEYAJ   EHA-AEEA1K4A81030055
9   Y89 Y9  Y9Q+ 9     Q8QQ-YQ9ZQQY8-99Q 8Q   8-Y9Q0ZQ Q8Y9Q YQ ZY   Q9Z Y9ZQ 98Y
    99  9   9 Z        Z Z   Z  9Z99   Z 99   9   Z  0 Z 9 9 9Z       Z   9  0  99

BTXT.AM...A8..AADJ0A   ESF-D2EA1KYADA1.FAEA   0FHAD.1.EHAA0EGADHKB   FBFKB0UMFFBB81030056
9   Y8  Y9  Y99Y Y     Q8Z Q8ZQ 99Y9Q  QQZQ    QZY9   Q0-Y 9ZYQ  9   QRQ88-99QZ8Q
    99  9   9  9 9     Z   Z9 0   9 Z  Z9 0    Z 9    Z-       Z     Z Z 9   Z 99

BTXT.AMH..A8..AAB0AA   FPEA1KBAD+3AEA0FBAD-   3AEA0KBAD03AKBFBFNB0   UMFFBJDBBJDD81030057
9   Y8R Y9  Y98-Y9     Q0ZQ 99Y9  YZQ QZY9     YZQ Y9Y9+ Y 9QRQ88-   99QZ-YQQ-YQQ
    990 9   9 9        Z  0   9   9 0 Z 9      9 0 9 9 - 9  Z Z 9      Z   Z0  Z9

BTXT.AMA..A8..AAAAFS   GADMB0JMGGB0J6GAG0DS   BDDBBDDDG0DAKGFXFGB0   JVF+BBB0AAFP81030058
9   Y8Q Y9  Y9-YQ9     ZYQ 8-Y8QY8-Y8Q-Z Q8   -9QQ-9QQZ QQ 9Q8Q-8-   Y8Q-8Q8-Y9Q0
    990 9   9   Z        Z 9  9Z99  9Z   Z     Z0  Z9  Z0  Z Z 9      9Z 999   Z

BTXT.AMY..A8..AAEA0F   BADA1AEYB0AACAP..AAA   HAM8AAAABAP.AAA+CAP.   AAAAFAP.AAAG81030059
9   Y8  Y9  Y9ZQ Q     8Y9Y YQ 8 YY9Y9   YY9  9Y8 YYY99Y9 YYY 9Y9    YYY9 Y9 YYY8
    99  9   9  0 Z     99   9Z 9 99 9    99    99 999  9  999  9     999  9  999

BTXT.ANJ..A8..AAFAP.   AAAAVAP.AAAGVAP.AAAJ   BAP.-AAABAP.-AAABAP.   AAAATAP.-AAA81030060
9   Y8Y Y9  Y9 Y9      YYYR9Y9 YYYQ9Y9 YYY0    Y9  YY9 Y9  YY9 Y9    YYY99Y9  YY9
    999 9   9  9       999  9  999  9  999     9   99  9   99  9     999  9   99

BTXT.ANH..A8..AATAP.   AAABTAP.AAACFAP.AAA+   AANJD.AAAANYD.AAAANA   D.AAAAN8D.AA81030061
9   Y8R Y9  Y99Y9      YYY99Y9 YYY9 Y9 YYY    YY8Y8 YYYY898 Y9YY8Q   8 YYYY898 Y9
    99  9   9  9       999  9  999  9  999    99999 99999 9 9 999Z   9 99999 9 9

BTXT.ANA..A8..AAAAAA   AAAAAANADAAAAAAAAAAA   AAAADAAAAAAAMAAAAAAA   BAAAAAAAAAAA81030062
9   Y8Q Y9  Y9YYYY     YYYYYY8Q8YYYYYYYQYYY   YYYY9YYYYYYY9YYYYYYY   9YYYYYYYYYYY
    99  9   9 9999     9999999 999999999999   9999 9999999 9999999    99999999999

BTXT.ANH..A8..AAAAAA   DAAAAA0HDAAAAAAADAAA   AANAHAAAAAAADAAAAANH   FAAAAAN-BAAB81030063
9   Y8  Y9  Y9YYYY     9YYYYY9-8YYYYYYY8YYY   YY8Q9YYYYYYY9YYYYY8Z   8YYYYY8 9YY9
    99  9   9 9999      99999  999999999999   9999 9999999 999999    9999999  99

BTXT.A0A..A8..AAAAP.   AAA+AAN0DAAAAAAAAAAA   AAAAAAAAABA.RTN.BYPA   SSED.MAKE.RE81030064
9   Y8Y Y9  Y99Y9      YYY YY8+8YYYYYYY9YYY   YYYYYYYYY9Y
    999 9   9  9       999 999-99999999 999   999999999 9

BTXT.A08..A8..AAADER   .NOT.READY.PUT.READE   R.OFF.LINEOFFON..DO.   NOPROT.PUT.A81030065
9   Y89 Y9  Y9                                                             8
    99  9   9

BTXT.A00..A8..AAB0UT   .30.BLNK.CDS.IN.RDRT   MAKE.RDYTEOF.ONAB0UT   .30....5....81030066
9   Y8+ Y9  Y9                            8           8
    99- 9   9

BTXT.A0Q..A8..AAREM0   VE.CDS.FROM.STACKER.   OF.LOADER.DEVICE.REM   OVE.THE.REMA81030067
9   Y80 Y9  Y9
    99  9   9
```

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BTXT.AOS..A8..AAININ     G.TEST.DECKSTIF.ANYT     .FROM.THE.LOADER.HPR     .DO.NOPRO.AN81030068
9    Y88  Y9  Y9                      8     8
     99   9   9

BTXT.APQ..A8..AAD.PL     ACE.CDS.RUN.OUT.IN.F     RONT.OF.REMAINING.TE     ST.DECKS.SAV81030069
9    Y89  Y9  Y9
     99   9   9

BTXT.AP+..A8..AAE.RE     MAINING.TEST.DECKS.U     NTIL.A.MSG.REQUESTS.     THEM.TO.BE.P81030070
9    Y8   Y9  Y9
     99   9   9

BTXT.APH..A8..AAUT.I     N.HPR.PUT.REMAINING.     TEST.DECKS.INTO.RDR.     HPR.AND.MAKE81030071
9    Y80  Y9  Y9
     99   9   9

BTXT.APO..A8..AA.RDR     .RDYTEOF.ON.REMOVE.B     LNK.CDS.FROM.READER.     MAKE.DEVICE.81030072
9    Y8+  Y9  Y9              8
     99   9   9

BTXT.AP8..AC..AARDY.     ..........           ..........           ..........81030073
9    Y8   Y9  Y9
     99   9   9

BRLD......A8....AAAA     AAANEAA4AADAAADJAAJ/     AAJAEAJHAAM9AANAAANA     AANJAANJHAN/81030074
9         Y9    Y9Y9     8YQ98YQ88Y9-8Y9Y8Y88     8Y8R8Y8R8Y8 8Y898Y88     8Y898Y889Y89
          9     9 9      999 999 99  99  999      99909990999 999 9999     999 9999 99

BRLD......A8....AAAA     AAN/AAN1AAN1AANAAANA     AANAAANJAAN/AAN/EANO     EANHEANADANH81030075
9         Y9    Y9Y9     8Y888Y898Y888Y8Z8Y88     8Y8R8Y888Y8 8Y888Y8+     8Y8R8Y8Y8Y80
          9     9 9      9999999 9999999 999      999 999 999 999 999-     9990999 999

BRLD......AJ....AAAA     EANHEANOEANSEANOEAN8     AAOADAOH.....            ..........81030076
9         YY    Y9Y9     8Y8-8Y8-8Y888Y8 8Y8      8Y898Y89
          99    9 9      999 999 999 999 999      999 999

BEND.APD.....AA....      ..........           ..........           ..........81030077
9    Y9Q      Y9
     9 Z      9

BDAT.....                ..........           ..........           ..........81030078
9

..........               ..........           ..........           ..........81030079
..........               ..........           ..........           ..........81030080
..........               ..........           ..........           ..........81030081
..........               ..........           ..........           ..........81030082
..........               ..........           ..........           ..........81030083
..........               ..........           ..........           ..........81030084
..........               ..........           ..........           ..........81030085
..........               ..........           ..........           ..........81030086
..........               ..........           ..........           ..........81030087
..........               ..........           ..........           ..........81030088
..........               ..........           ..........           ..........81030089
..........               ..........           ..........           ..........81030090
..........               ..........           ..........           ..........81030091
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..........               ..........           ..........           ..........81030092
..........               ..........           ..........           ..........81030093
..........               ..........           ..........           ..........81030094
..........               ..........           ..........           ..........81030095
..........               ..........           ..........           ..........81030096
..........               ..........           ..........           ..........81030097
..........               ..........           ..........           ..........81030098
BLDT......               ..........           ..........           ..........81030099
9
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LAST PAGE

```
                8112  TITLE
*********************************************************************
*                                                                   *
* MODIFICATIONS                                                     *
*                                                                   *
*                                                                   *
* REVISION LEVEL 2.  THIS REVISION DIFFERS FROM VERSION 1 AS FOLLOWS..*
*     1.  THIS SECTION PREVIOUSLY CONTAINED THE RIPPLE READ AND THE *
*         360 STACKER SELECT TESTS.  THIS SECTION NOW EXECUTES A    *
*         CONTINUATION OF THE INTERFACE TESTING.                    *
*     2.  DATA AND COMMAND CHAINING TESTS ARE ATTEMPTED.            *
*     3.  1400 COMPATIBILITY PROVISIONAL FEED TESTING HAS BEEN ADDED *
*         TO THE PROGRAM.                                           *
*     4.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE TEST NUMBERS AND *
*         COMMON MESSAGE FORMAT.                                    *
*                                                                   *
* E.C. PREREQUISITES                                                *
*     MACHINE . . . NONE                                            *
*     PROGRAM . . . NONE                                            *
*                                                                   *
* USE DESCRIPTION F810* AT EC 130498, DATED 15 JUN 67  OR LATER.    *
*                                                                   *
*********************************************************************
XF8112 START 4096
001000       USING *,15
*
*
*********************************************************************
*                        TEST NUMBER DESCRIPTION
*********************************************************************
*********************************************************************
* TEST      DESCRIPTION
*
*
*                    **************
*                      ROUTINE 01
*                    **************
*
* 0010 - OPERATION ATTEMPTED
*        A TEST I-O IS ISSUED TO THE READER.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE TEST I-O.
*
*        POSSIBLE FAILURE CAUSES
*
*        1. CONDITION CODE 2 INDICATES THE CHANNEL APPEARS TO BE BUSY.
*        2. CONDITION CODE 3 INDICATES THERE IS NO DEVICE FOR THE
*           ADDRESS USED.  THE DM UDT ENTRY COULD BE IN ERROR, THE
*           DEVICE MAY BE OFF LINE, OR IF THE 2821 TWO CHANNEL SWITCH
*           FEATURE IS INSTALLED, THE PARTITIONING SWITCH FOR THIS
*           INTERFACE MAY BE DISABLED.
*        3. IF CONDITION CODE 1 IS SET, THE CSW MUST BE INSPECTED TO
*           DETERMINE THE CAUSE.  UNIT CHECK MIGHT BE DUE TO NOT READY
*           DEVICE.  CHANNEL OR DEVICE END INDICATES THAT AN INTERRUPT
*           WAS PENDING IN THE CHANNEL.
*
* 0020 - OPERATION ATTEMPTED
*
*        A TEST I-O IS ISSUED TO THE PUNCH.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE TEST I-O.
*
```



```
*        POSSIBLE FAILURE CAUSES
*
*        REFER TO POSSIBLE FAILURE CAUSES GIVEN FOR TEST 0010.
*
*                    **************
*                      ROUTINE 02
*                    **************
*
* 0030 - OPERATION ATTEMPTED
*
*        A READ AND FEED COMMAND -02- IS ISSUED AND THE SYSTEM IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  INTERRUPT DUE
*        TO CHANNEL END SHOULD OCCUR.
*
* 0040 - OPERATION ATTEMPTED
*
*        A DIAGNOSTIC WRITE IS ISSUED TO THE PUNCH WHILE THE READER IS
*        BUSY.  A SENSE IS THEN PERFORMED.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 1 SHOULD BE SET ON THE START I-O.  THE CSW STORED
*        SHOULD CONTAIN UNIT CHECK.  THE SENSE BYTE SHOULD HAVE THE
*        COMMAND REJECT BIT ON.
*
*        POSSIBLE ERROR CAUSES
*
*        IF MORE THAN 1 2540 EXISTS ON THE SYSTEM, THE PUNCH ADDRESS
*        BEING USED BY THE TEST MAY NOT BE HOUSED IN THE SAME PHYSICAL
*        BOX AS THE READER BEING TESTED.  THESE ADDRESSES MUST BE
*        PUT IN THE DM UDT IN THE FOLLOWING MANNER- READER 1, PUNCH 1,
*        READER 2, PUNCH 2, ETC.
*        IF THE ADDRESSES ARE ALL RIGHT, AN EVALUATION OF THE ERROR
*        MESSAGE MUST BE MADE TO DETERMINE THE CAUSE OF THE TROUBLE.
*
* 0050 - OPERATION ATTEMPTED
*        A TEST I-O IS ISSUED TO A READER WITH A PENDING DEVICE END.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 1 SHOULD BE SET ON THE TEST I-O.  THE CSW STORED
*        SHOULD CONTAIN DEVICE END ONLY.
*
* 0060 - OPERATION ATTEMPTED
*
*        A DIAGNOSTIC WRITE IS ISSUED TO THE PUNCH AND THE SYSTEM IS
*        ENABLED FOR AN INTERRUPT.  A SENSE IS THEN PERFORMED.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL AND
*        DEVICE END INTERRUPT SHOULD OCCUR.  THE COMMAND REJECT SENSE
*        BIT SHOULD BE RESET.
*
*                    **************
*                      ROUTINE 03
*                    **************
*
* 0070 - OPERATION ATTEMPTED
*        A DIAGNOSTIC WRITE IS ISSUED TO THE PUNCH.  THE DATA WHICH IS
*        LOADED INTO THE READER BUFFER INDICATES A 3 AND A 4 HOLE WAS
*        READ IN EVERY COLUMN.  THE SYSTEM IS ENABLED FOR AN INTERRUPT.
*
*        EXPECTED RESPONSE
```

```
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL AND
*       DEVICE END INTERRUPT SHOULD OCCUR.
*
* 0080 - OPERATION ATTEMPTED
*
*       A READ AND FEED COMMAND IS ISSUED TO A READER WHICH HAS
*       INVALID DATA IN ITS READ BUFFER.  THE SYSTEM IS ENABLED FOR
*       TWO INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0 SET ON START I-O. EXPECTED STATUS IS UNIT
*       CHECK AND CHANNEL END IN THE 1ST CSW. DEVICE END RETURNING
*       AFTER COMPLETION OF FEED CYCLE.
*       A SENSE IS PERFORMED AND DATA CHECK IS EXPECTED.
*
*                       **************
*                         ROUTINE 04
*                       **************
*
* 0090 - OPERATION ATTEMPTED
*
*       A READ, FEED, STACKER SELECT R1 -02- IS ISSUED.
*
*       EXPECTED RESPONSE
*
*       CHANNEL END SEPARATELY FROM DEVICE END. CONDITION CODE 0.
*       PRIOR FEED IN TEST 0080 PUTS VALID BLANKS INTO READ BUFFER
*       AND SHOULD ENABLE THIS COMMAND TO FUNCTION WITHOUT ERROR
*       STATUS.
*
*
* 0100 - OPERATION ATTEMPTED
*
*       A READ NO FEED -C2- IS ISSUED.
*
*       EXPECTED RESPONSE
*
*       CHANNEL END AND DEVICE END TOGETHER. 1 CSW EXPECTED.
*       CONDITION CODE 0.
*
*
* 0110 - OPERATION ATTEMPTED
*
*       A FEED, STACKER SELECT R1 -23- IS ISSUED.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 1 DUE TO THIS COMMAND BEING A COMMAND IMMEDIATE
*       ON THE 2540. CHANNEL END IS SEPARATE FROM DEVICE END DUE TO
*       FEED CYCLE.
*
*                       **************
*                         ROUTINE 05
*                       **************
*
* 0120 - OPERATION ATTEMPTED
*
*       DIAGNOSTIC WRITE -25- IS ISSUED TO THE  PUNCH TO WRITE VALID
*       DATA INTO THE READ BUFFER WITHOUT GOING THROUGH THE READ
*       TRANSLATE CIRCUITRY.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0. EXPECT CHANNEL AND DEVICE ENDS TOGETHER
*       IN ONE CSW.
```



```
*
*       WHEN ISSUING A DIAGNOSTIC WRITE COMMAND TO A 2540 READER, THE
*       CCW MUST BE ADDRESSED TO THE ASSOCIATED 2540 PUNCH.
*       BECAUSE THE DIAGNOSTIC WRITE COMMAND UTILIZES THE CARD IMAGE
*       (COLUMN BINARY) CIRCUITRY, 160 BYTES MUST BE TRANSFERRED TO
*       FILL THE 80 POSITION READ BUFFER.  THE CARD IMAGE FEATURE
*       DOES NOT HAVE TO BE INSTALLED FOR DIAGNOSTIC WRITE TO WORK.
*
*
* 0130 - OPERATION ATTEMPTED
*
*       FEED STACKER SELECT R1 -23- ISSUED TO READER.
*
*       EXPECTED RESPONSE
*       CONDITION CODE 1. UNIT CHECK IN STATUS DUE TO 2 FEEDS IN A
*       ROW WITH NO INTERVENING READ. FIRST FEED ISSUE IN TEST 0110.
*       SENSE BYTE EXPECTED SHOULD HAVE COMMAND REJECT.
*
*                       **************
*                         ROUTINE 06
*                       **************
*
* 0140 - OPERATION ATTEMPTED
*
*       DIAGNOSTIC WRITE TO THE PUNCH -25- FILLS READ BUFFER WITH
*       VALID DATA.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0. CHANNEL AND DEVICE ENDS EXPECTED TOGETHER.
*
*       WHEN ISSUING A DIAGNOSTIC WRITE COMMAND TO A 2540 READER, THE
*       CCW MUST BE ADDRESSED TO THE ASSOCIATED 2540 PUNCH.
*       BECAUSE THE DIAGNOSTIC WRITE COMMAND UTILIZES THE CARD IMAGE
*       (COLUMN BINARY) CIRCUITRY, 160 BYTES MUST BE TRANSFERRED TO
*       FILL THE 80 POSITION READ BUFFER.  THE CARD IMAGE FEATURE
*       DOES NOT HAVE TO BE INSTALLED FOR DIAGNOSTIC WRITE TO WORK.
*
* 0150 - OPERATION ATTEMPTED
*
*       READ NO FEED -C2- TO READER.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0. CHANNEL AND DEVICE ENDS TOGETHER.
*
*
* 0160 - OPERATION ATTEMPTED
*
*       DIAGNOSTIC WRITE TO THE PUNCH -25-. PUTS INVALID DATA MODE 1
*       DATA INTO THE READ BUFFER.
*
*       EXPECTED RESPONSE
*       CONDITION CODE 0. CHANNEL AND DEVICE ENDS TOGETHER.
*
*
* 0170 - OPERATION ATTEMPTED
*
*       FEED STACKER SELECT R1 -23- SHOULD FORCE BLANK DATA INTO
*       THE READ BUFFER.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 1 -CMD IMMEDIATE-. SEPERATE CHANNEL AND DEVICE
*       ENDS.
*
*
```

```
*
*
* 0180 - OPERATION ATTEMPTED
*
*       READ FEED STACKER SELECT R1 -02-
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0. CHANNEL AND DEVICE END STATUS SEPARATELY.
*
*
*                     **************
*                       ROUTINE 07
*                     **************
*
* 0190 - OPERATION ATTEMPTED
*
*       READ 80 CHARACTERS, FEED, STACKER SELECT R1 -02- COMMAND
*       CHAINED INTO ANOTHER READ 80 CHARACTERS, FEED, STACKER SELECT
*       R1. NO SUPPRESS LENGTH INDICATOR ON -SLI FLAG.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0. CHANNEL AND DEVICE ENDS SEPARATELY.
*
*
*                     **************
*                       ROUTINE 08
*                     **************
*
* 0200 - OPERATION ATTEMPTED
*
*       READ 79 CHARACTERS, FEED, STACKER SELECT R1 -02- COMMAND
*       CHAINED INTO A READ 80 CHARACTERS, FEED, STACKER SELECT R1.
*       NO SLI FLAG ON IN COMMANDS.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0. CHANNEL END AND WRONG LENGTH RECORD IN 1ST
*       CSW. DEVICE END ALONE IN 2ND CSW.
*
*
*                     **************
*                       ROUTINE 09
*                     **************
*
* 0210 - OPERATION ATTEMPTED
*
*       READ, FEED, STACKER SELECT R1.-02- DATA CHAINED INTO 4
*       DIFFERENT PLACES. EACH COMMAND REQUESTING 20 BYTES FOR TOTAL
*       OF 80 BYTES IN THE CHAIN. NO SLI FLAG ON IN COMMANDS.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0. CHANNEL END IN 1ST CSW. DEVICE END IN 2ND
*       CSW.
*
*
*                     **************
*                       ROUTINE 10
*                     **************
*
* 0220 - OPERATION ATTEMPTED
*
*       READ, FEED, STACKER SELECT R1 -02- DATA CHAINED INTO 4
*       DIFFERENT PLACES. NO SLI FLAG ON. THE 1ST COMMAND REQUESTS
*       40 CHARACTERS, THE FOLLOWING 3 CCWS REQUEST 20 EACH.
*
```



```
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0. CHANNEL END, WRONG LENGTH RECORD, AND A
*       RESIDUAL COUNT OF DECIMAL 20 IN THE 1ST CSW. DEVICE END ALONE
*       IN THE 2ND CSW.
*
*
*                     **************
*                       ROUTINE 11
*                     **************
*
* 0230 - OPERATION ATTEMPTED
*
*       READ, FEED, STACKER SELECT R1 -02-  DATA CHAINED INTO 4
*       DIFFERENT PLACES. SLI FLAG IS ON IN 3RD CCW OF CHAIN.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0. CHANNEL END AND RESIDUAL COUNT IN 1ST CSW.
*       DEVICE END ALONE IN 2ND CSW.
*
*                     **************
*                       ROUTINE 12
*                     **************
*
* 0240 - OPERATION ATTEMPTED
*
*       A 1400 COMPATIBILITY READ NO FEED COMMAND CHAINED TO A 1400
*       COMPATIBILITY FEED STACKER SELECT R1 WAS ISSUED TO THE READER.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0. CHANNEL END ALONE IN THE FIRST STATUS.
*       DEVICE END ALONE IN THE SECOND CSW RETURNED DUE TO A CARD
*       FEED CYCLE.
*       A RESIDUAL COUNT OF 1 SHOULD BE IN THE CSW BECAUSE THE
*       READER DOES NOT TRANSFER ANY DATA FOR THE STACKER COMMAND.
*       IF THE PROGRAM HANGS IN A LOOP, A POSSIBLE CHANNEL ERROR
*       MAY HAVE OCCURRED.  THE OPERATOR SHOULD DO A PSW RESTART TO
*       HAVE THE LAST OPERATION OUTPUT ON THE OUTPUT DEVICE.
*
*       POSSIBLE ERROR CAUSES
*
*       THE DM UDT ENTRY FOR THE OPTION BYTE OF THE 2540 MAY HAVE
*       BEEN ERRONEOUSLY SET UP TO INDICATE THAT 1400 COMPATIBILITY
*       HARDWARE EXISTS IN THE 2540.  THE 1400 COMPATIBILITY TESTS
*       WILL BE ATTEMPTED AND WILL INDICATE ERRORS.
*
*       ALL OTHER ERRORS WILL HAVE TO BE ANALYZED BY THE INDICATIONS
*       GIVEN IN THE ERROR MESSAGE.
*
*       1400 PROVISIONAL FEED OPERATION AND DEFINITION.
*
*       THE FOLLOWING IS AN EXPLANATION OF 1400 PROVISIONAL FEED
*       OPERATION.
*
*       A 1400 READ NO FEED COMMAND IS ISSUED AND CHANNEL AND DEVICE
*       ENDS RETURN IN THE SAME CSW BECAUSE NO FEED CYCLE IS TAKEN.
*
*       THE PROGRAM HAS TO ISSUE A FEED AND STACKER SELECT COMMAND
*       WITHIN 6 MILLISECONDS. IF IT DOES NOT, THE PROVISIONAL
*       FEED CIRCUITRY AUTOMATICALLY STACKER SELECTS THE CARD. IF
*       THE PROGRAM ISSUES A STACKER SELECT AFTER THE PROVISIONAL
*       FEED HAS STARTED, THE DEVICE WILL ACT BUSY OR PRESENT BOTH
*       BUSY AND DEVICE ENDS IN STATUS IF THE PROGRAM ACCEPTS THE
*       INTERRUPT.
*       A COMMAND REJECT COULD BE GENERATED ON THE DEVICE UNDER
*       THE CONDITION THAT THE PROVISIONAL FEED WAS DONE AND THE
```

```
*      PROGRAM ATTEMPTS A FEED AND STACKER SELECT ALSO, DUE TO
*      2 FEEDS IN A ROW BEING ATTEMPTED.
*
*      IF THIS ERROR IS INDICATED, THE SINGLE SHOT THAT GOVERNS
*      THE 6 MILLISECOND DELAY FOR THE PROVISIONAL FEED SHOULD BE
*      SCOPED TO INSURE PROPER SETTING. IF THE SINGLE SHOT IS ALL
*      RIGHT, THE MONITOR BEING USED MUST BE TOO SLOW AND THE ERROR
*      IGNORED.
*
*
*
*                     **************
*                       ROUTINE 13
*                     **************
*
* 0250 - OPERATION ATTEMPTED
*
*      IF 1400 COMPATIBILITY IS ON MACHINE, ISSUE 1400 COMPATIBILITY
*      READ NO FEED -D2-.
*
*      EXPECTED RESPONSE
*
*      CONDITION CODE 0. CHANNEL END AND DEVICE END TOGETHER IN
*      ONE CSW.
*      DEVICE END RETURNS AGAIN IN 2ND CSW AFTER 6 MS WAIT DUE TO
*      AUTOMATIC 1400 FEED CYCLE.
*      IF THE PROGRAM HANGS IN A LOOP, A POSSIBLE CHANNEL ERROR
*      MAY HAVE OCCURRED.  THE OPERATOR SHOULD DO A PSW RESTART TO
*      HAVE THE LAST OPERATION OUTPUT ON THE OUTPUT DEVICE.
*
*      POSSIBLE ERROR CAUSES
*
*      SEE POSSIBLE ERROR CAUSES UNDER TEST NUMBER 0240.
*
*
* 0260 - OPERATION ATTEMPTED
*
*      ISSUE 1400 COMPATIBILITY FEED, STACKER SELECT R1 -33- AFTER
*      2.5 SECOND TIME OUT OF READ.
*
*      EXPECTED RESPONSE
*
*      CONDITION CODE 1. UNIT CHECK IN STATUS. SENSE IS DONE AND
*      COMMAND REJECT IS EXPECTED DUE TO 1400 PROVISIONAL FEED
*      PRIOR TO THIS FEED.
*
*      POSSIBLE ERROR CAUSES
*
*      SEE POSSIBLE ERROR CAUSES UNDER TEST NUMBER 0240.
*
*
*                     **************
*                       ROUTINE 14
*                     **************
*
* 0270 - OPERATION ATTEMPTED
*
*      IF 1400 COMPATIBILITY ON MACHINE, ISSUE 1400 COMPATIBILITY
*      READ NO FEED -D2- COMMAND CHAINED TO A NO-OP -03- COMMAND
*      WHICH IS COMMAND CHAINED TO A 1400 FEED STACKER SELECT R1-33-
*      THIS IS TO TEST FOR ANY EXTRANEOUS STATUS THAT MAY BE RETURNED
*      BETWEEN THE READ AND THE FEED COMMANDS IF THE PROVISIONAL
*      FEED CIRCUITRY IS NOT FUNCTIONING PROPERLY.
*
*      EXPECTED RESPONSE
*
*      CONDITION CODE 0. CHANNEL END IN FIRST STATUS AND DEVICE
*      END ALONE IN THE SECOND CSW DUE TO THE FEED CYCLE.
*      A RESIDUAL COUNT OF 1 SHOULD BE IN THE CSW BECAUSE THE
```



```
                          *      READER DOES NOT TRANSFER ANY DATA FOR THE NO-OP COMMAND.
                          *
                          *      POSSIBLE FAILURE CAUSES
                          *
                          *      BUSY OCCURS DUE TO PROVISIONAL FEED CYCLE OCCURRING BEFORE
                          *      THE EXPECTED 6 MILLISECOND TIME OUT.
                          *      IF THE PROGRAM HANGS IN A LOOP, A POSSIBLE CHANNEL ERROR
                          *      MAY HAVE OCCURRED.  THE OPERATOR SHOULD DO A PSW RESTART TO
                          *      HAVE THE LAST OPERATION OUTPUT ON THE OUTPUT DEVICE.
                          *
                          *      SEE POSSIBLE ERROR CAUSES UNDER TEST NUMBER 0240.
                          *
                          *
                          * 0280 - OPERATION ATTEMPTED
                          *
                          *
                          *      ISSUE SENSE COMMAND -04-.
                          *
                          *      EXPECTED RESPONSE
                          *
                          *      CONDITION CODE 0. CHANNEL END AND DEVICE END TOGETHER IN
                          *      STATUS. NO SENSE BITS ON.
                          *
                          *
                          *****************************************************************
                          ******************                            *******************
                          * SECTION PREFACE ************************************ SECTION PREFACE *
                          ******************                            *******************
001000  F8112000          SECNO  DC    XL4'F8112000'        PROGRAM,SECTION AND REVISION NOS.  *
001004  00000000          SNSW   DC    XL4'00'              SECTION SENSE SWITCHES             *
001008  0000                     DC    XL2'00'                                                 *
00100A  0000              ICM    DC    XL2'00'              INTERRUPTION CONDITION MASK        *
00100C  00                SDMF   DC    XL1'00'              SECTION DM FLAGS                   *
00100D  02                NIOU   DC    XL1'02'              NUMBER OF UNIT TABLE ENTRYS        *
00100E  C0                FLAG1  DC    X'C0'                EXCLUSIVE CPU                      *
00100F  00                FLAG2  DC    X'00'                I/O INT ARE ERR, EXT INT TO PROG   *
001010  0104000000        INPSW  DC    X'0104000000'        DISABLED, SPVSR STATE, NO PGM MASK *
001015  0017D8                   DC    AL3(ROUT01)          ADR OF 1ST ROUTINE PREFIX          *
001018  0000000000000000  EXOPSW DC    XL8'0'               SECTION OLD EXTERNAL PSW           *
001020  0000000000000000  SVOPSW DC    XL8'00'              CLEAR ALL OLD PSWS                 *
001028  0000000000000000  PGOPSW DC    XL8'00'              PROGRAM OLD PSW                    *
001030  0000000000000000  MCOPSW DC    XL8'00'              MACHINE CHECK OLD PSW              *
001038  0000000000000000  IOOPSW DC    XL8'00'              I/O OLD PSW                        *
001040  0000000000000000  CSW    DC    XL8'00'              CHANNEL STATUS WORD                *
001048  00000000          CAW    DC    XL4'00'              CAW                                *
00104C  000000000000000000       DC    XL12'00'             RESERVED FOR DM USE                *
001055  000000
001058  0004000000        EXNPSW DC    X'0004000000'        EXTERNAL NEW PSW                   *
00105D  000000            SRET   DC    XL3'0'               ADR OF EXT INTRPT ROUTINE          *
001060  0000000000000000  SVNPSW DC    XL8'00'              SUPERVISOR NEW PSW                 *
001068  0000000000000000  PGNPSW DC    XL8'00'              PROGRAM NEW PSW                    *
001070  0000000000000000  MCNPSW DC    XL8'00'              MACHINE CHECK NEW PSW              *
001078  01040000          IONPSW DC    XL4'01040000'        I/O NEW PSW                        *
00107C  00001212                 DC    AL4(IRETRN)          ADDRESS OF I/O INTRPT ROUTINE      *
001080                           DS    96C                  96 BYTE REG DUMP AREA FOR DM USE   *
0010E0  81                UNIT1  DC    X'81'                UNIT TYPE - 2540 READER
0010E1  00                U1OP   DC    X'00'                OPTIONAL FEATURES BYTE             *
0010E2  8000              U1ADDR DC    X'8000'              FLAGS AND CHAN/UNIT ADDRESS        *
0010E4  82                UNIT2  DC    X'82'                UNIT TYPE - 2540 PUNCH
0010E5  00                U2OP   DC    X'00'                OPTIONAL FEATURES BYTE
0010E6  8000              U2ADDR DC    X'8000'              FLAGS AND CHAN/UNIT ADDRESS
                          *****************************************************************
                          *     OPTIONAL FEATURE BYTE DEFINITION
                          *****************************************************************
                          *  * BIT 0 * BIT 1 * BIT 2 * BIT 3 * BIT 4 * BIT 5 * BIT 6 * BIT 7 *
                          *  * HEX 8 * HEX 4 * HEX 2 * HEX 1 * HEX 8 * HEX 4 * HEX 2 * HEX 1 *
                          *  * ASCII * CARD  *       *  51   * 1400  *       *       * 2821  *
                          *  *       * IMAGE *       * COL RD* COMP  *       *       * 2 CHN *
```

```
*  *       *       *       *       *       *       *       *  SW.  *
***********************************************************************
*                    2540 READER SENSE BYTE
***********************************************************************
*       BIT   MEANING
*        0    COMMAND REJECT
*        1    INTERVENTION REQUIRED
*        2    BUS OUT CHECK
*        3    EQUIPMENT CHECK
*        4    DATA CHECK - VALIDITY CHECK - INVALID CARD CODE
*        5    OVERRUN - NOT USED
*        6    UNUSUAL COMMAND SEQUENCE-2 READS WITHOUT INTERVENING FEED
*        7    NOT USED
***********************************************************************
*                 2540 READER STATUS BYTE
***********************************************************************
*       BIT   MEANING
*        0    ATTENTION - 1400 COMPATIBILITY FEATURE ONLY - INDICATES
*                         SENSE WAS ISSUED BEFORE 6 MS TIME OUT AFTER
*                         A 1400 COMPATIBILITY READ.
*        1    STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
*        2    CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
*        3    DEVICE BUSY
*        4    CHANNEL END
*        5    DEVICE END
*        6    UNIT CHECK
*        7    UNIT EXCEPTION - LAST CARD PREVIOUSLY READ, AND END OF
*                              FILE WAS ON.
***********************************************************************
***********************************************************************
***********************************************************************
*                         PARAMETERS USED TO ENTER
*                         THE I-O HANDLER ROUTINE
***********************************************************************
*       BAL   R11,ISIO                 LINK TO I-O HANDLER
*       DC    XL2'0000'                CONTROL SWITCHES
*       DC    X'0014'                  TEST NO. IN DEC EXPRESSED IN HEX
*       DC    X'F0'                    EXPECTED COND. CODE
*       DC    X'00'                    EXPECTED SENSE DATA
*       DC    AL2(ADR-BASE+REG)        ADDR. OF EXPECTED CSW IF NEEDED
***********************************************************************
***********************************************************************
*                         I-O HANDLER CONTROL SWITCHES
*                         2 BYTE PARAMETER FOLLOWING BAL
***********************************************************************
* SWITCH     DESCRIPTION
*   0  ----  OFF - ISSUE AN I-O COMMAND
*            ON  - DO NOT ISSUE AN I-O COMMAND
*   1  ----  OFF - ENABLE
*            ON  - DO NOT ENABLE
*   2  ----  OFF - EXPECT NO INTERRUPT
*            ON  - EXPECT AN INTERRUPT
*   3  ----  OFF - DO NOT EXPECT 2 INTERRUPTS
*            ON  - EXPECT 2 INTERRUPTS
*   4  ----  OFF - EXPECT NO CSWS
*            ON  - EXPECT A CSW
*   5  ----  OFF - DO NOT EXPECT 2 CSWS
*            ON  - EXPECT 2 CSWS
*   6  ----  OFF - ALWAYS TRY TO ISSUE SENSE
*            ON  - SENSE ON UNIT CHECK ONLY
*
***********************************************************************
***********************************************************************
*                         SWITCHES USED BY I-O HANDLER
***********************************************************************
* SWITCH     DESCRIPTION
*   0  ----  OFF - NO HANGUP ON INTERFACE
*            ON  - HANGUP OCCURRED
```



```
                          *   1  ----  OFF - NO CSWS STORED
                          *            ON  - ONE CSW STORED
                          *   2  ----  OFF - SECOND CSW NOT RECEIVED
                          *            ON  - SECOND CSW RECEIVED
                          *   3  ----  OFF - DID NOT ENABLE
                          *            ON  - ENABLED ONCE
                          *   4  ----  OFF - DID NOT ENABLE TWICE
                          *            ON  - ENABLED TWICE
                          *   5  ----  OFF - NO SENSE DATA RECEIVED
                          *            ON  - SENSE DATA RECEIVED
                          *   6  ----  OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
                          *            ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
                          *   7  ----  OFF - NO ERROR DETECTED
                          *            ON  - AN ERROR WAS DETECTED
                          ***********************************************************************
                          *                    REGISTERS USED IN I-O HANDLER
                          ***********************************************************************
                          *      REG         COMMENTS
                          *       5   USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
                          *           PREVIOUS HANGUP ON INTERFACE DETECTED.
                          *
                          *       8   USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
                          *
                          *       9   USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
                          *
                          *      10   MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
                          *
                          *      11   MUST BE USED AS LINK REG TO THIS ROUTINE
                          *
                          *      12   MUST CONTAIN DEVICE ADDRESS
                          *
                          ***********************************************************************
0010E8  0000              ISW     DC    XL2'0'
                          ***********************************************************************
                          ***********************************************************************
                          *                    * I-O HANDLER SUB-ROUTINE *
                          ***********************************************************************
0010EA  92 9E F 1AC       IHIO    MVI   ISSUE,X'9E'              SET UP FOR HALT I-O
0010EE  92 C8 F 649               MVI   IOPT1+25,X'C8'           MOVE -H- TO OPTION MSG.
0010F2  92 C8 F 580               MVI   IOADDR+12,X'C8'
0010F6  92 9E F 15E               MVI   ILOOP,X'9E'
0010FA  47 F0 F 122               BC    UNC,IEYEOH               BR. UNCONDITIONAL
0010FE  92 9D F 1AC       ITIO    MVI   ISSUE,X'9D'              SET UP FOR TEST I-O
001102  92 9D F 15E               MVI   ILOOP,X'9D'
001106  92 E3 F 649               MVI   IOPT1+25,X'E3'           MOVE -T- TO OPTION MSG.
00110A  92 E3 F 580               MVI   IOADDR+12,X'E3'
00110E  47 F0 F 122               BC    UNC,IEYEOH               BR. UNCONDITIONAL
001112  92 9C F 1AC       ISIO    MVI   ISSUE,X'9C'              SET UP FOR START I-O
001116  92 9C F 15E               MVI   ILOOP,X'9C'
00111A  92 E2 F 649               MVI   IOPT1+25,X'E2'           MOVE -S- TO OPTION MSG.
00111E  92 E2 F 580               MVI   IOADDR+12,X'E2'
001122  D2 01 F 62C B 002 IEYEOH  MVC   ITSTNO+5(2),2(R11)       SAVE TEST NUMBER
001128  90 AB F 680               STM   R10,R11,ISLAVE           SAVE REG 10 AND REG 11
00112C  90 89 F 570               STM   R8,R9,ISAVE              SAVE REGS 8 AND 9
001130  D2 00 F 68D F 003         MVC   RTSV(1),SECNO+3          SAVE RT NO. FOR HANGUP.
001136  50 AD 0 048       IRETRY  ST    R10,HCAW(R13)            STORE COMMAND ADDRESS.
00113A  D7 07 D 040 D 040         XC    HCSW(8,R13),HCSW(R13)
001140  D7 0B E 080 E 080         XC    LOGOUT(12,R14),LOGOUT(R14)
001146  91 80 B 000               TM    0(R11),X'80'             CHECK CONTROL SWITCH FOR NO I-O
00114A  47 10 F 1E2               BC    ALL,INOW                 BR. IF ON
00114E  91 C0 F 004               TM    SNSW,X'C0'
001152  47 80 F 19A               BC    NONE,JOHN
                          ***********************************************************************
                          *                           SENSE SWITCH LOOPS
                          ***********************************************************************
001156  91 80 F 004       ITRY1   TM    SNSW,X'80'               CHECK SECTION SENSE SWITCH 0
00115A  47 80 F 166               BC    NONE,ITRY2               BR. IF OFF
00115E  9C 00 C 000       ILOOP   SIO   0(R12)                   SIO, TIO, OR HIO
```

2540 READER FUNCTION TESTS - SECTION 2 F811

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001162   47 F0 F 156                BC    UNC,ITRY1          BR. UNCONDITIONAL
001166   91 40 F 004          ITRY2 TM    SNSW,X'40'         CHECK SECTION SENSE SWITCH 1
00116A   47 80 F 186                BC    NONE,IHI           BR. IF OFF
00116E   9D 00 C 000          IHANG TIO   0(R12)             TEST I-O
001172   47 70 F 156                BC    NCCO,ITRY1         BR. IF NOT COND. CODE 0
001176   91 40 F 004                TM    SNSW,X'40'         CHECK SECTION SENSE SWITCH 1
00117A   47 80 F 186                BC    NONE,IHI           BR. IF OFF
00117E   9C 00 C 000                SIO   0(R12)             START I-O
001182   47 F0 F 16E                BC    UNC,IHANG          BR. UNCONDITIONAL
001186   58 9E 0 198          IHI   L     R9,WT(R14)         PICK UP DM WAIT FACTOR.
00118A   88 90 0 003                SRL   R9,3               CUT IT DOWN TO 1.25 SECS.
00118E   9D 00 C 000          GREG  TIO   0(R12)             TEST I-O TO DEVICE.
001192   47 80 F 19A                BC    CCO,JOHN           BR IF AVAILABLE.
001196   46 90 F 18E                BCT   R9,GREG            LOOP UNTIL TIME OUT.
00119A   D7 01 F 0E8 F 0E8   JOHN  XC    ISW(2),ISW         ZERO THE I-O HANDLER SWITCHES.
0011A0   96 80 F 0E8                OI    ISW,X'80'          TURN ON THE HANG SWITCH.
0011A4   92 E7 F 605                MVI   IACSNS+5,C'X'      MOVE AN X INTO ACTUAL SENSE BYTE.
0011A8   92 E7 F 59F                MVI   IACTCC+5,C'X'      MOVE IN A -X-
0011AC   9C 00 C 000          ISSUE SIO   0(R12)             I-O COMMAND- SIO, TIO, OR HIO
0011B0   47 80 F 1DE                BC    CCO,IZERO          BR. IF COND. CODE 0
0011B4   47 40 F 1CC                BC    CC1,IONE           BR. IF COND. CODE 1
0011B8   47 20 F 1C4                BC    CC2,ITWO           BR. IF COND. CODE 2
0011BC   92 F3 F 59F                MVI   IACTCC+5,X'F3'     INDICATE COND. CODE 3
0011C0   47 F0 F 1E2                BC    UNC,INOW           BR. UNCONDITIONAL
0011C4   92 F2 F 59F          ITWO  MVI   IACTCC+5,X'F2'     INDICATE COND. CODE 2
0011C8   47 F0 F 1E2                BC    UNC,INOW           BR. UNCONDITIONAL
0011CC   92 F1 F 59F          IONE  MVI   IACTCC+5,X'F1'     INDICATE COND. CODE 1
0011D0   D2 07 F 666 D 040          MVC   ICSW1(8),HCSW(R13) SAVE CSW
0011D6   96 40 F 0E8                OI    ISW,X'40'          INDICATE 1 CSW
0011DA   47 F0 F 1E2                BC    UNC,INOW           BR. UNCONDITIONAL
0011DE   92 F0 F 59F          IZERO MVI   IACTCC+5,X'F0'     INDICATE COND. CODE 0
0011E2   94 7F F 0E8          INOW  NI    ISW,X'7F'          TURN OFF HANG UP SWITCH
0011E6   91 40 B 000                TM    0(R11),X'40'       CHECK CONTROL SWITCH FOR NO ENABLE
0011EA   47 10 F 286                BC    ALL,ISEN           BR. IF ON
0011EE   96 10 F 0E8                OI    ISW,X'10'          INDICATE ENABLED ONCE
0011F2   58 9E 0 198          IWAIT L     R9,WT(R14)         LOAD DM WAIT FACTOR
0011F6   88 90 0 003                SRL   R9,3               ADJUST
0011FA   96 80 F 0E8                OI    ISW,X'80'          TURN ON HANG UP SW
0011FE   80 00 F 68B                SSM   MSK1               ENABLE
001202   46 90 F 202                BCT   R9,*               WAIT
001206   80 00 F 68C                SSM   MSK2               DISABLE
00120A   94 7F F 0E8                NI    ISW,X'7F'          TURN OFF HANG SW
00120E   47 F0 F 286                BC    UNC,ISEN           BR. UNCONDITIONAL
*****************************************************************************
*                          ALL I-O INTERRUPTS RETURN HERE
*****************************************************************************
001212   49 C0 F 03A          IRETRN CH   R12,IOOPSW+2       COMPARE FOR CURRENT I-O ADDRESS
001216   47 60 F 234                BC    UNEQ,IUIO          BR. IF UNEQUAL
00121A   94 7F F 0E8                NI    ISW,X'7F'          RESET HANG UP SW
00121E   91 40 F 0E8                TM    ISW,X'40'
001222   47 10 F 264                BC    ALL,ISV2           BR. IF 1 CSW ALREADY STORED
001226   D2 07 F 666 F 040           MVC   ICSW1(8),HCSW(R15) SAVE CSW 1
00122C   96 40 F 0E8                OI    ISW,X'40'          INDICATE 1 CSW STORED
001230   47 F0 F 26E                BC    UNC,INT3           BR. UNCONDITIONAL
001234   D2 07 F 578 F 040    IUIO   MVC   WORK(8),HCSW(R15)
00123A   0A DD                      SVC   X'DD'              CONVERT ADDRESS
00123C   0002                       DC    AL2(2)             2 BYTES OF I-O OLD PSW.
00123E   003A                       DC    AL2(IOOPSW+2-SECNO) FROM HERE.
001240   069F                       DC    AL2(IUNEX+17-SECNO) TO HERE
001242   0A D0                      SVC   X'D0'              PRINT UNEXPECTED INTERRUPT DEVICE
001244   64                         DC    X'64'              ADDRESS
001245   15                         DC    X'15'
001246   F68E                       DC    AL2(IUNEX-SECNO+REG)
001248   D2 02 F 5D6 F 5CF           MVC   IBLAH+1(3),ICSW    MOVE -CSW- TO MESSAGE
00124E   92 1A F 421                MVI   ICNT,X'1A'         ADJUST COUNT
001252   D2 02 F 5EC F 5EF           MVC   IBLAH+23(3),IACT   MOVE -ACT- TO MESSAGE
001258   45 90 F 40A                BAL   R9,ICOUT           BR. TO OUTPUT CSW
00125C   96 02 F 0E8                OI    ISW,X'02'          INDICATE UIO
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2540 READER FUNCTION TESTS - SECTION 2 F811

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001260   47 F0 F 4E4                BC    UNC,ILOGED         BR. UNCONDITIONAL
001264   D2 07 F 66E F 040    ISV2  MVC   ICSW2(8),HCSW(R15) SAVE CSW 2
00126A   96 20 F 0E8                OI    ISW,X'20'          INDICATE 2 CSWS STORED
00126E   91 10 B 000          INT3  TM    0(R11),X'10'       CHECK CTRL SW FOR 2 INTR EXPECTED
001272   47 80 F 286                BC    NONE,ISEN          BR. IF NOT
001276   91 08 F 0E8                TM    ISW,X'08'
00127A   47 10 F 286                BC    ALL,ISEN           BR. IF ALREADY ENABLED TWICE
00127E   96 08 F 0E8                OI    ISW,X'08'          INDICATE ENABLED TWICE
001282   47 F0 F 1F2                BC    UNC,IWAIT
001286   91 02 B 000          ISEN  TM    0(R11),X'02'       CHECK CONTROL SWITCH FOR SNS ON UC
00128A   47 80 F 2AE                BC    NONE,IDOSNS        BR. IF OFF TO ISSUE SENSE
00128E   91 40 F 0E8                TM    ISW,X'40'          SEE IF 1ST CSW IN.
001292   47 80 F 304                BC    NONE,IBSN          BR. IF NO CSW STORED TO BYPASS SENSE
001296   91 02 F 66A                TM    ICSW1+4,X'02'      CHECK FOR UNIT CHECK
00129A   47 10 F 2AE                BC    ALL,IDOSNS         IF YES BR. TO ISSUE SENSE
00129E   91 20 F 0E8                TM    ISW,X'20'          CHECK FOR SECOND CSW
0012A2   47 80 F 304                BC    NONE,IBSN          BR. IF NOT TO BYPASS SENSE
0012A6   91 02 F 672                TM    ICSW2+4,X'02'      CHECK FOR UNIT CHECK
0012AA   47 80 F 304                BC    NONE,IBSN          BR. IF NOT TO BYPASS SENSE
0012AE   58 9E 0 198          IDOSNS L    R9,WT(R14)         LOAD DM WAIT FACTOR
0012B2   88 90 0 004                SRL   R9,4               ADJUST
0012B6   41 80 F 678                LA    R8,ISENSE          LOAD SENSE COMMAND ADDRESS
0012BA   50 8D 0 048                ST    R8,HCAW(R13)       STORE IN CAW
0012BE   9C 00 C 000                SIO   0(R12)             ISSUE SENSE
0012C2   47 70 F 352                BC    NCCO,INDER         BR. IF NOT ACCEPTED
0012C6   9D 00 C 000          ITIOLP TIO  0(R12)             TEST I-O
0012CA   47 40 F 2EE                BC    CC1,ILOKE          BR. IF CSW STORED
0012CE   46 90 F 2C6          ITIC  BCT   R9,ITIOLP
0012D2   47 F0 F 304                BC    UNC,IBSN           BR. UNCONDITIONAL
0012D6   91 40 F 0E8          INDEX1 TM   ISW,X'40'
0012DA   47 10 F 352                BC    ALL,INDER          BR. IF CSW STORED
0012DE   47 F0 F 356                BC    UNC,IDUNCK         BR. UNCONDITIONAL
0012E2   91 20 F 0E8          INDEX2 TM   ISW,X'20'
0012E6   47 10 F 352                BC    ALL,INDER          BR. IF CSW 2 STORED
0012EA   47 F0 F 356                BC    UNC,IDUNCK         BR. UNCONDITIONAL
0012EE   95 0C D 044          ILOKE CLI   HCSW+4(R13),X'0C'  CHECK FOR CE DE ONLY
0012F2   47 70 F 2CE                BC    NCCO,ITIC          BR. IF NOT
0012F6   96 04 F 0E8                OI    ISW,X'04'          INDICATE SENSE DATA RECIEVED
0012FA   D5 00 F 605 B 005          CLC   IACSNS+5(1),5(R11) COMPARE FOR EXPECTED SENSE
001300   47 60 F 352                BC    UNEQ,INDER         BR. IF UNEQUAL
001304   D5 00 F 59F B 004    IBSN   CLC   IACTCC+5(1),4(R11) COMPARE FOR EXPECTED COND. CODE
00130A   47 60 F 352                BC    UNEQ,INDER         BR. IF UNEQUAL
00130E   91 08 B 000                TM    0(R11),X'08'
001312   47 80 F 2D6                BC    NONE,INDEX1        BR. IF NO CSW EXPECTED
001316   91 40 F 0E8                TM    ISW,X'40'
00131A   47 80 F 352                BC    NONE,INDER         BR. IF NO CSW RECIEVED
00131E   48 8B 0 006                LH    R8,6(R11)          LOAD CSW ADDR
001322   40 80 F 32A                STH   R8,ICCSW1+4        STORE IN COMPARE INSTR.
001326   D5 07 F 666 F 666    ICCSW1 CLC   ICSW1(8),ICSW1     COMPARE FOR EXPECTED CSW
00132C   47 60 F 352                BC    UNEQ,INDER         BR. IF UNEQUAL
001330   91 04 B 000                TM    0(R11),X'04'
001334   47 80 F 2E2                BC    NONE,INDEX2        BR. IF NO CSW 2 EXPECTED
001338   91 20 F 0E8                TM    ISW,X'20'
00133C   47 80 F 352                BC    NONE,INDER         BR. IF NO CSW 2 RECIEVED
001340   41 88 0 008                LA    R8,8(R8)           UPDATE TO SECOND CSW
001344   40 80 F 34C                STH   R8,ICCSW2+4
001348   D5 07 F 66E F 66E    ICCSW2 CLC   ICSW2(8),ICSW2     COMPARE FOR EXPECTED CSW 2
00134E   47 80 F 356                BC    EQ,IDUNCK          BR. IF EQUAL
001352   96 01 F 0E8          INDER  OI    ISW,X'01'          INDICATE AN ERROR
001356   92 64 F 396          IDUNCK MVI   IFLAG1,X'64'       SET UP FOR ERROR PRINTOUT
00135A   92 C0 F 522                MVI   IFLAG2,X'C0'
00135E   91 01 F 0E8                TM    ISW,X'01'          CHECK FOR A DETECTED ERROR
001362   47 10 F 376                BC    ALL,IOUTIT         BR. IF ERROR DETECTED
001366   91 01 F 004                TM    SNSW,X'01'         CHECK SECTION SENSE SWITCH 7
00136A   47 80 F 53E                BC    NONE,ILEAVE        BR. IF OFF
00136E   92 24 F 396                MVI   IFLAG1,X'24'       SET UP FOR CORRECT PRINTOUT
001372   92 80 F 522                MVI   IFLAG2,X'80'
001376   95 40 F 605          IOUTIT CLI   IACSNS+5,X'40'     SEE IF INTERVENTION REQUIRED.
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00137A   47 80 F 554                  BC    EQ,RDYM              BR IF YES.
00137E   91 01 F 66A                  TM    ICSW1+4,X'01'        SEE IF UNIT EXCEPTION.
001382   47 10 F 554                  BC    ALL,RDYM             BR IF YES.
001386   D2 01 F 62C B 002            MVC   ITSTNO+5(2),2(R11)   MOVE TEST NUMBER TO PRINT
00138C   0A DD                       SVC   X'DD'                CONVERT TEST NUMBER
00138E   0002                         DC    AL2(2)
001390   062C                         DC    AL2(ITSTNO+5-SECNO)
001392   062C                         DC    AL2(ITSTNO+5-SECNO)
001394   0A D0                       SVC   X'D0'                PRINT TEST NUMBER
001396   64                   IFLAG1  DC    X'64'
001397   09                           DC    X'09'
001398   F627                         DC    AL2(ITSTNO-SECNO+REG)
00139A   41 80 0 004                 LA    R8,4                 ADJUST LINK ADDRESS FOR PRINTOUT
00139E   1B 88                       SR    R11,R8
0013A0   50 80 F 588                 ST    R11,ILINK+5
0013A4   0A DD                       SVC   X'DD'                CONVERT LINK ADDRESS
0013A6   0003                         DC    AL2(3)
0013A8   05B9                         DC    AL2(ILINK+6-SECNO)
0013AA   0588                         DC    AL2(ILINK+5-SECNO)
0013AC   0A D0                       SVC   X'D0'                PRINT LINK ADDRESS
0013AE   A0                           DC    X'A0'
0013AF   10                           DC    X'10'
0013B0   F583                         DC    AL2(ILINK-SECNO+REG)
0013B2   41 BB 0 004                 LA    R11,4(R11)
0013B6   91 80 B 000                 TM    0(R11),X'80'
0013BA   47 10 F 438                 BC    ALL,IOCSW            BR. IF NO I-O COMMAND ISSUED
0013BE   0A DD                       SVC   X'DD'                CONVERT I-O ADDRESS
0013C0   0003                         DC    AL2(3)
0013C2   0688                         DC    AL2(IOADR-SECNO)
0013C4   05A9                         DC    AL2(IOADDR+5-SECNO)
0013C6   0A D0                       SVC   X'D0'                PRINT I-O ADDRESS
0013C8   A0                           DC    X'A0'
0013C9   0F                           DC    X'0F'
0013CA   F5A4                         DC    AL2(IOADDR-SECNO+REG)
0013CC   95 9C F 1AC                 CLI   ISSUE,X'9C'          COMPARE FOR SIO COMMAND
0013D0   47 60 F 426                 BC    UNEQ,ICCOUT          BR. IF NOT
0013D4   50 A0 F 5C8                 ST    R10,ICAW+5           STORE CCW ADDR.
0013D8   0A DD                       SVC   X'DD'                CONVERT CAW
0013DA   0003                         DC    AL2(3)
0013DC   05C9                         DC    AL2(ICAW+6-SECNO)
0013DE   05C8                         DC    AL2(ICAW+5-SECNO)
0013E0   0A D0                       SVC   X'D0'                PRINT CAW
0013E2   A0                           DC    X'A0'
0013E3   0B                           DC    X'0B'
0013E4   F5C3                         DC    AL2(ICAW-SECNO+REG)
0013E6   D2 02 F 5D6 F 5D2           MVC   IBLAH+1(3),ICCW      MOVE -CCW- TO MESSAGE
0013EC   92 16 F 421                 MVI   ICNT,X'16'           ADJUST COUNT
0013F0   D2 07 F 578 A 000   ICWOUT  MVC   WORK(8),0(R10)        MOVE CCW TO WORK AREA
0013F6   45 90 F 40A                 BAL   R9,ICOUT             BR. TO OUTPUT CCW
0013FA   91 C0 A 004                 TM    4(R10),X'C0'         CHECK FOR ANY CHAIN FLAGS
0013FE   47 80 F 426                 BC    NONE,ICCOUT          BR. IF NONE
001402   41 AA 0 008                 LA    R10,8(R10)           UPDATE TO NEXT CCW
001406   47 F0 F 3F0                 BC    UNC,ICWOUT           BR. UNCONDITIONAL
00140A   0A DD                 ICOUT SVC   X'DD'                CONVERT
00140C   0008                         DC    AL2(8)
00140E   0578                         DC    AL2(WORK-SECNO)
001410   0578                         DC    AL2(WORK-SECNO)
001412   D2 07 F 5DA F 578            MVC   IBLAH+5(8),WORK      MOVE TO MESSAGE
001418   D2 07 F 5E3 F 580            MVC   IBLAH+14(8),WORK+8
00141E   0A D0                       SVC   X'D0'                PRINT
001420   A0                           DC    X'A0'
001421   1A                   ICNT    DC    X'1A'
001422   F5D5                         DC    AL2(IBLAH-SECNO+REG)
001424   07 F9                       BCR   UNC,R9               RETURN VIA REG 9
001426   D2 00 F 595 B 004    ICCOUT  MVC   IEXPCC+5(1),4(R11)   MOVE EXP CC TO MESSAGE
00142C   0A D0                       SVC   X'D0'                PRINT EXPECTED COND. CODE
00142E   A0                           DC    X'A0'
00142F   0A                           DC    X'0A'
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001430   F590                         DC    AL2(IEXPCC-SECNO+REG)
001432   0A D0                       SVC   X'D0'                PRINT ACTUAL COND. CODE
001434   A0                           DC    X'A0'
001435   0A                           DC    X'0A'
001436   F59A                         DC    AL2(IACTCC-SECNO+REG)
001438   D2 02 F 5D6 F 5CF    IOCSW   MVC   IBLAH+1(3),ICSW      MOVE -CSW- TO MESSAGE
00143E   92 1A F 421                 MVI   ICNT,X'1A'           ADJUST COUNT
001442   91 08 B 000                 TM    0(R11),X'08'
001446   47 80 F 46A                 BC    NONE,IDIDI           BR. IF NO CSW EXPECTED
00144A   D2 02 F 5EC F 5F2           MVC   IBLAH+23(3),IEXP     MOVE -EXP- TO MESSAGE
001450   48 8B 0 006                 LH    R8,6(R11)
001454   40 80 F 464                 STH   R8,ICHNG1+4
001458   41 88 0 008                 LA    R8,8(R8)
00145C   40 80 F 494                 STH   R8,ICHNG2+4
001460   D2 07 F 578 F 578    ICHNG1  MVC   WORK(8),WORK         MOVE EXPECTED CSW TO WORK AREA
001466   45 90 F 40A                 BAL   R9,ICOUT             BR. TO OUTPUT EXPECTED CSW
00146A   91 40 F 0E8          IDIDI   TM    ISW,X'40'
00146E   47 80 F 482                 BC    NONE,IMORST          BR. IF NO CSW STORED
001472   D2 02 F 5EC F 5EF           MVC   IBLAH+23(3),IACT     MOVE -ACT- TO MESSAGE
001478   D2 07 F 578 F 666           MVC   WORK(8),ICSW1        MOVE ACTUAL CSW TO WORK AREA
00147E   45 90 F 40A                 BAL   R9,ICOUT             BR. TO OUTPUT ACTUAL CSW
001482   91 04 B 000          IMORST  TM    0(R11),X'04'
001486   47 80 F 49A                 BC    NONE,IDID            BR. IF NOT EXPECTING 2 CSWS
00148A   D2 02 F 5EC F 5F2           MVC   IBLAH+23(3),IEXP     MOVE -EXP- TO MESSAGE
001490   D2 07 F 578 F 578    ICHNG2  MVC   WORK(8),WORK         MOVE EXPECTED CSW TO WORK AREA
001496   45 90 F 40A                 BAL   R9,ICOUT             BR. TO OUTPUT EXPECTED CSW 2
00149A   91 20 F 0E8          IDID    TM    ISW,X'20'
00149E   47 80 F 4B2                 BC    NONE,IPAS            BR. IF NO SECOND CSW STORED
0014A2   D2 02 F 5EC F 5EF           MVC   IBLAH+23(3),IACT     MOVE -ACT- TO MESSAGE
0014A8   D2 07 F 578 F 66E           MVC   WORK(8),ICSW2        MOVE CSW TO WORK AREA
0014AE   45 90 F 40A                 BAL   R9,ICOUT
0014B2   D2 00 F 5FA B 005    IPAS    MVC   IEXSNS+5(1),5(R11)   MOVE EXP SENSE TO MESSAGE
0014B8   91 04 F 0E8                 TM    ISW,X'04'
0014BC   47 80 F 4DC                 BC    NONE,IPASS           BR. IF NO SENSE DATA RECIEVED
0014C0   0A DD                       SVC   X'DD'                CONVERT EXPECTED SENSE
0014C2   0001                         DC    AL2(1)
0014C4   05FA                         DC    AL2(IEXSNS+5-SECNO)
0014C6   05FA                         DC    AL2(IEXSNS+5-SECNO)
0014C8   0A D0                       SVC   X'D0'                PRINT EXPECTED SENSE
0014CA   A0                           DC    X'A0'
0014CB   0B                           DC    X'0B'
0014CC   F5F5                         DC    AL2(IEXSNS-SECNO+REG)
0014CE   0A DD                       SVC   X'DD'
0014D0   0001                         DC    AL2(1)
0014D2   0605                         DC    AL2(IACSNS+5-SECNO)
0014D4   0605                         DC    AL2(IACSNS+5-SECNO)
0014D6   0A D0                       SVC   X'D0'                PRINT ACTUAL SENSE DATA
0014D8   A0                           DC    X'A0'
0014D9   0B                           DC    X'0B'
0014DA   F600                         DC    AL2(IACSNS-SECNO+REG)
0014DC   95 30 E 181          IPASS   CLI   SYSMOD(R14),X'30'    CHECK FOR MODEL 30
0014E0   47 60 F 510                 BC    UNEQ,ICUIO           BR IF NOT.
0014E4   D2 0B F 578 E 080    ILOGED  MVC   WORK(12),LOGOUT(R14) MOVE LOG OUT TO WORK AREA
0014EA   0A DD                       SVC   X'DD'                CONVERT
0014EC   000C                         DC    AL2(12)
0014EE   0578                         DC    AL2(WORK-SECNO)
0014F0   0578                         DC    AL2(WORK-SECNO)
0014F2   D2 01 F 610 F 578           MVC   IOLOG+5(2),WORK      MOVE LOG OUT TO MESSAGE
0014F8   D2 05 F 613 F 57A           MVC   IOLOG+8(6),WORK+2
0014FE   D2 05 F 61A F 582           MVC   IOLOG+15(6),WORK+10
001504   D2 05 F 621 F 58A           MVC   IOLOG+22(6),WORK+18
00150A   0A D0                       SVC   X'D0'                PRINT LOG OUT
00150C   A0                           DC    X'A0'
00150D   1C                           DC    X'1C'
00150E   F60B                         DC    AL2(IOLOG-SECNO+REG)
001510   91 02 F 0E8          ICUIO   TM    ISW,X'02'            SEE IF UIO.
001514   47 80 F 520                 BC    NONE,IOPOUT          BR. IF NOT UIO
001518   94 FD F 0E8                 NI    ISW,X'FD'            RESET UIO SWITCH
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00151C   47 F0 F 1F2                  BC    UNC,IWAIT             BR. UNCONDITIONAL
001520   0A D0               IOPOUT SVC   X'D0'                 PRINT LOOP OPTIONS
001522   C0                  IFLAG2 DC    X'C0'
001523   36                         DC    X'36'
001524   F630                       DC    AL2(IOPT1-SECNO+REG)
001526   0A D0                      SVC   X'D0'                 SPACE A LINE
001528   A0                         DC    X'A0'
001529   01                         DC    X'01'
00152A   F5B3                       DC    AL2(ILINK-SECNO+REG)
00152C   50 AD 0 048                ST    R10,HCAW(R13)         STORE CAW
001530   91 C0 F 004                TM    SNSW,X'C0'            CHECK SECTION SENSE SWITCH 0 AND 1
001534   47 50 F 156                BC    ANY,ITRY1             BR. IF ANY ON
001538   91 80 F 0E8                TM    ISW,X'80'
00153C   07 15                      BCR   ALL,R5                RETURN VIA REG 5 IF HANG UP
00153E   91 08 B 000         ILEAVE TM    0(R11),X'08'
001542   47 80 F 54A                BC    NONE,IUP              BR. IF NO CSW EXPECTED
001546   41 BB 0 002                LA    R11,2(R11)            UPDATE LINK ADDRESS FOR RETURN
00154A   41 BB 0 006         IUP    LA    R11,6(R11)
00154E   98 89 F 570                LM    R8,R9,ISAVE           RESTORE REGS 8 AND 9
001552   07 FB                      BCR   UNC,R11               RETURN VIA REG 11
                             ************************************************************
                             *     INTERVENTION REQUIRED MESSAGE
                             ************************************************************
001554   0A D0               RDYM   SVC   X'D0'                 PRINT -MAKE DEVICE READY-
001556   2410                       DC    X'2410'
001558   F6B0                       DC    AL2(MDR-SECNO+REG)
00155A   0A DA                      SVC   X'DA'                 -HALT-
00155C   9D 00 C 000                TIO   0(R12)                TEST I-O
001560   0A D0                      SVC   X'D0'                 PRINT A BLANK.
001562   8001                       DC    X'8001'
001564   F6B0                       DC    AL2(MDR-SECNO+REG)
001566   47 F0 F 136                BC    UNC,IRETRY            BR TO CONTINUE.
                             ************************************************************
                             *     I-O HANDLER WORK AREA.
                             ************************************************************
00156A                              CNOP  0,8
00156A   07 00                      BCR   0,0
00156C   07 00                      BCR   0,0
00156E   07 00                      BCR   0,0
001570   0000000000000000    ISAVE  DC    XL8'0'
001578                       WORK   DS    24C
001590   40C3C34040E740C5E7  IEXPCC DC    C' CC  X EXP'
001599   D7
00159A   40C3C34040E740C1C3  IACTCC DC    C' CC  X ACT'
0015A3   E3
0015A4   40C1C4D940E7E7E7E7  IOADDR DC    C' ADR XXXXXX XIO'
0015AD   E7E740E7C9D6
0015B3   00                         DC    X'00'
0015B4                              CNOP  0,4
                     0015B3         ORG   *-1
0015B3   40C1C4D940E7E7E7E7  ILINK  DC    C' ADR XXXXXX LINK'
0015BC   E7E740D3C9D5D2
0015C3   00                         DC    X'00'
0015C4                              CNOP  0,4
                     0015C3         ORG   *-1
0015C3   40C3C1E640E7E7E7E7  ICAW   DC    C' CAW XXXXXX '
0015CC   E7E740
0015CF   C3E2E6              ICSW   DC    C'CSW'
0015D2   C3C3E6              ICCW   DC    C'CCW'
0015D5   40C3E2E640E7E7E7E7  IBLAH  DC    C' CSW XXXXXXXX XX'
0015DE   E7E7E7E740E7E7
0015E5   E7E7E7E7E7E740C5E7         DC    C'XXXXXX EXP'
0015EE   D7
0015EF   C1C3E3              IACT   DC    C'ACT'
0015F2   C5E7D7              IEXP   DC    C'EXP'
0015F5   40E2D5E240E7E740C5  IEXSNS DC    C' SNS XX EXP'
0015FE   E7D7
001600   40E2D5E240E7E740C1  IACSNS DC    C' SNS XX ACT'
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001609   C3E3
00160B   40D3D6C740E7E740E7  IOLOG  DC    C' LOG XX XXXXXX X'
001614   E7E7E7E7E7E740E7
00161B   E7E7E7E7E740E7E7E7         DC    C'XXXXX XXXXXX'
001624   E7E7E7
001627   40E3E2E340E7E7E7E7  ITSTNO DC    C' TST XXXX'
001630   40E2C5E340E2E240F0  IOPT1  DC    C' SET SS 0 ON FOR'
001639   40D6D540C6D6D9
001640   40D3D6D6D740D6D540         DC    C' LOOP ON XIO, SS'
001649   E7C9D66B40E2E2
001650   40F140D6D540C6D6D9         DC    C' 1 ON FOR TIO SI'
001659   40E3C9D640E2C9
001660   D640D3D6D6D7               DC    C'O LOOP'
001666   0000000000000000    ICSW1  DC    XL8'0'
00166E   0000000000000000    ICSW2  DC    XL8'0'
001678   04 001605 0000 0001 ISENSE CCW   X'04',IACSNS+5,X'00',1
001680   0000000000000000    ISLAVE DC    XL8'0'                REGISTER SAVE AREA
001688   0011AC              IOADR  DC    AL3(ISSUE)
00168B   FE                  MSK1   DC    X'FE'
00168C   01                  MSK2   DC    X'01'
00168D   00                  RTSV   DC    X'00'                 SAVE RT NO. FOR HANGUP.
00168E   40E4C9D640C6D9D6D4  IUNEX  DC    C' UIO FROM DEVICE'
001697   40C4C5E5C9C3C5
00169E   40E7E7E7E7                 DC    C' XXXX'
0016A3   40D9E3D540C2E8D7C1  BYPASS DC    C' RTN BYPASSED'
0016AC   E2E2C5C4
0016B0   40D4C1D2C540C4C5E5  MDR    DC    C' MAKE DEVICE RDY'
0016B9   C9C3C540D9C4E8
                             ************************************************************
                             *                 INITIALIZE ROUTINE
                             ************************************************************
0016C0   1B DD               INIT   SR    R13,R13               ZERO REG 13
0016C2   91 40 E 196                TM    406(R14),X'40'        CHECK FOR FORCED PROBLEM STATE
0016C6   47 80 F 6CC                BC    NONE,NITWIT           BR. IF NOT
0016CA   18 DF                      LR    R13,R15               SET UP FOR PROBLEM STATE
0016CC   58 C0 F 0E4         NITWIT L     R12,UNIT2             PICK UP THE PUNCH UNIT TABLE.
0016D0   54 C0 F 718                N     R12,MOD50             SAVE ONLY THE PUNCH ADDR.
0016D4   50 C0 F B9C                ST    R12,PCH               SAVE IT
0016D8   58 C0 F 0E0                L     R12,UNIT1             LOAD REG 12 WITH UNIT TABLE ENTRY
0016DC   54 C0 F 718                N     R12,MOD50             SAVE ONLY THE READER ADDR.
0016E0   50 C0 F B98                ST    R12,RDR               SAVE IT
0016E4   91 80 F 0E8         BLOOP  TM    ISW,X'80'             CHECK FOR HANG UP
0016E8   47 10 F 6FC                BC    ALL,HANGUP            BR. IF DETECTED
0016EC   92 40 F 71C                MVI   RDAR,C' '             CLEAR WORK AREA.
0016F0   D2 9E F 71D F 71C          MVC   RDAR+1(159),RDAR
0016F6   41 A0 F B20                LA    R10,NOOP              PUT ADDR OF NOOP INTO 10.
0016FA   07 F4                      BCR   UNC,R4                RETURN VIA REG 4
0016FC   D2 00 F 003 F 68D   HANGUP MVC   SECNO+3(1),RTSV       RESTORE RT NO.
001702   0A D0                      SVC   X'D0'                 PRINT
001704   64                         DC    X'64'                 -PREVIOUS HANGUP DETECTED-
001705   1A                         DC    X'1A'
001706   F7BC                       DC    AL2(HUNG-SECNO+REG)
001708   96 01 F 0E8                OI    ISW,X'01'             TURN ON ERROR SWITCH.
00170C   45 50 F 2AE                BAL   R5,IDOSNS             BR. TO OUTPUT AVAILABLE INFO
001710   92 00 F 0E8                MVI   ISW,X'00'             RESET HANGUP SWITCH
001714   47 F0 F 6E4                BC    UNC,BLOOP
001718                              CNOP  0,4
001718   00003FFF            MOD50  DC    X'00003FFF'
00171C                       RDAR   DS    160C
0017BC   40D7D9C5E5C9D6E4E2  HUNG   DC    C' PREVIOUS HANG U'
0017C5   40C8C1D5C740E4
0017CC   D740C4C5E3C5C3E3C5         DC    C'P DETECTED'
0017D5   C4
0017D6                              CNOP  0,4
0017D6   07 00                      BCR   0,0
                             ************************************************************
                             * ROUTINE 01 - ISSUE A TEST I-O TO THE READER AND THE PUNCH. THE
                             *              EXPECTED CONDITION CODE FROM EACH DEVICE SHOULD BE
```

```
0017D8    01
0017D9    0007FC
0017DC    45 40 F 6CO
0017E0    45 BO F OFE
0017E4    0000
0017E6    0010
0017E8    F000
0017EA    58 CO F B9C
0017EE    45 BO F OFE
0017F2    0000
0017F4    0020
0017F6    F000
0017F8    0A D6
0017FA
0017FA    07 00
```

```
*                ZERO.
*                IF CONDITION CODE 1 IS RETURNED,THE DEVICE IS EITHER
*                NOT READY OR SOME STATUS WAS STILL PENDING IN THE
*                DEVICE FROM THE LAST START I-O EXECUTED ON THE DEVICE.
*                IF CONDITION CODE 2 IS RETURNED, CHANNEL END FROM THE
*                PREVIOUS START I-O IS STILL PENDING.
*                IF CONDITION CODE 3 IS RETURNED, THE ADDRESS OF THE
*                DEVICE THAT THE TEST I-O WAS ISSUED TO MAY BE WRONG
*                -POSSIBLE WRONG DM UDT ENTRY- OR THE CONTROL UNIT COULD
*                NOT DECODE IT PROPERLY.
*****************************************************************************
ROUT01 DC     X'01'                ROUTINE NUMBER
       DC     AL3(ROUT02-SECNO)    ADDRESS OF NEXT ROUTINE
       BAL    R4,INIT              BR. TO INITIALIZE
START  BAL    R11,ITIO             BR TO ISSUE TEST I-O.
       DC     X'0000'              CTRL SWITCHES
       DC     X'0010'              T E S T   N U M B E R
       DC     X'F000'              EXP COND. CODE AND SENSE
       L      R12,PCH              PICK UP THE PUNCH ADDR.
       BAL    R11,ITIO             BR TO ISSUE TEST I-O
       DC     X'0000'              CTRL SWITCHES.
       DC     X'0020'              T E S T   N U M B E R
       DC     X'F000'              EXP COND. CODE AND SENSE
       SVC    X'D6'                ROUTINE EXIT
       CNOP   0,4
     BCR      0,0
*****************************************************************************
* ROUTINE 02 - ISSUE A READ AND STACKER SELECT R1 TO THE READER.
*              ALLOW ONLY CHANNEL END TO BE ACCEPTED. ISSUE A
*              DIAGNOSTIC WRITE TO THE PUNCH -ATTEMPTS TO WRITE DATA
*              INTO THE READ BUFFER-
*              TEST FOR COMMAND REJECT IN THE PUNCH SENSE BYTE.
*              ACCEPT DEVICE END FROM THE READER.
*              RE-ISSUE DIAGNOSTIC WRITE AND CHECK TO SEE IF COMMAND
*              WAS ACCEPTED.
*****************************************************************************
```

```
0017FC    02
0017FD    00086C
001800    45 40 F 6C0
001804    58 CO F B98
001808    41 AO F B30
00180C    45 BO F 112
001810    2A00
001812    0030
001814    F000
001816    FBA0
001818    45 40 F AE6
00181C    0001
00181E    41 AO F B00
001822    58 CO F B9C
001826    45 BO F 112
00182A    4800
00182C    0040
00182E    F180
001830    FBB0
001832    58 9E 0 198
001836    88 90 0 002
00183A    46 90 F 83A
00183E    58 CO F B98
001842    45 BO F OFE
001846    4800
001848    0050
00184A    F100
00184C    FBB8
00184E    45 40 F AE6
001852    0001
001854    58 CO F B9C
001858    41 AO F B00
```

```
ROUT02 DC     X'02'                ROUTINE NUMBER
       DC     AL3(ROUT03-SECNO)    ADDRESS OF NEXT ROUTINE
       BAL    R4,INIT              BR. TO INITIALIZE
       L      R12,RDR              PUT READER ADDR INTO REG 12.
       LA     R10,RD1              PUT RD FD STK SEL R1 ADDR INTO 10.
       BAL    R11,ISIO             BR TO ISSUE START I-O.
       DC     X'2A00'              CTRL SWITCHES
       DC     X'0030'              T E S T   N U M B E R
       DC     X'F000'              EXP COND. CODE AND SENSE.
       DC     AL2(EXP1-SECNO+REG)  EXP CSW ADDRESS
       BAL    R4,DWBF              BR TO GENERATE DIAGNOSTIC WRITE DATA
       DC     X'0001'              DATA
       LA     R10,DGWR             PUT ADDR. OF DIAG WRITE INTO 10.
       L      R12,PCH              PUT ADDR OF PCH INTO 12.
       BAL    R11,ISIO             BR TO ISSUE START I-O.
       DC     X'4800'              CTRL SWITCHES
       DC     X'0040'              T E S T   N U M B E R
       DC     X'F180'              EXP COND. CODE AND SENSE
       DC     AL2(EXP2-SECNO+REG)  EXP CSW ADDRESS.
       L      R9,WT(R14)           PUT 10 SEC WAIT IN REG 9.
       SRL    R9,2                 CUT IT DOWN TO 2.5 SECS.
       BCT    R9,*                 TIME OUT.
       L      R12,RDR              PUT RDR ADDR. INTO 12.
       BAL    R11,ITIO             BR TO ISSUE TEST I-O.
       DC     X'4800'              CTRL SWITCHES
       DC     X'0050'              T E S T   N U M B E R
       DC     X'F100'              EXP COND. CODE AND SENSE.
       DC     AL2(EXP3-SECNO+REG)  EXP CSW ADDRESS.
       BAL    R4,DWBF              BR TO GENERATE COL BINARY DATA.
       DC     X'0001'              DATA
       L      R12,PCH              PUT ADDR. OF PCH INTO 12.
       LA     R10,DGWR             PUT ADDR OF DIAG WRITE CCW INTO 10.
```



```
00185C    45 BO F 112
001860    2800
001862    0060
001864    F000
001866    FBC0
001868    0A D6
00186A
00186A    07 00
```

```
       BAL    R11,ISIO             BR TO ISSUE START I-O.
       DC     X'2800'              CTRL SWITCHES
       DC     X'0060'              T E S T   N U M B E R
       DC     X'F000'              EXP COND. CODE AND SENSE.
       DC     AL2(EXP4-SECNO+REG)  EXP CSW ADDRESS.
       SVC    X'D6'                ROUTINE EXIT
       CNOP   0,4
     BCR      0,0
*****************************************************************************
* ROUTINE 03 - ISSUE A DIAGNOSTIC WRITE TO LOAD THE READ BUFFER WITH
*              MORE THAN ONE DIGIT BETWEEN ROWS 1 THRU 7.
*              ISSUE A READ AND FEED AND TEST FOR UNIT CHECK IN STATUS
*              AND DATA CHECK IN THE SENSE BYTE.
*              ISSUE ANOTHER READ AND FEED TO THE READER AND TEST
*              FOR AN ACCEPTED COMMAND DUE TO THE BUFFER BEING READ
*              INTO WITH VALID DATA FROM THE FIRST READ.
*****************************************************************************
ROUT03 DC     X'03'                ROUTINE NUMBER
       DC     AL3(ROUT04-SECNO)    ADDRESS OF NEXT ROUTINE
       BAL    R4,INIT              BR. TO INITIALIZE
       L      R12,PCH              PUT THE PCH ADDR. INTO REG 12.
       LA     R10,DGWR             PUT ADDR.
       BAL    R4,DWBF              BR TO COL BINARY GENERATOR.
       DC     X'0120'              DATA
       BAL    R11,ISIO             BR TO ISSUE START I-O.
       DC     X'2800'              CTRL SWITCHES
       DC     X'0070'              T E S T   N U M B E R
       DC     X'F000'              EXP COND. CODE AND SENSE
       DC     AL2(EXP4-SECNO+REG)  EXP CSW ADDRESS
       L      R12,RDR              PUT RDR ADDR INTO REG 12.
       LA     R10,RD1              PUT RD CCW ADDR INTO 10.
       BAL    R11,ISIO             BR TO ISSUE START I-O.
       DC     X'3C00'              CTRL SWITCHES
       DC     X'0080'              T E S T   N U M B E R
       DC     X'F008'              EXP COND. CODE AND SENSE
       DC     AL2(EXP14-SECNO+REG) EXP CSW ADDRESS.
       BAL    R11,ISIO             BR TO ISSUE START I-O
       DC     X'3C00'              CTRL SWITCHES
       DC     X'0090'              T E S T   N U M B E R
       DC     X'F000'              EXP COND. CODE AND SENSE
       DC     AL2(EXP1-SECNO+REG)  EXP CSW ADDRESS.
       SVC    X'D6'                ROUTINE EXIT
       CNOP   0,4
*****************************************************************************
* ROUTINE 04 - ISSUE A READ NO FEED AND THEN FOLLOW BY A FEED AND
*              STACKER SELECT R1. STATUS IS TESTED FOR CHANNEL END AND
*              DEVICE END TOGETHER FOR THE READ NO FEED COMMAND.
*              STATUS FOR THE FEED AND STACKER SELECT IS TESTED FOR
*              SEPARATE CHANNEL AND DEVICE END INTERRUPTS.
*****************************************************************************
```

```
00186C    03
00186D    0008B0
001870    45 40 F 6C0
001874    58 CO F B9C
001878    41 AO F B00
00187C    45 40 F AE6
001880    0120
001882    45 BO F 112
001886    2800
001888    0070
00188A    F000
00188C    FBC0
00188E    58 CO F B98
001892    41 AO F B30
001896    45 BO F 112
00189A    3C00
00189C    0080
00189E    F008
0018A0    FC20
0018A2    45 BO F 112
0018A6    3C00
0018A8    0090
0018AA    F000
0018AC    FBA0
0018AE    0A D6
0018B0
```

```
0018B0    04
0018B1    0008E0
0018B4    45 40 F 6C0
0018B8    58 CO F B98
0018BC    41 AO F B08
0018C0    45 BO F 112
0018C4    2800
0018C6    0100
0018C8    F000
0018CA    FBD0
0018CC    41 AO F B38
0018D0    45 BO F 112
0018D4    3C00
0018D6    0110
0018D8    F100
0018DA    FC60
0018DC    0A D6
0018DE
```

```
ROUT04 DC     X'04'                ROUTINE NUMBER
       DC     AL3(ROUT05-SECNO)    ADDRESS OF NEXT ROUTINE
       BAL    R4,INIT              BR. TO INITIALIZE
       L      R12,RDR              PUT THE RDR ADDR. INTO REG 12.
       LA     R10,DGRD             PUT READ NO FEED CCW ADDR INTO 10.
       BAL    R11,ISIO             BR TO ISSUE START I-O
       DC     X'2800'              CTRL SWITCHES
       DC     X'0100'              T E S T   N U M B E R
       DC     X'F000'              EXP COND. CODE AND SENSE.
       DC     AL2(EXP6-SECNO+REG)  EXP CSW ADDRESS.
       LA     R10,RFS1             PUT FEED CCW ADDR. INTO 10.
       BAL    R11,ISIO             BR TO ISSUE START I-O
       DC     X'3C00'              CTRL SWITCHES
       DC     X'0110'              T E S T   N U M B E R
       DC     X'F100'              EXP COND. CODE AND SENSE
       DC     AL2(EXP15-SECNO+REG)
       SVC    X'D6'                ROUTINE EXIT
       CNOP   0,4
```

```
0018DE  07 00              BCR    0,0
                    ***********************************************************************
                    * ROUTINE 05 - ISSUE A DIAGNOSTIC WRITE TO THE PUNCH WHICH SHOULD
                    *              FILL THE READ BUFFER WITH DATA THAT IS INVALID TO A
                    *              NORMAL READ COMMAND.
                    *              ISSUE A FEED AND STACKER SELECT R1 TO THE READER.
                    *              THIS COMMAND SHOULD BE REJECTED DUE TO TWO FEEDS IN A
                    *              ROW BEING PERFORMED ON THE READER. A SENSE COMMAND IS
                    *              ISSUED TO THE READER AND TESTED FOR THE COMMAND REJECT
                    *              BIT ON THE SENSE BYTE.
                    ***********************************************************************
0018E0  05          ROUT05 DC     X'05'                   ROUTINE NUMBER
0018E1  000918             DC     AL3(ROUT06-SECNO)       ADDRESS OF NEXT ROUTINE
0018E4  45 40 F 6C0        BAL    R4,INIT                 BR. TO INITIALIZE
0018E8  58 C0 F B9C        L      R12,PCH                 PUT THE PCH ADDR. INTO REG 12.
0018EC  41 A0 F B00        LA     R10,DGWR                PUT ADDR OF DIAG WR CCW INTO 10.
0018F0  45 40 F AE6        BAL    R4,DWBF                 BR TO COL BINARY GENERATOR.
0018F4  3F3F               DC     X'3F3F'                 WRITE DATA.
0018F6  45 B0 F 112        BAL    R11,ISIO                BR TO ISSUE START I-O
0018FA  2A00               DC     X'2A00'                 CTRL SWITCHES
0018FC  0120               DC     X'0120'                 T E S T   N U M B E R
0018FE  F000               DC     X'F000'                 EXP COND. CODE AND SENSE
001900  FBC0               DC     AL2(EXP4-SECNO+REG)     EXP CSW ADDRESS.
001902  58 C0 F B98        L      R12,RDR                 PUT RDR ADDR INTO REG 12.
001906  41 A0 F B38        LA     R10,RFS1                PUT FEED CCW ADDR. INTO 10.
00190A  45 B0 F 112        BAL    R11,ISIO                BR TO ISSUE START I-O
00190E  2800               DC     X'2800'                 CTRL SWITCHES
001910  0130               DC     X'0130'                 T E S T   N U M B E R
001912  F180               DC     X'F180'                 EXP COND. CODE AND SENSE
001914  FBB0               DC     AL2(EXP2-SECNO+REG)     EXP CSW 1 ADDR.
001916  0A D6              SVC    X'D6'                   ROUTINE EXIT
001918                     CNOP   0,4
                    ***********************************************************************
                    * ROUTINE 06 - ISSUE A DIAGNOSTIC WRITE COMMAND TO THE PUNCH TO FILL
                    *              THE READ BUFFER WITH VALID DATA MODE 1 DATA.
                    *              ISSUE A READ NO FEED WITH A SENSE COMMAND FOLLOWING
                    *              TO ALLOW TESTING THE SENSE BYTE.
                    *              ISSUE A DIAGNOSTIC WRITE COMMAND TO WRITE INVALID DATA
                    *              INTO THE READ BUFFER.
                    *              ISSUE A FEED AND STACK SELECT R1 FOLLOWED BY A SENSE
                    *              COMMAND AND TEST FOR EXPECTED NORMAL OPERATION.
                    *              ISSUE A READ FEED AND STACK SELECT R1 AND EXPECT NORMAL
                    *              OPERATION DUE TO THE READ BUFFER BEING FILLED WITH
                    *              VALID DATA BY THE LAST FEED OPERATION.
                    ***********************************************************************
001918  06          ROUT06 DC     X'06'                   ROUTINE NUMBER
001919  000990             DC     AL3(ROUT07-SECNO)       ADDRESS OF NEXT ROUTINE
00191C  45 40 F 6C0        BAL    R4,INIT                 BR. TO INITIALIZE
001920  58 C0 F B9C        L      R12,PCH                 PUT THE PCH ADDR. INTO REG 12.
001924  41 A0 F B00        LA     R10,DGWR                PUT DIAG WR. CCW ADDR. INTO 10.
001928  45 40 F AE6        BAL    R4,DWBF                 BR TO COL BINARY GENERATOR.
00192C  0001               DC     X'0001'                 VALID MODE 1 DATA.
00192E  45 B0 F 112        BAL    R11,ISIO                BR TO ISSUE START I-O
001932  2800               DC     X'2800'                 CTRL SWITCHES
001934  0140               DC     X'0140'                 T E S T   N U M B E R
001936  F000               DC     X'F000'                 EXP COND. CODE AND SENSE.
001938  FBC0               DC     AL2(EXP4-SECNO+REG)     EXP CSW ADDRESS.
00193A  58 C0 F B98        L      R12,RDR                 PUT THE RDR ADDR. INTO REG 12.
00193E  41 A0 F B08        LA     R10,DGRD                PUT RD NO FD CCW ADDR INTO 10.
001942  45 B0 F 112        BAL    R11,ISIO                BR TO ISSUE START I-O.
001946  2800               DC     X'2800'                 CTRL SWITCHES
001948  0150               DC     X'0150'                 T E S T   N U M B E R
00194A  F000               DC     X'F000'                 EXP COND. CODE AND SENSE.
00194C  FBD0               DC     AL2(EXP6-SECNO+REG)     EXP CSW ADDRESS.
00194E  58 C0 F B9C        L      R12,PCH                 PUT ADDR OF PCH INTO REG. 12.
001952  41 A0 F B00        LA     R10,DGWR                PUT DIAG WR CCW ADDR INTO 10.
001956  45 40 F AE6        BAL    R4,DWBF                 BR TO COL BINARY GENERATOR.
00195A  3F3F               DC     X'3F3F'                 INV. DATA.
```



```
00195C  45 B0 F 112        BAL    R11,ISIO                BR TO ISSUE START I-O
001960  2800               DC     X'2800'                 CTRL SWITCHES
001962  0160               DC     X'0160'                 T E S T   N U M B E R
001964  F000               DC     X'F000'                 EXP COND. CODE AND SENSE.
001966  FBC0               DC     AL2(EXP4-SECNO+REG)     EXP CSW ADDRESS.
001968  58 C0 F B98        L      R12,RDR                 PUT RDR ADDR INTO REG 12.
00196C  41 A0 F B38        LA     R10,RFS1                PUT FD SK SEL R1 CCW ADDR. IN 10.
001970  45 B0 F 112        BAL    R11,ISIO                BR TO ISSUE START I-O.
001974  3C00               DC     X'3C00'                 CTRL SWITCHES
001976  0170               DC     X'0170'                 T E S T   N U M B E R
001978  F100               DC     X'F100'                 EXP COND CODE AND SENSE.
00197A  FC60               DC     AL2(EXP15-SECNO+REG)
00197C  41 A0 F B30        LA     R10,RD1                 PUT RD FD CCW ADDR. INTO 10.
001980  45 B0 F 112        BAL    R11,ISIO                BR TO ISSUE START I-O.
001984  3C00               DC     X'3C00'                 CTRL SWITCHES
001986  0180               DC     X'0180'                 T E S T   N U M B E R
001988  F000               DC     X'F000'                 EXP COND. CODE AND SENSE.
00198A  FBA0               DC     AL2(EXP1-SECNO+REG)     EXP CSW ADDRESS.
00198C  0A D6              SVC    X'D6'                   ROUTINE EXIT
00198E                     CNOP   0,4
00198E  07 00              BCR    0,0
                    ***********************************************************************
                    * ROUTINE 07 - ISSUE A READ FEED STACKER SELECT R1 COMMAND CHAINED
                    *              INTO ANOTHER READ FEED STACKER SELECT R1. THE SLI FLAG
                    *              IS LEFT OUT OF THE COMMANDS AND 80 CHARACTERS REQUESTED
                    *              BY EACH READ SHOULD NOT BRING WRONG LENGTH RECORD INTO
                    *              STATUS.
                    ***********************************************************************
001990  07          ROUT07 DC     X'07'                   ROUTINE NUMBER
001991  0009B0             DC     AL3(ROUT08-SECNO)       ADDRESS OF NEXT ROUTINE
001994  58 C0 F B98        L      R12,RDR                 PUT THE READER ADDR INTO REG 12.
001998  41 A0 F B40        LA     R10,CHRD                PUT ADDR OF CHAINED CCWS INTO-10.
00199C  92 50 F B47        MVI    CHRD+7,80               PUT COUNT OF 80 INTO COMMAND 1.
0019A0  45 B0 F 112        BAL    R11,ISIO                BR TO ISSUE START I-O
0019A4  3C00               DC     X'3C00'                 CTRL SWITCHES
0019A6  0190               DC     X'0190'                 T E S T   N U M B E R
0019A8  F000               DC     X'F000'                 EXP COND. CODE AND SENSE
0019AA  FBE8               DC     AL2(EXP8-SECNO+REG)     EXP 1ST CSW ADDR.
0019AC  0A D6              SVC    X'D6'                   ROUTINE EXIT
0019AE                     CNOP   0,4
0019AE  07 00              BCR    0,0
                    ***********************************************************************
                    * ROUTINE 08 - ISSUE TWO READ FEED STACKER SELECT R1 COMMANDS COMMAND
                    *              CHAINED WITH THE FIRST COMMAND REQUESTING ONLY 79
                    *              CHARACTERS. CHAINING IS EXPECTED TO BE BROKEN BY THE
                    *              WRONG LENGTH RECORD INDICATION AND STATUS IS TESTED
                    *              FOR THIS CONDITION.
                    ***********************************************************************
0019B0  08          ROUT08 DC     X'08'                   ROUTINE NUMBER
0019B1  0009D4             DC     AL3(ROUT09-SECNO)       ADDRESS OF NEXT ROUTINE
0019B4  45 40 F 6C0        BAL    R4,INIT                 BR. TO INITIALIZE
0019B8  41 A0 F B40        LA     R10,CHRD                PUT CHAIN CMD CCW ADDR. INTO 10.
0019BC  58 C0 F B98        L      R12,RDR                 PUT RDR ADDR. INTO REG 12.
0019C0  92 4F F B47        MVI    CHRD+7,79               MOVE 79 INTO CCW COUNT.
0019C4  45 B0 F 112        BAL    R11,ISIO                BR TO ISSUE START I-O.
0019C8  3C00               DC     X'3C00'                 CTRL SWITCHES
0019CA  0200               DC     X'0200'                 T E S T   N U M B E R
0019CC  F000               DC     X'F000'                 EXP COND. CODE AND SENSE
0019CE  FBF8               DC     AL2(EXP9-SECNO+REG)     EXP CSW ADDRESS.
0019D0  0A D6              SVC    X'D6'                   ROUTINE EXIT
0019D2                     CNOP   0,4
0019D2  07 00              BCR    0,0
                    ***********************************************************************
                    * ROUTINE 09 - ISSUE A READ FEED STACKER SELECT R1 COMMAND WHICH DATA
                    *              CHAINS INTO FOUR DIFFERENT PLACES. THE TOTAL COUNT WILL
                    *              BE EQUAL TO 80, THEREFORE, NO WRONG LENGTH RECORD
                    *              INDICATION SHOULD APPEAR IN STATUS.
                    ***********************************************************************
```

```
0019D4   09
0019D5   0009FC
0019D8   45 40 F 6C0
0019DC   58 C0 F B98
0019E0   41 A0 F B50
0019E4   92 14 F B57
0019E8   92 80 F B64
0019EC   45 B0 F 112
0019F0   3C00
0019F2   0210
0019F4   F000
0019F6   FC08
0019F8   0A D6
0019FA
0019FA   07 00

ROUT09 DC    X'09'                  ROUTINE NUMBER
       DC    AL3(ROUT10-SECNO)      ADDRESS OF NEXT ROUTINE
       BAL   R4,INIT                BR. TO INITIALIZE
       L     R12,RDR                PUT THE RDR ADDR. INTO REG 12.
       LA    R10,DCNRD              PUT ADDR. OF CCW INTO REG 10.
       MVI   DCNRD+7,20             PUT 20 INTO THE FIRST CCW.
       MVI   DCNRD+20,X'80'         PUT CHAIN FLAG ON IN THIRD CCW.
       BAL   R11,ISIO               BR TO ISSUE START I-O.
       DC    X'3C00'                CTRL SWITCHES
       DC    X'0210'                T E S T   N U M B E R
       DC    X'F000'                EXP COND. CODE AND SENSE.
       DC    AL2(EXP10-SECNO+REG)   EXP 1ST CSW ADDR.
       SVC   X'D6'                  ROUTINE EXIT
       CNOP  0,4
     BCR     0,0
*************************************************************************
* ROUTINE 10 - ISSUE A READ FEED STACKER SELECT R1 COMMAND WHICH DATA
*              CHAINS INTO FOUR DIFFERENT PLACES. THE TOTAL COUNT WILL
*              BE EQUAL TO 100 THEREFORE, WRONG LENGTH RECORD SHOULD
*              APPEAR IN STATUS, AND CHAINING SHOULD BE BROKEN.
*************************************************************************
0019FC   10
0019FD   000A24
001A00   45 40 F 6C0
001A04   58 C0 F B98
001A08   41 A0 F B50
001A0C   92 28 F B57
001A10   92 80 F B64
001A14   45 B0 F 112
001A18   3C00
001A1A   0220
001A1C   F000
001A1E   FC70
001A20   0A D6
001A22
001A22   07 00

ROUT10 DC    X'10'                  ROUTINE NUMBER
       DC    AL3(ROUT11-SECNO)      ADDRESS OF NEXT ROUTINE.
       BAL   R4,INIT                BR TO INITIALIZE.
       L     R12,RDR                PUT RDR ADDRESS INTO REG 12.
       LA    R10,DCNRD              PUT CCW ADDRESS INTO REG 10.
       MVI   DCNRD+7,40             PUT COUNT OF 40 INTO 1ST CCW.
       MVI   DCNRD+20,X'80'         TURN ON ONLY CHN DATA FLAG.
       BAL   R11,ISIO               BR TO ISSUE START I-O
       DC    X'3C00'                CTRL SWITCHES
       DC    X'0220'                T E S T   N U M B E R
       DC    X'F000'                EXP COND. CODE AND SENSE.
       DC    AL2(EXP11-SECNO+REG)   EXP 1ST CSW ADDR.
       SVC   X'D6'                  ROUTINE EXIT
       CNOP  0,4
     BCR     0,0
*************************************************************************
* ROUTINE 11 - ISSUE A READ FEED STACKER SELECT R1 COMMAND DATA CHAINED
*              INTO FOUR DIFFERENT PLACES WITH THE SLI FLAG ON IN THE
*              COMMAND THAT REACHES TOTAL RECORD COUNT. EXPECT CHAINING
*              TO BE BROKEN BUT WRONG LENGTH RECORD SHOULD NOT APPEAR
*              IN STATUS.
*************************************************************************
001A24   11
001A25   000A4C
001A28   45 40 F 6C0
001A2C   58 C0 F B98
001A30   41 A0 F B50
001A34   92 28 F B57
001A38   92 A0 F B64
001A3C   45 B0 F 112
001A40   3C00
001A42   0230
001A44   F000
001A46   FC70
001A48   0A D6
001A4A
001A4A   07 00

ROUT11 DC    X'11'                  ROUTINE NUMBER
       DC    AL3(ROUT12-SECNO)      ADDR OF NEXT ROUTINE.
       BAL   R4,INIT
       L     R12,RDR                PUT RDR ADDR INTO REG 12.
       LA    R10,DCNRD              PUT CCW ADDR INTO 10.
       MVI   DCNRD+7,40             PUT 40 INTO CCW COUNT.
       MVI   DCNRD+20,X'A0'         TURN ON THE SLI FLAG IN THIRD CCW.
       BAL   R11,ISIO               BRTO ISSUE START I-O.
       DC    X'3C00'                CTRL SWITCHES
       DC    X'0230'                T E S T   N U M B E R
       DC    X'F000'                EXP COND. CODE AND SENSE.
       DC    AL2(EXP11-SECNO+REG)   EXP 1ST CSW ADDR.
       SVC   X'D6'                  ROUTINE EXIT
       CNOP  0,4                    ALIGN
     BCR     0,0
*************************************************************************
* ROUTINE 12 - IF THE 1400 COMPATIBILITY BIT IS ON IN THE UDT ENTRY
*              FOR THE 2540, THE FOLLOWING TEST IS PERFORMED ON THE
*              READER-
*              A 1400 COMPATIBILITY READ NO FEED COMMAND CHAINED TO A
*              1400 COMPATIBILITY FEED AND STACKER SELECT R1 IS ISSUED
*              TO THE 2540 READER.
*              EXPECTED STATUS IS CHANNEL END IN THE FIRST CSW AND
*              DEVICE END IN THE SECOND CSW AFTER THE FEED CYCLE IS
*              COMPLETED.
*              A RESIDUAL COUNT OF 1 SHOULD BE IN THE CSW BECAUSE
*              THE READER DOES NOT TRANSFER ANY DATA FOR THE STACKER
*              COMMAND.
*              IF THE PROGRAM HANGS IN A LOOP, A POSSIBLE CHANNEL
*              ERROR MAY HAVE OCCURRED.  THE OPERATOR SHOULD DO A PSW
*              RESTART TO HAVE THE LAST OPERATION OUTPUT ON THE OUTPUT
*              DEVICE
*************************************************************************
001A4C   12
001A4D   000A74
001A50   45 40 F 6C0
001A54   91 08 F 0E1
001A58   47 80 F A70
001A5C   41 A0 F B88
001A60   58 C0 F B98
001A64   45 B0 F 112
001A68   3C00
001A6A   0240
001A6C   F000
001A6E   FCA0
001A70   0A D6
001A72
001A72   07 00

ROUT12 DC    X'12'                  ROUTINE NUMBER
       DC    AL3(ROUT13-SECNO)      ADDRESS OF NEXT ROUTINE
       BAL   R4,INIT                BR TO INITIALIZE
       TM    UNIT1+1,X'08'          SEE IF 1400 COMPATIBLE 2540.
       BC    NONE,EXT1              BR IF NO.
       LA    R10,CH14               PUT ADDR OF 1400 RD CHAIN INTO 10.
       L     R12,RDR                PUT RDR ADDR. INTO REG 12.
       BAL   R11,ISIO               BR TO ISSUE START I-O.
       DC    X'3C00'                CTRL SWITCHES
       DC    X'0240'                T E S T   N U M B E R
       DC    X'F000'                EXP COND. CODE AND SENSE
       DC    AL2(EXP18-SECNO+REG)
EXT1   SVC   X'D6'                  ROUTINE EXIT
       CNOP  0,4                    ALIGN
     BCR     0,0
*************************************************************************
* ROUTINE 13 - IF THE 1400 COMPATIBILITY BIT IS ON IN THE 2540 READER
*              UDT ENTRY THE FOLLOWING TEST WILL BE PERFORMED-
*              A READ NO FEED IS ISSUED TO THE READER. EXPECTED
*              STATUS IS CHANNEL AND DEVICE ENDS TOGETHER IN 1 CSW.
*              A TIME LOOP IS EXECUTED TO ALLOW EXPECTED AUTOMATIC
*              FEED CYCLE DUE TO 6 MS PROVISIONAL FEED FOR THE 1400
*              FEATURE.
*              DEVICE END ALONE RETURNS AFTER AUTOMATIC PROVISIONAL
*              FEED CYCLE.
*              A FEED AND STACKER SELECT R1 IS ISSUED AND UNIT CHECK
*              IS EXPECTED IN STATUS DUE TO 2 FDS IN A ROW WITHOUT
*              INTERVENING READ. SENSE SHOULD HAVE THE COMMAND REJECT
*              BIT ON.
*              IF THE PROGRAM HANGS IN A LOOP, A POSSIBLE CHANNEL
*              ERROR MAY HAVE OCCURRED.  THE OPERATOR SHOULD DO A PSW
*              RESTART TO HAVE THE LAST OPERATION OUTPUT ON THE OUTPUT
*              DEVICE
*************************************************************************
001A74   13
001A75   000AB0
001A78   91 08 F 0E1
001A7C   47 80 F AAC
001A80   45 40 F 6C0
001A84   41 A0 F B10
001A88   58 C0 F B98
001A8C   45 B0 F 112
001A90   3E00
001A92   0250
001A94   F000
001A96   FC30
001A98   41 A0 F B18
001A9C   58 C0 F B98
001AA0   45 B0 F 112
001AA4   2800
001AA6   0260
001AA8   F180
001AAA   FB80
001AAC   0A D6
001AAE
001AAE   07 00

ROUT13 DC    X'13'                  ROUTINE NUMBER
       DC    AL3(ROUT14-SECNO)      ADDR OF NEXT ROUTINE
       TM    UNIT1+1,X'08'          SEE IF 1400 COMPATIBLE 2540.
       BC    NONE,EXT2              BR IF NO.
       BAL   R4,INIT                BR TO INITIALIZE.
       LA    R10,DGRD1              PUT ADDR OF 1400 RD NO FD R1 IN 10.
       L     R12,RDR                PUT RDR ADDR INTO 12.
       BAL   R11,ISIO               BR TO ISSUE START I-O.
       DC    X'3E00'                CTRL SWITCHES
       DC    X'0250'                T E S T   N U M B E R
       DC    X'F000'                EXP COND. CODE AND SENSE.
       DC    AL2(EXPCOM-SECNO+REG)  EXP CSW ADDRESS.
       LA    R10,RFS14              PUT ADDR OF 1400 FD STK R1 IN 10.
       L     R12,RDR                PUT RDR ADDR INTO 12.
       BAL   R11,ISIO               BR TO ISSUE START I-O
       DC    X'2800'                CTRL SWITCHES
       DC    X'0260'                T E S T   N U M B E R
       DC    X'F180'                EXP COND. CODE AND SENSE.
       DC    AL2(EXP2-SECNO+REG)    EXP CSW ADDRESS.
EXT2   SVC   X'D6'                  ROUTINE EXIT
       CNOP  0,4                    ALIGN
     BCR     0,0
*************************************************************************
* ROUTINE 14 - IF THE 1400 COMPATIBILITY BIT IS ON IN THE 2540 READER
*              UDT ENTRY THE FOLLOWING TEST IS PERFORMED.
*              A 1400 COMPATIBILITY READ NO FEED COMMAND CHAINED TO A
```

```
                        *              NOOP COMMAND WHICH IS COMMAND CHAINED TO A 1400 FEED
                        *              AND STACK SELECT R1,IS ISSUED TO THE READER.
                        *              THE NO-OP COMMAND SERVES AS AN INTERMEDIATE COMMAND
                        *              BETWEEN THE 1400 READ AND SEPARATE FEED COMMANDS TO
                        *              INSURE THAT NO EXTRANEOUS DATA IS RETURNED BETWEEN
                        *              THESE TIMING CRITICAL 1400 COMMANDS.
                        *              EXPECTED STATUS IS CHANNEL END RETURNED IN THE FIRST
                        *              CSW AND DEVICE END RETURNED IN THE SECOND DUE TO THE
                        *              FEED CYCLE.
                        *              A RESIDUAL COUNT OF 1 SHOULD BE IN THE CSW BECAUSE
                        *              THE READER DOES NOT TRANSFER ANY DATA FOR THE NO-OP
                        *              COMMAND.
                        *              A SENSE COMMAND IS ISSUED AND EXPECTED STATUS IS
                        *              CHANNEL END AND DEVICE END IN ONE CSW. NO SENSE BITS
                        *              ARE EXPECTED TO BE ON.
                        *              IF THE PROGRAM HANGS IN A LOOP, A POSSIBLE CHANNEL
                        *              ERROR MAY HAVE OCCURRED.  THE OPERATOR SHOULD DO A PSW
                        *              RESTART TO HAVE THE LAST OPERATION OUTPUT ON THE OUTPUT
                        *              DEVICE
001AB0    14            ********************************************************************
001AB1    00FFFF        ROUT14 DC    X'14'                    ROUTINE NUMBER
001AB4    91 08 F 0E1           DC    X'00FFFF'                LAST ROUTINE.
001AB8    47 80 F AE4           TM    UNIT1+1,X'08'            SEE IF 1400 COMPATIBLE 2540.
001ABC    45 40 F 6C0           BC    NONE,EXT3                BR IF NO.
001AC0    58 C0 F B98           BAL   R4,INIT                  BR TO INITIALIZE
001AC4    41 A0 F B70           L     R12,RDR                  PUT RDR ADDR INTO REG 12.
001AC8    45 B0 F 112           LA    R10,DRCN                 PUT ADDR OF 1400 RD CHAIN INTO 10.
001ACC    3E00                  BAL   R11,ISIO                 BR TO ISSUE START I-O.
001ACE    0270                  DC    X'3E00'                  CTRL SWITCHES
001AD0    F000                  DC    X'0270'                  T E S T   N U M B E R
001AD2    FC90                  DC    X'F000'                  EXP COND. CODE AND SENSE.
001AD4    41 A0 F B28           DC    AL2(EXP17-SECND+REG)     EXP CSW ADDRESS.
001AD8    45 B0 F 112           LA    R10,SNS                  PUT SENSE ADDR INTO REG 10.
001ADC    2A00                  BAL   R11,ISIO                 BR TO ISSUE START I-O
001ADE    0280                  DC    X'2A00'                  CTRL SWITCHES
001AE0    F000                  DC    X'0280'                  T E S T   N U M B E R
001AE2    FC50                  DC    X'F000'                  EXP COND. CODE AND SENSE.
001AE4    0A D6                 DC    AL2(EXPSN2-SECND+REG)    EXP CSW ADDRESS.
                        EXT3   SVC   X'D6'                     ROUTINE EXIT-
                        ********************************************************************
                        *      SET UP DIAGNOSTIC WRITE DATA HERE
                        ********************************************************************
001AE6    41 50 0 050   DWBF   LA    R5,80                    PUT 80 INTO REG 5.
001AEA    41 60 F 71C           LA    R6,RDAR                  PUT ADDR OF BUFFER INTO REG 6
001AEE    D2 01 6 000 4 000 DTLP MVC  0(2,R6),0(R4)           MOVE TWO BYTES TO BUFFER
001AF4    41 66 0 002           LA    R6,2(R6)                 ADD 2 TO BUFFER ADDR.
001AF8    46 50 F AEE           BCT   R5,DTLP                  BR UNTIL 160 CHARS MOVED.
001AFC    47 F4 0 002           BC    UNC,2(R4)                RETURN TO PROGRAM.
                        ********************************************************************
                        *      CCW AREA
                        ********************************************************************
001B00    25 00171C 0000 00A0 DGWR   CCW   X'25',RDAR,X'00',160  DIAG WR. CCW.
001B08    C2 00171C 0000 0050 DGRD   CCW   X'C2',RDAR,X'00',80   DIAG RD CCW.
001B10    D2 00171C 2000 0050 DGRD1  CCW   X'D2',RDAR,X'20',80   1400 READ NO FEED.
001B18    33 00171C 2000 0001 RFS14  CCW   X'33',RDAR,X'20',1    1400 FEED STK SEL.
001B20    03 00171C 2000 0001 NOOP   CCW   X'03',RDAR,X'20',1    NO-OP CCW
001B28    04 00171C 2000 0001 SNS    CCW   X'04',RDAR,X'20',1    SENSE CMD.
001B30    02 00171C 0000 0050 RD1    CCW   X'02',RDAR,X'00',80   RD, FD, STK SEL R1.
001B38    23 00171C 0000 0001 RFS1   CCW   X'23',RDAR,X'00',1    FD AND STK SELECT R1.
001B40    02 00171C 4000 0050 CHRD   CCW   X'02',RDAR,X'40',80   COM CHAIN CCWS.
001B48    02 00171C 0000 0050        CCW   X'02',RDAR,X'00',80
001B50    02 00171C 8000 0014 DCNRD  CCW   X'02',RDAR,X'80',20   DATA CHAIN CCWS.
001B58    02 001744 8000 0014        CCW   X'02',RDAR+40,X'80',20
001B60    02 00176C 8000 0014        CCW   X'02',RDAR+80,X'80',20
001B68    02 001794 0000 0014        CCW   X'02',RDAR+120,X'00',20
001B70    D2 00171C 6000 0050 DRCN   CCW   X'D2',RDAR,X'60',80   1400 RD NO FD WITH CMD CHN.
001B78    03 00171C 6000 0001        CCW   X'03',RDAR,X'60',1    NO-OP
001B80    33 00171C 2000 0001        CCW   X'33',RDAR,X'20',1    1400 FD STK SEL R1.
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001B88    D2 00171C 6000 0050 CH14   CCW   X'D2',RDAR,X'60',80   1400 RD NO FD -CMD CHAIN-
001B90    33 00171C 2000 0001        CCW   X'33',RDAR,X'20',1    1400 FD STK SEL R1.
001B98    00000000            RDR    DC    F'0'
001B9C    00000000            PCH    DC    F'0'
                              ********************************************************************
                              *      EXP CSW AREA
                              ********************************************************************
001BA0    00001B38            EXP1   DC    A(RD1+8)
001BA4    08000000                   DC    X'08000000'
001BA8    00000000                   DC    XL4'00'
001BAC    04000000                   DC    X'04000000'
001BB0    00000000            EXP2   DC    XL4'00'
001BB4    02000000                   DC    X'02000000'
001BB8    00000000            EXP3   DC    XL4'00'
001BBC    04000000                   DC    X'04000000'
001BC0    00001B08            EXP4   DC    A(DGWR+8)
001BC4    0C000000                   DC    X'0C000000'
001BC8    00000000            EXP5   DC    XL4'00'
001BCC    14000000                   DC    X'14000000'
001BD0    00001B10            EXP6   DC    A(DGRD+8)
001BD4    0C000000                   DC    X'0C000000'
001BD8    00001B40            EXP7   DC    A(RFS1+8)
001BDC    08000000                   DC    X'08000000'
001BE0    00000000                   DC    XL4'00'
001BE4    04000000                   DC    X'04000000'
001BE8    00001B50            EXP8   DC    A(CHRD+16)
001BEC    08000000                   DC    X'08000000'
001BF0    00000000                   DC    XL4'00'
001BF4    04000000                   DC    X'04000000'
001BF8    00001B48            EXP9   DC    A(CHRD+8)
001BFC    08400000                   DC    X'08400000'
001C00    00000000                   DC    XL4'00'
001C04    04000000                   DC    X'04000000'
001C08    00001B70            EXP10  DC    A(DCNRD+32)
001C0C    08000000                   DC    X'08000000'
001C10    00000000            EXP12  DC    XL4'00'
001C14    04000000                   DC    X'04000000'
001C18    00000000            EXP13  DC    XL4'00'
001C1C    14000014                   DC    X'14000014'
001C20    00001B38            EXP14  DC    A(RD1+8)
001C24    0A000000                   DC    X'0A000000'
001C28    00000000                   DC    XL4'00'
001C2C    04000000                   DC    X'04000000'
001C30    00001B18            EXPCOM DC    A(DGRD1+8)
001C34    0C000000                   DC    X'0C000000'
001C38    00000000                   DC    XL4'00'
001C3C    04000000                   DC    X'04000000'
001C40    00000000            RD14   DC    XL4'00'
001C44    08000000                   DC    X'08000000'
001C48    00000000                   DC    XL4'00'
001C4C    04000000                   DC    X'04000000'
001C50    00001B30            EXPSN2 DC    A(SNS+8)
001C54    0C000000                   DC    X'0C000000'
001C58    00000000            EXPNOP DC    XL4'00'
001C5C    0C000000                   DC    X'0C000000'
001C60    00000000            EXP15  DC    XL4'00'
001C64    08000000                   DC    X'08000000'
001C68    00000000                   DC    XL4'00'
001C6C    04000000                   DC    X'04000000'
001C70    00001B70            EXP11  DC    A(DCNRD+32)
001C74    08400014                   DC    X'08400014'
001C78    00000000                   DC    XL4'00'
001C7C    04000000                   DC    X'04000000'
001C80    00000000            EXP16  DC    XL4'00'
001C84    08000000                   DC    X'08000000'
001C88    00000000                   DC    XL4'00'
001C8C    04000000                   DC    X'04000000'
001C90    00001B88            EXP17  DC    A(DRCN+24)
```

```
001C94  08000001                DC    X'08000001'
001C98  00000000                DC    XL4'00'
001C9C  04000000                DC    X'04000000'
001CA0  00001898        EXP18   DC    A(CH14+16)
001CA4  08000001                DC    X'08000001'
001CA8  00000000                DC    XL4'00'
001CAC  04000000                DC    X'04000000'
                        ********************************************************************************
                        *       EQUATES
                        ********************************************************************************
000000          NEVER   EQU   0
000007          NCCO    EQU   7
00000F          UNC     EQU   15
000008          NONE    EQU   8
000004          SOME    EQU   4
000001          ALL     EQU   1
000005          ANY     EQU   5
000008          CC0     EQU   8
000004          CC1     EQU   4
000002          CC2     EQU   2
000001          CC3     EQU   1
000008          EQ      EQU   8
000004          LO      EQU   4
000002          HI      EQU   2
000006          UNEQ    EQU   6
00000C          EQLO    EQU   12
00000A          EQHI    EQU   10
000080          LOGOUT  EQU   X'80'
000181          SYSMOD  EQU   X'181'
00F000          REG     EQU   X'F000'
00005A          WHAT    EQU   90
000000          R0      EQU   0
000001          R1      EQU   1
000002          R2      EQU   2
000003          R3      EQU   3
000004          R4      EQU   4
000005          R5      EQU   5
000006          R6      EQU   6
000007          R7      EQU   7
000008          R8      EQU   8
000009          R9      EQU   9
00000A          R10     EQU   10
00000B          R11     EQU   11
00000C          R12     EQU   12
00000D          R13     EQU   13
00000E          R14     EQU   14
00000F          R15     EQU   15
000198          WT      EQU   408
000040          HCSW    EQU   64
000048          HCAW    EQU   72
0001A0          DMSSW   EQU   X'01A0'
                        END   ROUT01
```


POST ASSEMBLY DATA.

REFERENCES TO DEFINED SYMBOLS.

```
   1      8    EQ    134E,  137A
   1      2    HI
   1      4    LO
   1      0    R0
   1      1    R1
   1      2    R2
   1      3    R3
   1      4    R4    16FA,  17DC,  1800,  1818,  184E,  1870,  187C
                     18B4,  18E4,  18F0,  191C,  1928,  1956,  1984
                     19D8,  1A00,  1A28,  1A50,  1A80,  1ABC,  1AEE
                     1AFC
   1      5    R5    153C,  170C,  1AE6,  1AF8
   1      6    R6    1AEA,  1AEE,  1AF4,  1AF4
   1      7    R7
   1      8    R8    112C,  12B6,  12BA,  131E,  1322,  1340,  1340
                     1344,  139A,  139E,  1450,  1454,  1458,  1458
                     145C,  154E
   1      9    R9    112C,  1186,  118A,  1196,  11F2,  11F6,  1202
                     1258,  12AE,  12B2,  12CE,  13F6,  1424,  1466
                     147E,  1496,  14AE,  154E,  1832,  1836,  183A
   1    198    WT    1186,  11F2,  12AE,  1832
   1      1    ALL   114A,  11EA,  1222,  127A,  129A,  12DA,  12E6
                     1362,  1382,  138A,  153C,  16E8
   1      5    ANY   1534
   4   1048    CAW
   1      8    CC0   1192,  11B0
   1      4    CC1   11B4,  12CA
   1      2    CC2   11B8
   1      1    CC3
   8   1040    CSW
   2    100A   ICM
   4    1186   IHI   116A,  117A
   2    10E8   ISW   119A,  119A,  11A0,  11D6,  11E2,  11EE,  11FA
                     120A,  121A,  121E,  122C,  125C,  126A,  1276
                     127E,  128E,  129E,  12D6,  12E2,  12F6,  1316
                     1338,  1352,  135E,  146A,  149A,  14B8,  1510
                     1518,  1538,  16E4,  1708,  1710
   4    154A   IUP   1542
  16    16B0   MDR   1558,  1564
   4    1B9C   PCH   16D4,  17EA,  1822,  1854,  1874,  18E8,  1920
                     194E
   1      A    R10   1128,  1136,  13D4,  13F0,  13FA,  1402,  1402
                     152C,  16F6,  1808,  181E,  1858,  1878,  1892
                     188C,  18CC,  18EC,  1906,  1924,  193E,  1952
                     196C,  197C,  1998,  19B8,  19E0,  1A08,  1A30
                     1A5C,  1A84,  1A98,  1AC4,  1AD4
   1      B    R11   1122,  1128,  1146,  11E6,  126E,  1286,  12FA
                     1304,  130E,  131E,  1330,  1386,  139E,  13A0
                     13B2,  13B2,  13B6,  1426,  1442,  1450,  1482
                     14B2,  153E,  1546,  1546,  154A,  154A,  1552
                     17E0,  17EE,  180C,  1826,  1842,  185C,  1882
                     1896,  18A2,  18C0,  18D0,  18F6,  190A,  192E
                     1942,  195C,  1970,  1980,  19A0,  19C4,  19EC
                     1A14,  1A3C,  1A64,  1A8C,  1AA0,  1AC8,  1AD8
   1      C    R12   115E,  116E,  117E,  118E,  11AC,  1212,  12BE
                     12C6,  155C,  16CC,  16D0,  16D4,  16D8,  16DC
                     16E0,  17EA,  1804,  1822,  183E,  1854,  1874
                     188E,  1888,  18E8,  1902,  1920,  193A,  194E
                     1968,  1994,  19BC,  19DC,  1A04,  1A2C,  1A60
                     1A88,  1A9C,  1AC0
   1      D    R13   1136,  113A,  113A,  11D0,  12BA,  12EE,  152C
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2540 READER FUNCTION TESTS - SECTION 2 F811

			16C0,	16C0,	16CA					
1	E	R14	1140,	1140,	1186,	11F2,	12AE,	14DC,	14E4	
			16C2,	1832						
1	F	R15	1226,	1234,	1264,	16CA				
8	1B30	RD1	1808,	1892,	197C,	1BA0,	1C20			
4	1B98	RDR	16E0,	1804,	183E,	188E,	18B8,	1902,	193A	
			1968,	1994,	19BC,	19DC,	1A04,	1A2C,	1A60	
			1A88,	1A9C,	1AC0					
1	F000	REG	1246,	1398,	13B0,	13CA,	13E4,	1422,	1430	
			1436,	14CC,	14DA,	150E,	1524,	152A,	1558	
			1564,	1706,	1816,	1830,	184C,	1866,	188C	
			18A0,	18AC,	18CA,	18DA,	1900,	1914,	1938	
			194C,	1966,	197A,	198A,	19AA,	19CE,	19F6	
			1A1E,	1A46,	1A6E,	1A96,	1AAA,	1AD2,	1AE2	
8	1B28	SNS	1AD4,	1C50						
1	F	UNC	10FA,	110E,	1162,	1182,	11C0,	11C8,	11DA	
			120E,	1230,	1260,	1282,	12D2,	12DE,	12EA	
			1406,	1424,	151C,	1552,	1566,	16FA,	1714	
			1AFC							
8	1B88	CH14	1A5C,	1CA0						
8	1B40	CHRD	1998,	199C,	19B8,	19C0,	1BE8,	1BF8		
8	1B08	DGRD	18BC,	193E,	1BD0					
8	1B00	DGWR	181E,	1858,	1878,	18EC,	1924,	1952,	1BC0	
8	1B70	DRCN	1AC4,	1C90						
6	1AEE	DTLP	1AF8							
4	1AE6	DWBF	1818,	184E,	187C,	18F0,	1928,	1956		
1	A	EQHI								
1	C	EQLO								
4	1BA0	EXP1	1816,	18AC,	198A					
4	1BB0	EXP2	1830,	1914,	1AAA					
4	1BB8	EXP3	184C							
4	1BC0	EXP4	1866,	188C,	1900,	1938,	1966			
4	1BC8	EXP5								
4	1BD0	EXP6	18CA,	194C						
4	1BD8	EXP7								
4	1BE8	EXP8	19AA							
4	1BF8	EXP9	19CE							
2	1A70	EXT1	1A58							
2	1AAC	EXT2	1A7C							
2	1AE4	EXT3	1AB8							
4	118E	GREG	1196							
1	48	HCAW	1136,	128A,	152C					
1	40	HCSW	113A,	113A,	11D0,	1226,	1234,	1264,	12EE	
16	178C	HUNG	1706							
3	15EF	IACT	1252,	1472,	14A2					
6	1304	IBSN	1292,	12A2,	12AA,	12D2				
12	15C3	ICAW	13D4,	13DC,	13DE,	13E4				
3	15D2	ICCW	13E6							
1	1421	ICNT	124E,	13EC,	143E					
3	15CF	ICSW	1248,	1438						
4	149A	IDID	1486							
3	15F2	IEXP	144A,	148A						
4	10EA	IHIO								
2	16C0	INIT	17DC,	1800,	1870,	18B4,	18E4,	191C,	1984	
			19D8,	1A00,	1A28,	1A50,	1A80,	1ABC		
4	11E2	INOW	114A,	11C0,	11C8,	11DA				
4	126E	INT3	1230							
4	11CC	IONE	11B4							
6	1482	IPAS	149E							
4	1286	ISEN	11EA,	120E,	1272,	127A				
4	1112	ISID	180C,	1826,	185C,	1882,	1896,	18A2,	18C0	
			18D0,	18F6,	190A,	192E,	1942,	195C,	1970	
			1980,	19A0,	19C4,	19EC,	1A14,	1A3C,	1A64	
			1A8C,	1AA0,	1AC8,	1AD8				
6	1264	ISV2	1222							
4	12CE	ITIC	12F2							
4	10FE	ITIO	17E0,	17EE,	1842					
4	11C4	ITWO	1188							

2540 READER FUNCTION TESTS - SECTION 2 F811

6	1234	IUIO	1216							
6	119A	JOHN	1152,	1192						
1	1688	MSK1	11FE							
1	168C	MSK2	1206							
1	7	NCCO	1172,	12C2,	12F2					
1	100D	NIOU								
1	8	NONE	1152,	115A,	116A,	117A,	1272,	128A,	1292	
			12A2,	12AA,	1312,	131A,	1334,	133C,	136A	
			13FE,	1446,	146E,	1486,	149E,	14BC,	1514	
			1542,	16C6,	1A58,	1A7C,	1AB8			
8	1B20	NODP	16F6							
4	1C40	RD14								
1	171C	RDAR	16EC,	16F0,	16F0,	1AEA,	1B00,	1B08,	1B10	
			1B18,	1B20,	1B28,	1B30,	1B38,	1B40,	1B48	
			1B50,	1B58,	1B60,	1B68,	1B70,	1B78,	1B80	
			1B88,	1B90						
2	1554	RDYM	137A,	1382						
8	1B38	RFS1	18CC,	1906,	196C,	1BD8				
1	168D	RTSV	1130,	16FC						
1	100C	SDMF								
4	1004	SNSW	114E,	1156,	1166,	1176,	1366,	1530		
1	4	SOME								
3	105D	SRET								
1	10E1	U1OP								
1	10E5	U2OP								
1	6	UNEQ	1216,	1300,	130A,	132C,	13D0,	14E0		
1	5A	WHAT								
1	1578	WORK	1234,	13F0,	140E,	1410,	1412,	1418,	1460	
			1460,	1478,	1490,	1490,	14A8,	14E4,	14EE	
			14F0,	14F2,	14F8,	14FE,	1504			
4	16E4	BLOOP	1714							
8	1B50	DCNRD	19E0,	19E4,	19E8,	1A08,	1A0C,	1A10,	1A30	
			1A34,	1A38,	1C08,	1C70				
8	1B10	DGRD1	1A84,	1C30						
1	1A0	DMSSW								
4	1C08	EXP10	19F6							
4	1C70	EXP11	1A1E,	1A46						
4	1C10	EXP12								
4	1C18	EXP13								
4	1C20	EXP14	18A0							
4	1C60	EXP15	18DA,	197A						
4	1C80	EXP16								
4	1C90	EXP17	1AD2							
4	1CA0	EXP18	1A6E							
1	100E	FLAG1								
1	100F	FLAG2								
16	15D5	IBLAH	1248,	1252,	13E6,	1412,	1418,	1422,	1438	
			144A,	1472,	148A,	14A2				
2	140A	ICOUT	1258,	13F6,	1466,	147E,	1496,	14AE		
8	1666	ICSW1	11D0,	1226,	1296,	1326,	1326,	137E,	1478	
8	166E	ICSW2	1264,	12A6,	1348,	1348,	14A8			
4	1510	ICUIO	14E0							
4	146A	IDIDI	1446							
4	116E	IHANG	1182							
16	15B3	ILINK	13A0,	13A8,	13AA,	13B0,	152A			
4	12EE	ILOKE	12CA							
4	115E	ILOOP	10F6,	1102,	1116					
4	1352	INDER	12C2,	12DA,	12E6,	1300,	130A,	131A,	132C	
			133C							
5	1010	INPSW								
3	1688	IOADR	13C2							
6	1438	IOCSW	13BA							
16	160B	IOLOG	14F2,	14F8,	14FE,	1504,	150E			
16	1630	IOPT1	10EE,	1106,	111A,	1524				
4	14DC	IPASS	14BC							
8	1570	ISAVE	112C,	154E						
4	11AC	ISSUE	10EA,	10FE,	1112,	13CC,	1688			
4	1156	ITRY1	1162,	1172,	1534					

4	1166	ITRY2	115A
16	168E	IUNEX	1240, 1246
4	11F2	IWAIT	1282, 151C
4	11DE	IZERO	11B0
4	1718	MOD50	16D0, 16DC
1	0	NEVER	
8	1B18	RFS14	1A98
4	1000	SECNO	1130, 123E, 1240, 1246, 1390, 1392, 1398
			13A8, 13AA, 13B0, 13C2, 13C4, 13CA, 13DC
			13DE, 13E4, 140E, 1410, 1422, 1430, 1436
			14C4, 14C6, 14CC, 14D2, 14D4, 14DA, 14EE
			14F0, 150E, 1524, 152A, 1558, 1564, 16FC
			1706, 17D9, 17FD, 1816, 1830, 184C, 1866
			186D, 188C, 18A0, 18AC, 18B1, 18CA, 18DA
			18E1, 1900, 1914, 1919, 1938, 194C, 1966
			197A, 198A, 1991, 19AA, 19B1, 19CE, 19D5
			19F6, 19FD, 1A1E, 1A25, 1A46, 1A4D, 1A6E
			1A75, 1A96, 1AAA, 1AD2, 1AE2
4	17E0	START	
1	10E0	UNIT1	16D8, 1A54, 1A78, 1AB4
1	10E4	UNIT2	16CC
13	16A3	BYPASS	
5	1058	EXNPSW	
8	1018	EXOPSW	
4	1C30	EXPCOM	1A96
4	1C58	EXPNOP	
4	1C50	EXPSN2	1AE2
6	16FC	HANGUP	16E8
11	1600	IACSNS	11A4, 12FA, 1376, 14D2, 14D4, 14DA, 1678
10	159A	IACTCC	11A8, 11BC, 11C4, 11CC, 11DE, 1304, 1436
6	1426	ICCOUT	13D0, 13FE
6	1326	ICCSW1	1322
6	1348	ICCSW2	1344
6	1460	ICHNG1	1454
6	1490	ICHNG2	145C
6	13F0	ICWOUT	1406
4	12AE	IDOSNS	128A, 129A, 170C
4	1356	IDUNCK	12DE, 12EA, 134E
10	1590	IEXPCC	1426, 1430
11	15F5	IEXSNS	1482, 14C4, 14C6, 14CC
6	1122	IEYEOH	10FA, 110E
1	1396	IFLAG1	1356, 136E
1	1522	IFLAG2	135A, 1372
4	153E	ILEAVE	136A
6	14E4	ILOGED	1260
4	1482	IMORST	146E
4	12D6	INOEX1	1312
4	12E2	INOEX2	1334
15	15A4	IOADDR	10F2, 110A, 111E, 13C4, 13CA
4	1078	IONPSW	
8	1038	IOOPSW	1212, 123E
2	1520	IOPOUT	1514
4	1376	IOUTIT	1362
4	1212	IRETRN	107C
4	1136	IRETRY	1566
8	1678	ISENSE	1286
8	1680	ISLAVE	1128
4	12C6	ITIOLP	12CE
9	1627	ITSTNO	1122, 1386, 1390, 1392, 1398
1	80	LOGOUT	1140, 1140, 14E4
8	1070	MCNPSW	
8	1030	MCOPSW	
4	16CC	NITWIT	16C6
8	1068	PGNPSW	
8	1028	PGOPSW	
1	17D8	ROUT01	1015, 1CB0
1	17FC	ROUT02	17D9
1	186C	ROUT03	17FD

1	18B0	ROUT04	186D
1	18E0	ROUT05	18B1
1	1918	ROUT06	18E1
1	1990	ROUT07	1919
1	19B0	ROUT08	1991
1	19D4	ROUT09	19B1
1	19FC	ROUT10	19D5
1	1A24	ROUT11	19FD
1	1A4C	ROUT12	1A25
1	1A74	ROUT13	1A4D
1	1AB0	ROUT14	1A75
8	1060	SVNPSW	
8	1020	SVOPSW	
1	181	SYSMOD	14DC
2	10E2	U1ADDR	
2	10E6	U2ADDR	
1	1000	XF8112	

NO ERROR DETECTED IN ABOVE ASSEMBLY

PERIODS CORRESPOND TO BLANK COLUMNS.

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COLS.   1 THROUGH 20    COLS.  21 THROUGH 40    COLS.  41 THROUGH 60    COLS.  61 THROUGH 80

BESD......AA..AAXF81    12..AAAA.ADA........    .................840    189.130498..81120001
9         YQ  Y9            YYQY Y8Q
          99  9             9999 990

BTXT.AAA..A8..AA8JJA    AAAAAAAAAB0AADAAAAPQ    AAAAAAAAAAAAAAAAAAAA    AAAAAAAAAAAA81120002
9    YQY  Y9  Y9 9YY    YYYYYYYYY9+Y99YYYY9     YYYYYYYYYYYYYYYYYYYY    YYYYYYYYYYYY
     999  9   9   99    999999999  9  9999      99999999999999999999    999999999999

BTXT.AA8..A8..AAAAAA    AAAAAAAAAAAAAAAAAAAA    AAAAAAAAADAAAAAAAAAA    AAAAAAAAAAAA81120003
9    YQ9  Y9  Y9YYYY    YYYYYYYYYYYYYYYYYYYY    YYYYYYYYY9YYYYYYYYYY    YYYYYYYYYYYY
     99   9   9 9999    99999999999999999999    999999999 9999999999    999999999999

BTXT.AA0..AA..AAAAAA    AAAAADAAAAKK........    ....................    ............81120004
9    YQ+  YQ  Y9YYYY    YYYY99YYYY99
     99-  99  9 9999    9999  9999

BTXT.AAS..A8..AAAAAA    BAAAAABF1MBH6ABH5ABF    10G01SBE1MBE10BT6ABT    5AG01SBD1MBD81120005
9    YQ8  Y9  Y90YYY    0YYYYY-Q Y-  8-  Q-Q     8Z  9-Q Y-Q 8-  8-      QZ  9-Q Y-Q
     99   9   9  9 9     9 999           0                               0

BTXT.AJQ..A8..AA10BS    6ABS5AKA6UABAL6AAI50    KA6E0C+NAHPG0.0.PCSA    SAAAAAGA1SA081120006
9    Y99  Y9  Y9 8-      8-  Q 9 8Q9QY YQ0 +     Y Y 9 YYZ 9- -  88Y    8Y-YQYZQ  -+
     9    9   9              0   90        -     9     9       9          09 9

BTXT.AJ+..A8..AA0DGA    1BAA0DGA10DA0AG01FA.    0DGA1FEA0AG01FA.0DGA    1FDA0AG01WHF81120007
9    Y9   Y9  Y9 9ZY     Q-Y 9ZY ZQY+YZ  R-      9ZY 0QY+YZ+ R-  9ZY     0QY+YZ  8RQ
     9    9   9                   9 9                 9 9 -                9 9

BTXT.AJH..A8..AAAHHA    ACEA0AGA1BFA1FPA0Y0Y    FA0YBX6EBX5GDA0AGA1F    G.1DGJ1DB35G81120008
9    Y90  Y9  Y99-0Q    Y9QY+YZY QZQ Y 9        -Y  -  9-  QQY+YZY Q    Z  YZY  -  Q
     9    9   9         9 9 9                             9 9  9         9 9

BTXT.AJ0..A8..AAG01S    B25GG01SB15GKG600.F.    0YG01SB05GD70YA.AAGA    2FFA0YHFAHHA81120009
9    Y9+  Y9  Y9Z       -  QZ   -  Q 9 Z- -      Z  -  Q-8  - QYZQ     0-Q  RQ9-0Q
     9    9   9                                               09 9       9

BTXT.AJ8..A8..AAACFA    0YAA6CFA2BAA6DD70YG0    2FA002G-24D70YA.0YGA    2MKG600.F.0Y81120010
9    Y9   Y9  Y9Y9-Y      YY YZQ 9YY Y-8  Z     08+ 8Z  9-8  -   ZQ     Z 9 Z  -
     9    9   9 9         9       9             9              9

BTXT.AKA..A8..AAG02W    KG5H0.BEABA2FGB0MN6F    KB505GBK4/KB5M5PEA4B    FB0YG04UKG6W81120011
9    Y9Q  Y9  Y9Z  8     9 R  8QY9Y89Q8-Z9 Y     9   Y-8 9 9 Y YZQ 8    -9  Z     9 8
     9 Z  9   9            0  999 99  9              9 9    9 9   9

BTXT.AKQ..A8..AA0.FJ    0YAAAAGA2FAH0YGA2FFH    0YG012ABAAGA20A.0YGA    3DAB6+GA20AJ81120012
9    Y9Z  Y9  Y9  -Y      -QQYZY 0-9  ZQ 0-9     Z   -9QYZY Y-   ZY     9-9 -ZQ Y-Y
     9    9   9    9       909          9              09                    9   9

BTXT.AKJ..A8..AA0YGA    3DAB6BGA3DHFAHHAADAA    6H+EAHDA0AG03BEA0AG.    20FA2FG03DA.81120013
9    Y9Y  Y9  Y9  ZY     9-9 RZY 9RQ9-0QY9ZY     R YYZQY+YZ+ RQY+YZ      YZQ  Z  9-
     9    9   9             0          9         0 9  9 9 -   9 9        9

BTXT.AKQ..A8..AA0YGA    3BG03FAJ0YGA3BG03FED    0DG02FFD0YNA6EAEG-3B    NA5GADG-3BAH81120014
9    Y9   Y9  Y9  ZQ     RZ  R-Y  ZQ RZ  R-8    -ZZ+ Y-9   Y 9Q9Z  R     Y QQ9Z  R-9
     9    9   9   9             9  9       9      - 9     9  0         9  0

BTXT.ALA..A8..AAAAGA    20A.0YGA3BHCAF.A3SNG    6060G-3BADAAGA2SAJ0Y    GA3BAHAH.A3D81120015
9    Y9Q  Y9  Y9QYZY      -   ZY RZYY9 Y 8 9    Z ZZ  R-9QYZY  -Y      ZY RZ0Y9 Y 8
     9 9  9   9 09                 9   9              09     9            9

BTXT.ALH..A8..AANG6W    6WGA3FFA0YBM3FB05SAA    0YGA3FAA0DGA56BU3FBA    5SE.6EGA5DAA81120016
9    Y9Z  Y9  Y9 9 8     8ZY R-9  -Z --+ 9-9      ZQ R-9 9ZY 8-9 --Y     9-  9ZY R-9
     9    9   9                                  9 0      9
```



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BTXT.ALA..A8..AA6+GA    5DKA6UABBEABFUFUB0MA    6XAAADLH+A5HBEACEIEH    B0JA5CACADAA81120017
9    Y9Y  Y9  Y9 -ZQ     R 9 8Q98QY998988-Z8     9ZYY980 Q 08QY99090    8-YQ 0ZQY9-Y
     9    9   9    9          90 999  9 99  9       9 9- 0 -999  - -    9  9 - 09

BTXT.ALH..A8..AAAAGA    48BEACFHERB0JG5MED1M    G-4W+J5HBEACEIEHB0JC    5CKB505KB04/81120018
9    Y90  Y9  Y9QYZQ     98QY990908-Y8 0-Q Y    Z  9 Y  8QY99 9 8-Y8        9   -9 9
     9 -  9   9 09 9     999      9 9                 999      9 9

BTXT.AL0..A8..AAKG5H    JAEA4BA0JDGA4WAKAHG0    30BEAHEHEHKG5B5HKG5T    5AB0JK5NG9KA81120019
9    Y9   Y9  Y9 9 R    YYZQ 8-+Y9ZY 9ZYY9Z       8QY99R9R 9 Q R 9       Y8-Y8  9  Y
     9    9   9    0     9  9            9        999  0 0   9 0         9  9     9

BTXT.AMY..A8..AA5EAD    B0JB5AB0JB5BKB5D5GBK    4/AHAAGA4+KB5M52HCAF    .A4MAHAH.A4D81120020
9    Y99  Y9  Y9 -Q9    8-Y8 Q8-Y8 Q 9   Y-8     9-9QYZY - 9 Y  ZYY9     Y ZZ0Y9 Y -
     9    9   9    0    9  9  9  9        9 9       09        9    9           9

BTXT.AM-..A8..AAKG5H    5HEA4BA.0YGA4BKB5M5P    KG5H60EA4BADAAGA4BKB    5M52KG5H5HEA81120021
9    Y9   Y9  Y9 9 R     RZQ 8-   ZY 0 9 Y Y     9 R ZZQ 8-9QYZY Q 9     Y   9 R RZQ
     9    9   9    0     0  9             9 9      0    9  09            9     0 0

BTXT.AMH..A8..AA4BAJ    0YGA4BKB5M5PKG5H6WEA    4BKA5BAEAD0YGA4DBEAA    EBEBB0JC55BE81120022
9    Y9-  Y9  Y9 8-Y      ZY 0 9 Y Y 9 R 8ZQ     8 Y QQ9-9  ZY Q8QY9    9Q9Q8-Y8  8Q
     9    9   9 9 9          -    9 9   0        9 9 Z0         9999     Z Z9  9  99

BTXT.AM0..A8..AAAAFE    FEB0JC6AEAJAG-5AKC5H    SABEADEHEHKA6A5HKE6L    52KE6K5BKE6/81120023
9    Y9-  Y9  Y9Y999    998-Y8 Y-QZ0Z  Q 8 R    8Y8QY89R9R 9 Q R 9 9     8 9 8 0 9 9
     9    9   9 9        9  9 9 Z     9 9 0      9999 0 0   9 0              9

BTXT.ANH..A8..AA5BB0    JM6CAB0YGA5JDE0YG012    B0066AB0JA5C+NAHA00D    G+1FAA0YGNAH81120024
9    Y99  Y9  Y9 Y8-    Y8 8-9  ZY Y-Q  Z       8-+9 Q8-Y9 0 YYZ-+ 9    Z  R-Y  99-9
     9    9   9    9     9 9        9 Z         9    Z9    -  9

BTXT.AN...A8..AAAAGA    5BACABACAFHI50GCB0UA    6ABBEA0AB0AA6AG016GA    GAGAAAAAAAAA81120025
9    Y9   Y9  Y9QYZY     8ZQY9ZQY9-0 +9Q8-9Q     Q8QQY+Y8-Y9 QZ   99Y    9Y9YYYYYYYYY
     9    9   9 09         09  09    - Z9  9     099 9 99    0     9     9 999999999

BTXT.ANA..AU..AA.CC.    .X.EXP.CC..X.ACT.ADR    .XXXXXX.XIOA........    ............81120026
9    Y9Q  Y9  Y9                                            Y
     9    9   9                                             9

BTXT.ANC..AJ..AA.ADR    .XXXXXX.LINKA.......    ....................    ............81120027
9    Y90  Y9  Y9                    Y
     9 -  9   9                     9

BTXT.ANC..A8..AA.CAW    .XXXXXX.CSWCCW.CSW.X    XXXXXXX.XXXXXXXX.EXP    ACTEXP.SNS.X81120028
9    Y9   Y9  Y9
     9    9   9

BTXT.ANC..A8..AAX.EX    P.SNS.XX.ACT.LOG.XX.    XXXXXX.XXXXXX.XXXXXX    .TST.XXXX.SE81120029
9    Y9Q  Y9  Y9
     9 Z  9   9

BTXT.A03..A8..AAT.SS    .O.ON.FOR.LOOP.ON.XI    OT.SS.1.ON.FOR.TIO.S    IO.LOOPAAAAA81120030
9    Y99  Y9  Y9                                 8                             YYYYY
     9    9   9                                                                99999

BTXT.AOT..A8..AAAAAA    AAAAAAAAADADEAAAAAAA    AAAAAAJMFAA.UIO.FROM    .DEVICE.XXXX81120031
9    Y98  Y9  Y9YYYY    YYYYYYYYY9Y99YYY9YYY    YYYYYY9YQ9Y
     9    9   9 9999    999999999 9  999 999    999999  Z 9

BTXT.AOL..A8..AA.RTN    .BYPASSED.MAKE.DEVIC    E.RDYLEA.JFGA6DQGH00    UD07Q+0CDH0081120032
9    Y90  Y9  Y9                                     8Q- Z-ZY Y9QR+      R+ 9 +QQR+
     9    9   9                                      99      9 9           Z

BTXT.AOC..A8..AASD07    Q+0CHAA0YGA6DB.7MKF7    N7MAJCJG4KA0C6EB0MK7    DFA0YE+20BA081120033
9    Y9Q  Y9  Y98R+     9 +Q--Y  ZQ Q-  8 Q     8 8ZYQY9  Y 9 Y8-Z8     Q-9  Z  Y-Y
     9 9  9   9           Z        9 Z  9       9 9 Z9  9    9 9        0       9
```

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BTXT.APL..AA..AAYG06   UAA7G.................  ....................  ............81120034
9    Y99 Y8  Y9 Z       YY8Q
     9   99  9          999Z

BTXT.APD..A8..AA.PRE   VIOUS.HANG.UP.DETECT    EDGAAAGDE.6OEAOFAAAA  OAHOCDEAOFAA81120035
9    Y9Q Y9  Y9                                 9Y9Y9QZ  +ZQ QYYYQ   YR+QQZQ QYY
     9 0 9   9                                    9 9 Z     0 Z9999    9  Z  0 Z99

BTXT.AP4..A8..AAAJOA   BOGABAHUE.6OHOCHAJCA    EA1KSAAAOACJE.BWAAAJ  CAHOCDEA1KHA81120036
9    Y9  Y9  Y9YY Y    8 9Y9Y98Z  +R+Q-ZYQQ    ZQ 98YYQ YQYZ Q Y9ZY  QYR+QQZQ 9ZY
     9   9   9 99 9    9  9 9        Z  ZZ      0  999Z 9Z   Z 9       Z9  Z  0  9

BTXT.AQU..A8..AAA.1A   CAHFAHHAABFA82HOCHEA    OFHAA+1ACHE.BWAAHOCD  AJCAEA1KYAA-81120037
9    Y98 Y9  Y9Y  Y    QQRQ9-OQY9ZQ 8R+Q-ZQ    QZYY  YQOZ Q Y9R+QQ  ZYQYZQ 99YY
     9 9 9   9 9        ZO       9   9 Z  0      Z 99  9Z-  Z 9   Z    Z9 0  99

BTXT.AQM..A8..AA0ACO   BOGACAHAE.6OHOCDAJCA    E.BWAJEA1KYAAOOACOHO  CHAJCAEA1K4A81120038
9    Y9Z Y9  Y9 YQ+    8 9Y9Y9QZ  +R+QQZYQY    Z Q 9YZQ 99YY+ YQ+R+  Q-ZYQQZQ 98Y
     9   9   9  9Z     9 9 9 0      Z  Z9       Z  9 0   99- 9Z      Z   ZZ 0  99

BTXT.AQD..A8..AAAAOH   DJEA1K4AAAOACJBODAHS    E.6OHOCHAJCHEA1KYAAA  OACOAJC8EA1K81120039
9    Y9Q Y9  Y9YY 9    QYZQ 98YYQ YQY8 9Y98    Z  +R+Q-ZYQ9ZQ 99Y9Y  YQ-ZYQ9ZQ 9
     9   9   9 9      Z9 0  999  9Z 9  9          Z    Z  Z 0   9 9    9Z   Z 0

BTXT.AQM..A8..AA4AAA   1AD-BOGAEAAQE.6OHOCD    AJCAE.BW77EA1KSAAJOA  COHOCHAJC8EA81120040
9    Y9  Y9  Y98Y9Q   YQ 8 9Y9Y89Z  +R+QQ    ZYQYZ Q 88ZQ 98Y9Y Y  Q+R+Q-ZYQ9ZQ
     9   9   9 99 9    9Z 9  9 99       Z      Z9  Z 99 0  99 9 9    Z   Z   Z 0

BTXT.AJD..A8..AA1KYA   AA1ACABOFAAAE.6OHOCD    AJCAE.BWAAEA1KYAA.OA  COHOCHAJCHEA81120041
9    Y88 Y9  Y9 99Y    9Q YQQ8 9Y8QZ  +R+QQ    ZYQYZ Q Y9ZQ 99Y9  Y  Q+R+Q-ZYQ9ZQ
     999 9   9  9      Z  ZO9  99       Z       Z9  Z 9 0   9  9      Z   Z   Z 0

BTXT.AJD..A8..AA1KYA   A+OACOHOCDAJCAE.BW77    EA1KYAA-OACOHOCHAJC8  EA1K4AAO1AD-81120042
9    Y8Z Y9  Y9 99Y    9  YQ-R+QQZYQYZ Q 88    ZQ 99Y9  YQ+R+Q-ZYQ9  ZQ 98Y9+ YQ
     99  9   9  9      9Z   Z  Z9  Z 99        0   9  9Z   Z   Z       0  99 - 9Z

BTXT.AJ4..A8..AAAJCA   EA1K4AAAOACJBOGAGAAA    HOCHAJC.B+CGEA1K4AAA  OACYBOGAHAAM81120043
9    Y88 Y9  Y9ZYQQ   ZQ 98Y9Y YQY8 9Y9Y8Q    R+Q-ZYQ - QZZQ 98Y9Q  YQ 8 9Y9Y8
     99  9   9  ZZ     0  99   9Z 9  9 99O      Z   Z   Z  0  99      9Z 9  9 99

BTXT.AJD..A8..AAE.60   AJC.HOCHBGCGEA1K4ABA    OAC8BOGAAAADE.6OHOCH  AJC+BMCGBACM81120044
9    Y8O Y9  Y9Z  +    ZYQ R+Q--8QZZQ 98Y9Y    YQ 8 9Y8Y8QZ  +R+Q-  ZYQ -9QR-YQZ
     99- 9   9          Z   Z   Z  0  99 9     9Z 9  9999Z       Z     Z   Z   Z

BTXT.AJM..A8..AAEA1K   4ABAOADHBOGAAABUE.6O    HOCHAJC+BYCGBACMEA1K  4ABJOADOBOGA81120045
9    Y8Y Y9  Y9ZQ 9    8Y9Q YQ98 9YQY89Z  +    R+Q-ZYQ -9QR-YQZZQ 9  8Y9Y YQ+8 9Y
     999 9   9  0      99 9 9Z 9  9999          Z   Z   Z   Z  0        99 9 9Z-9  9

BTXT.AKU..A8..AAJABD   E.6OHOCHAJC+BYCGBJCM    EA1K4ABAOADOBOGAKABD  E.6OAHOJGAB081120046
9    Y89 Y9  Y99Y88   Z  +R+Q-ZYQ -9QR-YQZ    ZQ 98Y9Q YQ+8 9Y9Y8R  Z  +-9 ZZYQ+
     99  9   9  99       Z   Z   Z   Z        0  99 Z 9Z-9  9 99O        Z-

BTXT.AKM..A8..AAAJCH   HOCHEA1K4AB.OADJBOGA    LABAAHOJGABME.6OAJCA  HOCHEA1K6AB+81120047
9    Y88 Y9  Y9ZYQO   R+Q-ZQ 98Y9  YQY8 9Y    9Y8Q-9 ZZYQYZ  +ZYQQ  R+Q-ZQ 98Y9
     99  9   9  Z      Z  0  99    9Z 9  9     99O       Z       Z9    Z  0  99

BTXT.AKD..A8..AAOADA   AJCQHOCHEA1KYAB-1ACA    BOGAMAGGAHOJGABUE.6O  HOCHAJCOEA1K81120048
9    Y8- Y9  Y9 YQO    ZYQ9R+Q-ZQ 99Y9  YQO    8 9Y9YQO-9 ZZYQ Z  +   R+Q-ZYQ+ZQ 9
     99  9   9 9ZZ      Z   Z  0    9    Z0     9 9 9ZZ       Z          Z   Z- 0

BTXT.AKD..A8..AA6ABO   OADAAJCYEA1KSABAOAD+    BOA+A+A-7MKA-A.AAOAB  F+BOG4ABVAPM81120049
9    Y8Y Y9  Y98Y9+   YQQZYQ9ZQ 98Y9Y YQ      8 Z Y Z  8 9 Y YZZY9  Z QYZ Y99Y98
     999 9   9 99 -    9Z   Z  0  99   9Z      9   9   9   9.9 9       Z9  9  9 9

BTXT.ALD..A8..AAAAAJ   BAPMAAA+KAPMJAA+3APM    JAAACAPMJAAADAPMJAAA  BAPMAAA+TAPM81120050
9    Y89 Y9  Y9YYYY   Y98YYY  Y98YYY 9Y98    YYY99Y98YYY99Y98YYY9  9Y98YYY 9Y98
     99  9   9 999      9 9999  9 9999  9 9    999  9 9999  9 9999     9 9999  9 9
```



```
BTXT.AL4..A8..AAAAAA   BAPM.AA+BAPMAAA+BAPM    AAAMBAPDAAAMBAPUAAAM  BAPDAAAMKAPM81120051
9    Y88 Y9  Y9YYY9    9Y98 YY 9Y98YYY 9Y98    YYY99Y9ZYYY99Y98YYY9  9Y9-YYY9 Y98
     999 9   9 999      9 9 99  9 9999  9 9     99 9   99 9   99  9    9  999  9 9

BTXT.ALD..A8..AA-AA+   CAPM-AAA3APMJAAAKAPM    -AA+3APMJAAAAAAAAAAA  AAL8HAAAAAAA81120052
9    Y8R Y9  Y9 YY     9Y98 YY99Y98YYY9 Y98    YY 9Y98YYY9YYYYYYYY  YY899YYYYYYY
     990 9   9  99      9 9 99  9 9999  9 9     99  9 9999 99999999   999  9999999

BTXT.ALM..A8..AADAAA   AAAABAAAAAAADAAAAALH    DAAAAAAAMAAAAALADAAA  AAL.HAAAAAAA81120053
9    Y8Y Y9  Y99YYY    YYYY9YYYYYYY9YYYYY89    8YYYYYYY9YYYYY8Q8YYY  YY8 9YYYYYYY
     99  9   9 999      9999 9999999 999999     99999999 99999999999  999  9999999

BTXT.ALU..A8..AADAAA   AAL+HAAAAAAADAAAAALH    H.AAAAAADAAAAALOHAAA  AAAADAAAAAAA81120054
9    Y8  Y9  Y99YYY    YY8 9YYYYYYY9YYYYY8Z    9 YYYYY9YYYYY8+9YYY  YYYY9YYYYYYY
     99  9   9 999      999  9999999 999999      999999 999999- 999   9999 9999999

BTXT.AMM..A8..AAMAAM   AAL8BAAAAAAADAAAAALQ    DAAAAAAADAAAAAAAHAAA  AAAADAAAAAL81120055
9    Y88 Y9  Y99YY9    YY898YYYYYYY9YYYYY89    8YYYYYYY9YYYYYYY9YYY  YYYY9YYYYY8Q
     999 9   9 99       999 99999999 999999     99999999 9999999 999  9999 999999Z

BTXT.AMD..A8..AADAAA   AAAADAAAAAAAHAAAAAAA    DAAAAALOH.AMAAAADAAA  AAAAHAAAAAAA81120056
9    Y8R Y9  Y98YYY    YYYY8YYYYYYY9YYYYYYY    9YYYYY8+9 Y9YYYY9YYY  YYYY9YYYYYYY
     99  9   9 9999     999999999999 9999999    999999-  9 9999 999   9999 9999999

BTXT.AMD..AU..AADAAA   AALHHAAAAAAADAAAAALH    HAAAAAAADAAA.........  ............81120057
9    Y8Y Y9  Y99YYY    YY809YY9YYYY9YYYYY8-    9YY9YYY9YYY
     99  9   9 999      999  99 9999 999999      99 9999 999

BRLD......A8....AAAA   AAANEAA4AAO1AAOHAALA    AALAAALJAALJAAL/AAL/  AAL1AAL1HALA81120058
9        Y9    Y9Y9    8YQ98YQ88Y988Y898Y88    8Y888Y898Y888Y898Y88  8Y898Y889Y8Z
         9   9 9       999 999 99  99  999     9999999 9999999 9999  999 9999 99

BRLD......A8....AAAA   AALAAALAAALJAAL/AAL/    AALAAAL1AALAAALIAALA  EALJEALODAL081120059
9        Y9    Y9Y9    8Y888Y8R8Y888Y8 8Y88    8Y8R8Y888Y808Y808Y8-  8Y8Y8Y8+8Y8-
         9   9 9       999 999 999 999 999     9990999 999 999 999   999 999 999

BRLD......AU....AAAA   EALQEALYEAL8EAMHEAMJ    EAMAEAM+EAMOEAMADAMJ  ............81120060
9        Y8    Y9Y9    8Y8 8Y8 8Y8 8Y898Y8Y    8Y8Q8Y8 8Y8+8Y8Q8Y8Y
         99  9 9       999 999 999 999 9999    999Z999 999-999 999

BEND.APQ......AA....   ....................    ....................  ............81120061
9    Y9      Y9
     9       9

BDAT.................  ....................    ....................  ............81120062
9

....................   ....................    ....................  ............81120063

....................   ....................    ....................  ............81120064

....................   ....................    ....................  ............81120065

....................   ....................    ....................  ............81120066

....................   ....................    ....................  ............81120067

....................   ....................    ....................  ............81120068

....................   ....................    ....................  ............81120069

....................   ....................    ....................  ............81120070

....................   ....................    ....................  ............81120071

....................   ....................    ....................  ............81120072

....................   ....................    ....................  ............81120073
```

F811 2540 RD FUNCTION SEC 2

.....	.....	.....	81120074
.....	.....	.....	81120075
.....	.....	.....	81120076
.....	.....	.....	81120077
.....	.....	.....	81120078
.....	.....	.....	81120079
.....	.....	.....	81120080
.....	.....	.....	81120081
.....	.....	.....	81120082
BLDT.....	.....	.....	81120083

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---------- LAST PAGE ----------

DATE 05MAY65 10AUG65 15JUN67 ID F811-2
EC 124252 125580 130498 PAGE 18

```
                8120   TITLE
*********************************************************************
*                                                                   *
* MODIFICATIONS                                                     *
*                                                                   *
* REVISION LEVEL 0.  INITIAL RELEASE OF THE PROGRAM.                *
*     EXPANSION TO THIS SECTION WAS THE RESULT OF THE TESTING ADDED *
*     TO SECTIONS 810 AND 811.                                      *
*     1.  THIS SECTION IS THE RIPPLE READ TEST, WHICH WAS FORMERLY  *
*         LOCATED IN SECTION F811 VERSION 1.                        *
*     2. THE PROGRAM INCLUDES TEST NUMBERS AND THE COMMON ERROR     *
*        ERROR MESSAGE FORMAT.                                      *
*                                                                   *
* E.C. PREREQUISITES                                                *
*     MACHINE . . . NONE                                            *
*     PROGRAM . . . NONE                                            *
*                                                                   *
* USE DESCRIPTION F810* AT EC 130498, DATED 15 JUN 67  OR LATER.    *
*                                                                   *
*********************************************************************
XF8120 START 4096
001000       USING *,15
*
*
*********************************************************************
*                        TEST NUMBER DESCRIPTION
*********************************************************************
*********************************************************************
* TEST       DESCRIPTION
*
*
*                     **************
*                       ROUTINE 01
*                     **************
*
* 0010 - OPERATION ATTEMPTED
*
*        A WRITE, FEED, AND STACKER SELECT P2 COMMAND -41- IS ISSUED
*        TO THE PUNCH
*        A SENSE COMMAND IS ISSUED IF UNIT CHECK OCCURS DURING THE
*        WRITE COMMAND.
*
*        EXPECTED RESPONSE
*
*        CONDITION CODE 0 WITH CHANNEL AND DEVICE END SEPARATELY IN
*        TWO CSWS.
*        IF AN ERROR OCCURS IN THIS ROUTINE, THE PROGRAM WILL RETRY
*        IF EXECUTION IS CONTINUED.  IF SEVERAL ERRORS OCCUR, IT IS
*        SUGGESTED THAT THE PUNCH DIAGNOSTICS BE CALLED INTO STORAGE.
*
*
*                     **************
*                       ROUTINE 02
*                     **************
*
* 0020 - OPERATION ATTEMPTED
*
*        ISSUE A READ NO FEED COMMAND -C2- TO THE READER. THE READ
*        DATA IS COMPARED TO EXPECTED DATA AND ERRORS ARE INDICATED
*        IF ACTUAL AND EXPECTED DATA ARE NOT EQUAL. TWO DIAGNOSTIC
*        CHECK READ COMMANDS ARE ATTEMPTED. THE DIAGNOSTIC CHECK
*        READ DATA IS TESTED COLUMN BY COLUMN FOR ANY ERRORS.
*        THE FOLLOWING HEADING WILL BE OUTPUT AFTER THE INITIAL
*        INFORMATION MESSAGE WHICH IS EXPLAINED IN THE DESCRIPTION
*        UNDER -STATUS MESSAGES-.
*
```



```
*
*        DATA ERROR MESSAGE EXPLANATION
*
*        -READ ERROR
*        -CARD IN PRESTKR STA
*        -    EXPECTED SHD                BUF
*        -COL PUNCHES  RD  RD XU XL PAR ADR TRAN
*           I     I     I   I  I  I  I   I   I
*           I     I     I   I  I  I  I   I   I
*           I     I     I   I  I  I  I   I   I---READER TRANSLATE CHK.
*           I     I     I   I  I  I  I   I
*           I     I     I   I  I  I  I   I---READ BUFFER ADDRESS CHECK.
*           I     I     I   I  I  I  I   I
*           I     I     I   I  I  I  I   I---READ BUFFER PARITY CHECK.
*           I     I     I   I  I  I  I
*           I     I     I   I  I  I  I---X LOWER CHECK PLANE.
*           I     I     I   I  I  I
*           I     I     I   I  I  I---X UPPER CHECK PLANE.
*           I     I     I   I  I
*           I     I     I   I  I---DATA BYTE READ FROM THE READER.
*           I     I     I   I
*           I     I     I   I---EXPECTED DATA BYTE.
*           I     I     I
*           I     I     I---HOLE PUNCHES EXPECTED TO BE IN THIS COLUMN.
*           I     I
*           I     I---COLUMN OF CARD WHERE ERROR WAS DETECTED.
*
*        NOTE-  THE INDICATION FOR XU, XL, PAR, BUF ADR, AND TRAN
*               WILL BE AS FOLLOWS-
*               0 IF NO ERROR.
*               1 IF ERROR.
*
*
*        POSSIBLE ERROR CAUSES
*
*        1.  IT IS POSSIBLE UNDER LOOPING CONDITIONS FOR THE PROGRAM
*            TO LOSE TRACK OF THE DETAIL CARD SEQUENCE. IF ALL 80 COLS
*            INDICATE AN ERROR IN THE DATA BYTES IT IS POSSIBLE THAT
*            THIS IS THE CAUSE.  THE WAY TO DISTINGUISH BETWEEN A
*            MACHINE FAILURE AND A SEQUENCE PROBLEM IS TO VISUALLY
*            SCAN THE DATA BYTE READ FROM THE READER FOR EACH CARD
*            COLUMN, IF THE DATA IN EACH SUCCESSIVE COLUMN IS
*            INCREMENTED BY 1 THE READ DATA IS GOOD.
*        2.  ANY OTHER ERRORS INDICATED SHOULD BE VALID MACHINE ERRORS
*            WHICH THE PROGRAM ERROR MESSAGE SHOULD GIVE SUFFICIENT
*            INFORMATION ON TO POINT TO THE MACHINE PROBLEM.
*        3.  X LOWER OR X UPPER INDICATIONS THAT DO NOT INDICATE A
*            DEFINITE PATTERN OF TROUBLE MAY BE DUE TO A READER
*            SKEW PROBLEM.
*        4.  IF LOOPING USING SENSE SWITCH 10 -READ FEED STACKER SELECT
*            R1- WITH SENSE SWITCH 2 OFF -COMPARE DATA- AND AN ERROR
*            IS INDICATED IN COLUMN 1, ANALYZE ONLY THE FIRST ERROR
*            MESSAGE INDICATED IF THE MESSAGES THAT FOLLOW INDICATE
*            ERRORS IN ALL 80 COLUMNS. THIS IS BECAUSE COLUMN 1 IS
*            USED TO GENERATE THE COMPARE DATA FOR ALL 80 COLUMNS
*            OF THE CARD READ.
*
*        REFER TO 2821 MDM FOR DETAILED ERROR ANALYSIS PROCEDURE.
*
*        EXPECTED RESPONSE
*
*        CONDITION CODE 0 WITH CHANNEL AND DEVICE ENDS RETURNED IN THE
*        SAME CSW BECAUSE NO FEED CYCLE OCCURS.
*        READ DATA SHOULD BE EQUAL TO EXPECTED DATA.
*        DIAGNOSTIC READ DATA SHOULD RETURN WITH 80 BYTES ALL ZERO.
*
*
* 0030 - OPERATION ATTEMPTED
```

```
                                     *
                                     *        A FEED, STACKER SELECT R1 -23- IS ISSUED TO THE READER.
                                     *
                                     *        EXPECTED RESPONSE
                                     *
                                     *        CONDITION CODE 1 -COMMAND IMMEDIATE WITH CHANNEL AND DEVICE
                                     *        ENDS IN TWO SEPARATE CSWS. SENSE IS ISSUED IF UNIT CHECK IS
                                     *        DETECTED DURING THE FEED COMMAND.
                                     *
                                     * 0040 - OPERATION ATTEMPTED
                                     *
                                     *        A READ, FEED, STACKER SELECT R1 -02- IS ISSUED IF SECTION
                                     *        SENSE SWITCH 10 IS ON.  IF AN ERROR IS DETECTED A SENSE
                                     *        COMMAND IS ISSUED IN THE I-O HANDLER, AND TWO DIAGNOSTIC
                                     *        CHECK READ COMMANDS ARE ISSUED TO ALLOW TESTING THE RETURNED
                                     *        CHECK READ INFORMATION.  IF AN ERROR IN THE NORMAL READ DATA
                                     *        OR THE CHECK READ DATA OCCURS, THE ERROR INDICATION LISTED
                                     *        UNDER TEST NUMBER 0020 WILL BE OUTPUT.
                                     *
                                     *        EXPECTED RESPONSE
                                     *
                                     *        CONDITION CODE 0 WITH CHANNEL AND DEVICE ENDS RETURNED
                                     *        IN SEPARATE CSWS. SENSE IS ISSUED IF UNIT CHECK OCCURS.
                                     *
                                     *
                                     *********************************************************************
                                     *******************                                *******************
                                     * SECTION PREFACE ********************************** SECTION PREFACE *
                                     *******************                                *******************
001000   F8120000                    SECNO  DC   XL4'F8120000'         PROGRAM,SECTION AND REVISION NOS.  *
001004   00000000                    SNSW   DC   XL4'00'               SECTION SENSE SWITCHES             *
001008   0000                               DC   XL2'00'                                                  *
00100A   0000                        ICM    DC   XL2'00'               INTERRUPTION CONDITION MASK        *
00100C   00                          SDMF   DC   XL1'00'               SECTION DM FLAGS                   *
00100D   02                          NIOU   DC   XL1'02'               NUMBER OF UNIT TABLE ENTRYS        *
00100E   C0                          FLAG1  DC   X'C0'                 EXCLUSIVE CPU                      *
00100F   00                          FLAG2  DC   X'00'                 I/O INT ARE ERR, EXT INT TO PROG   *
001010   0104000000                  INPSW  DC   X'0104000000'         DISABLED, SPVSR STATE, NO PGM MASK *
001015   001AF8                             DC   AL3(ROUT01)           ADR OF 1ST ROUTINE PREFIX          *
001018   0000000000000000            EXOPSW DC   XL8'0'                SECTION OLD EXTERNAL PSW           *
001020   0000000000000000            SVOPSW DC   XL8'00'               CLEAR ALL OLD PSWS                 *
001028   0000000000000000            PGOPSW DC   XL8'00'               PROGRAM OLD PSW                    *
001030   0000000000000000            MCOPSW DC   XL8'00'               MACHINE CHECK OLD PSW              *
001038   0000000000000000            IOOPSW DC   XL8'00'               I/O OLD PSW                        *
001040   0000000000000000            CSW    DC   XL8'00'               CHANNEL STATUS WORD                *
001048   00000000                    CAW    DC   XL4'00'               CAW                                *
00104C   000000000000000000                 DC   XL12'00'              RESERVED FOR DM USE                *
001055   000000
001058   0004000000                  EXNPSW DC   X'0004000000'         EXTERNAL NEW PSW                   *
00105D   000000                      SRET   DC   XL3'0'                ADR OF EXT INTRPT ROUTINE          *
001060   0000000000000000            SVNPSW DC   XL8'00'               SUPERVISOR NEW PSW                 *
001068   0000000000000000            PGNPSW DC   XL8'00'               PROGRAM NEW PSW                    *
001070   0000000000000000            MCNPSW DC   XL8'00'               MACHINE CHECK NEW PSW              *
001078   01040000                    IONPSW DC   XL4'01040000'         I/O NEW PSW                        *
00107C   000011F2                           DC   AL4(IRETRN)           ADDRESS OF I/O INTRPT ROUTINE      *
001080                                      DS   96C                   96 BYTE REG DUMP AREA FOR DM USE   *
0010E0   81                          UNIT1  DC   X'81'                 UNIT TYPE - 2540 READER
0010E1   00                          U1OP   DC   X'00'                 OPTIONAL FEATURES BYTE             *
0010E2   8000                        U1ADDR DC   X'8000'               FLAGS AND CHAN/UNIT ADDRESS        *
0010E4   82                          UNIT2  DC   X'82'                 UNIT TYPE - 2540 PUNCH
0010E5   00                          U2OP   DC   X'00'                 OPTIONAL FEATURES BYTE
0010E6   8000                        U2ADDR DC   X'8000'               FLAGS AND CHAN/UNIT ADDRESS
                                     *********************************************************************
                                     *      OPTIONAL FEATURE BYTE DEFINITION
                                     *********************************************************************
                                     *  * BIT 0 * BIT 1 * BIT 2 * BIT 3 * BIT 4 * BIT 5 * BIT 6 * BIT 7 *
                                     *  * HEX 8 * HEX 4 * HEX 2 * HEX 1 * HEX 8 * HEX 4 * HEX 2 * HEX 1 *
                                     *  * ASCII * CARD  *       *  51   * 1400  *       *       * 2821  *
```



```
* *       * IMAGE *       * COL RD* COMP  *       *       * 2 CHN *
* *       *       *       *       *       *       *       *  SW.  *
*********************************************************************
*                   2540 READER SENSE BYTE
*********************************************************************
*      BIT    MEANING
*       0     COMMAND REJECT
*       1     INTERVENTION REQUIRED
*       2     BUS OUT CHECK
*       3     EQUIPMENT CHECK
*       4     DATA CHECK - VALIDITY CHECK - INVALID CARD CODE
*       5     OVERRUN - NOT USED
*       6     UNUSUAL COMMAND SEQUENCE-2 READS WITHOUT INTERVENING FEED .
*       7     NOT USED
*********************************************************************
*               2540 READER STATUS BYTE
*********************************************************************
*      BIT    MEANING
*       0     ATTENTION - 1400 COMPATIBILITY FEATURE ONLY - INDICATES
*                         SENSE WAS ISSUED BEFORE 6 MS TIME OUT AFTER
*                           A 1400 COMPATIBILITY READ.
*       1     STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
*       2     CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
*       3     DEVICE BUSY
*       4     CHANNEL END
*       5     DEVICE END
*       6     UNIT CHECK
*       7     UNIT EXCEPTION - LAST CARD PREVIOUSLY READ, AND END OF
*                                  FILE WAS ON.
*********************************************************************
*          2540 READER DIAGNOSTIC CHECK READ BYTE DEFINITION
*********************************************************************
*      BIT    MEANING
*       0     NOT USED
*       1     NOT USED
*       2     NOT USED
*       3     XU CHECK PLANE
*       4     XL CHECK PLANE
*       5     BUFFER PARITY CHECK
*       6     READ TRANSLATE CHECK
*       7     READER BUFFER ADDRESS CHECK
*********************************************************************
*********************************************************************
*********************************************************************
*                         PARAMETERS USED TO ENTER
*                         THE I-O HANDLER ROUTINE
*********************************************************************
*      BAL    R11,ISIO              LINK TO I-O HANDLER
*      DC     XL2'0000'             CONTROL SWITCHES
*      DC     X'0014'               TEST NO. IN DEC EXPRESSED IN HEX
*      DC     X'F0'                 EXPECTED COND. CODE
*      DC     X'00'                 EXPECTED SENSE DATA
*      DC     AL2(ADR-BASE+REG)     ADDR. OF EXPECTED CSW IF NEEDED
*********************************************************************
*********************************************************************
*                         I-O HANDLER CONTROL SWITCHES
*                         2 BYTE PARAMETER FOLLOWING BAL
*********************************************************************
* SWITCH      DESCRIPTION
*   0  ----   OFF - ISSUE AN I-O COMMAND
*             ON  - DO NOT ISSUE AN I-O COMMAND
*   1  ----   OFF - ENABLE
*             ON  - DO NOT ENABLE
*   2  ----   OFF - EXPECT NO INTERRUPT
*             ON  - EXPECT AN INTERRUPT
*   3  ----   OFF - DO NOT EXPECT 2 INTERRUPTS
*             ON  - EXPECT 2 INTERRUPTS
*   4  ----   OFF - EXPECT NO CSWS
```

```
*          ON  - EXPECT A CSW
*   5  ----  OFF - DO NOT EXPECT 2 CSWS
*          ON  - EXPECT 2 CSWS
*   6  ----  OFF - ALWAYS TRY TO ISSUE SENSE
*          ON  - SENSE ON UNIT CHECK ONLY
*   8  ----  OFF - DO NOT ISSUE 2 DIAGNOSTIC CHECK READ START I-O CMDS
*          ON  - ALWAYS ISSUE 2 DIAGNOSTIC CHECK READ COMMANDS
*
*********************************************************************
*********************************************************************
*                        SWITCHES USED BY I-O HANDLER
*********************************************************************
* SWITCH    DESCRIPTION
*   0  ----  OFF - NO HANGUP ON INTERFACE
*          ON  - HANGUP OCCURRED
*   1  ----  OFF - NO CSWS STORED
*          ON  - ONE CSW STORED
*   2  ----  OFF - SECOND CSW NOT RECEIVED
*          ON  - SECOND CSW RECEIVED
*   3  ----  OFF - DID NOT ENABLE
*          ON  - ENABLED ONCE
*   4  ----  OFF - DID NOT ENABLE TWICE
*          ON  - ENABLED TWICE
*   5  ----  OFF - NO SENSE DATA RECEIVED
*          ON  - SENSE DATA RECEIVED
*   6  ----  OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*          ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*   7  ----  OFF - NO ERROR DETECTED
*          ON  - AN ERROR WAS DETECTED
*********************************************************************
*                      REGISTERS USED IN I-O HANDLER
*********************************************************************
*      REG          COMMENTS
*       5    USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
*            PREVIOUS HANGUP ON INTERFACE DETECTED.
*
*       8    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       9    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       10   MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
*
*       11   MUST BE USED AS LINK REG TO THIS ROUTINE
*
*       12   MUST CONTAIN DEVICE ADDRESS
*
*********************************************************************
0010E8  0000          ISW     DC    XL2'0'
*********************************************************************
*********************************************************************
*                          * I-O HANDLER SUB-ROUTINE *
*********************************************************************
0010EA  92 9C F 18C   ISIO    MVI   ISSUE,X'9C'          SET UP FOR START I-O
0010EE  92 9C F 132           MVI   ILOOP,X'9C'
0010F2  92 E2 F 889           MVI   IOPT1+25,X'E2'       MOVE -S- TO OPTION MSG.
0010F6  92 E2 F 7F0           MVI   IOADDR+12,X'E2'
0010FA  D2 01 F 86C B 002 IEYEOH MVC   ITSTNO+5(2),2(R11) SAVE TEST NUMBER
001100  90 09 F 778           STM   R0,R9,ISAVE          SAVE WORK REGISTERS.
001104  D2 00 F 98F F 003     MVC   RTSV(1),SECNO+3      SAVE RT NO. FOR HANGUP.
00110A  50 AD 0 048   CONP    ST    R10,HCAW(R13)        STORE CMD ADDRESS.
00110E  D7 07 D 040 D 040     XC    HCSW(8,R13),HCSW(R13)
001114  D7 0B E 080 E 080     XC    LOGOUT(12,R14),LOGOUT(R14)
00111A  91 80 B 000           TM    0(R11),X'80'         CHECK CONTROL SWITCH FOR NO I-O
00111E  47 10 F 1C2           BC    ALL,INOW             BR. IF ON
001122  91 C0 F 004           TM    SNSW,X'C0'
001126  47 80 F 16E           BC    NONE,JOHN
*********************************************************************
*                          SENSE SWITCH LOOPS
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00112A  91 80 F 004   ITRY1   TM    SNSW,X'80'           CHECK SECTION SENSE SWITCH 0
00112E  47 80 F 13A           BC    NONE,ITRY2           BR. IF OFF
001132  9C 00 C 000   ILOOP   SIO   0(R12)               SIO, TIO, OR HIO
001136  47 F0 F 12A           BC    UNC,ITRY1            BR. UNCONDITIONAL
00113A  91 40 F 004   ITRY2   TM    SNSW,X'40'           CHECK SECTION SENSE SWITCH 1
00113E  47 80 F 15A           BC    NONE,IHI             BR. IF OFF
001142  9D 00 C 000   IHANG   TIO   0(R12)               TEST I-O
001146  47 70 F 12A           BC    NCCO,ITRY1           BR. IF NOT COND. CODE 0
00114A  91 40 F 004           TM    SNSW,X'40'           CHECK SECTION SENSE SWITCH 1
00114E  47 80 F 15A           BC    NONE,IHI             BR. IF OFF
001152  9C 00 C 000           SIO   0(R12)               START I-O
001156  47 F0 F 142           BC    UNC,IHANG            BR. UNCONDITIONAL
00115A  58 9E 0 198   IHI     L     R9,WT(R14)           PICK UP DM WAIT FACTOR.
00115E  88 90 0 003           SRL   R9,3                 CUT IT DOWN TO 1.25 SECS.
001162  9D 00 C 000   GREG    TIO   0(R12)               TEST I-O TO DEVICE.
001166  47 80 F 16E           BC    CCO,JOHN             BR IF AVAILABLE.
00116A  46 90 F 162           BCT   R9,GREG              LOOP UNTIL TIME OUT.
00116E  D7 01 F 0E8 F 0E8 JOHN  XC    ISW(2),ISW           ZERO THE I-O HANDLER SWITCHES.
001174  96 80 F 0E8           OI    ISW,X'80'            TURN ON THE HANG SWITCH.
001178  94 00 F AD9           NI    CRSW,X'00'           ZERO DIAG MSG SW.
00117C  94 00 F ADC           NI    DERS,X'00'           ZERO THE DATA ERR SW.
001180  94 00 F AD7           NI    HDSW,X'00'           ZERO THE HEADING SWITCH.
001184  92 E7 F 845           MVI   IACSNS+5,C'X'        MOVE AN X INTO THE ACTUAL SENSE DATA
001188  92 E7 F 7DF           MVI   IACTCC+5,C'X'        MOVE IN A -X-
00118C  9C 00 C 000   ISSUE   SIO   0(R12)               I-O COMMAND- SIO, TIO, OR HIO
001190  47 80 F 1BE           BC    CCO,IZERO            BR. IF COND. CODE 0
001194  47 40 F 1AC           BC    CC1,IONE             BR. IF COND. CODE 1
001198  47 20 F 1A4           BC    CC2,ITWO             BR. IF COND. CODE 2
00119C  92 F3 F 7DF           MVI   IACTCC+5,X'F3'       INDICATE COND. CODE 3
0011A0  47 F0 F 1C2           BC    UNC,INOW             BR. UNCONDITIONAL
0011A4  92 F2 F 7DF   ITWO    MVI   IACTCC+5,X'F2'       INDICATE COND. CODE 2
0011A8  47 F0 F 1C2           BC    UNC,INOW             BR. UNCONDITIONAL
0011AC  92 F1 F 7DF   IONE    MVI   IACTCC+5,X'F1'       INDICATE COND. CODE 1
0011B0  D2 07 F 7A0 D 040     MVC   ICSW1(8),HCSW(R13)   SAVE CSW
0011B6  96 40 F 0E8           OI    ISW,X'40'            INDICATE 1 CSW
0011BA  47 F0 F 1C2           BC    UNC,INOW             BR. UNCONDITIONAL
0011BE  92 F0 F 7DF   IZERO   MVI   IACTCC+5,X'F0'       INDICATE COND. CODE 0
0011C2  94 7F F 0E8   INOW    NI    ISW,X'7F'            TURN OFF HANG UP SWITCH
0011C6  91 40 B 000           TM    0(R11),X'40'         CHECK CONTROL SWITCH FOR NO ENABLE
0011CA  47 10 F 266           BC    ALL,ISEN             BR. IF ON
0011CE  96 10 F 0E8           OI    ISW,X'10'            INDICATE ENABLED ONCE
0011D2  58 9E 0 198   IWAIT   L     R9,WT(R14)           LOAD DM WAIT FACTOR
0011D6  88 90 0 003           SRL   R9,3                 ADJUST
0011DA  96 80 F 0E8           OI    ISW,X'80'            TURN ON HANG UP SW
0011DE  80 00 F 98D           SSM   MSK1                 ENABLE
0011E2  46 90 F 1E2           BCT   R9,*                 WAIT
0011E6  80 00 F 98E           SSM   MSK2                 DISABLE
0011EA  94 7F F 0E8           NI    ISW,X'7F'            TURN OFF HANG SW
0011EE  47 F0 F 266           BC    UNC,ISEN             BR. UNCONDITIONAL
*********************************************************************
*                        ALL I-O INTERRUPTS RETURN HERE
*********************************************************************
0011F2  49 C0 F 03A   IRETRN CH     R12,IOOPSW+2         COMPARE FOR CURRENT I-O ADDRESS
0011F6  47 60 F 214           BC    UNEQ,IUIO            BR. IF UNEQUAL
0011FA  94 7F F 0E8           NI    ISW,X'7F'            RESET HANG UP SW
0011FE  91 40 F 0E8           TM    ISW,X'40'
001202  47 10 F 244           BC    ALL,ISV2             BR. IF 1 CSW ALREADY STORED
001206  D2 07 F 7A0 F 040     MVC   ICSW1(8),HCSW(R15)   SAVE CSW 1
00120C  96 40 F 0E8           OI    ISW,X'40'            INDICATE 1 CSW STORED
001210  47 F0 F 24E           BC    UNC,INT3             BR. UNCONDITIONAL
001214  D2 07 F 7B8 F 040 IUIO  MVC   WORK(8),HCSW(R15)
00121A  0A DD                 SVC   X'DD'                CONVERT ADDRESS
00121C  0002                  DC    AL2(2)               2 BYTES OF I-O OLD PSW.
00121E  003A                  DC    AL2(IOOPSW+2-SECNO)  FROM HERE.
001220  09A1                  DC    AL2(IUNEX+17-SECNO)  TO HERE
001222  0A D0                 SVC   X'D0'                PRINT UNEXPECTED INTERRUPT DEVICE
001224  64                    DC    X'64'                ADDRESS
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001225    15                              DC    X'15'
001226    F990                            DC    AL2(IUNEX-SECNO+REG)
001228    D2 02 F 816 F 80F               MVC   IBLAH+1(3),ICSW         MOVE -CSW- TO MESSAGE
00122E    92 1A F 435                     MVI   ICNT,X'1A'              ADJUST COUNT
001232    D2 02 F 82C F 82F               MVC   IBLAH+23(3),IACT        MOVE -ACT- TO MESSAGE
001238    45 90 F 41E                     BAL   R9,ICOUT                BR. TO OUTPUT CSW
00123C    96 02 F 0E8                     OI    ISW,X'02'               INDICATE UIO
001240    47 F0 F 4F8                     BC    UNC,ILOGED              BR. UNCONDITIONAL
001244    D2 07 F 7A8 F 040     ISV2      MVC   ICSW2(8),HCSW(R15)      SAVE CSW 2
00124A    96 20 F 0E8                     OI    ISW,X'20'               INDICATE 2 CSWS STORED
00124E    91 10 B 000           INT3      TM    0(R11),X'10'            CHECK CTRL SW FOR 2 INTR EXPECTED
001252    47 80 F 266                     BC    NONE,ISEN               BR. IF NOT
001256    91 08 F 0E8                     TM    ISW,X'08'
00125A    47 10 F 266                     BC    ALL,ISEN                BR. IF ALREADY ENABLED TWICE
00125E    96 08 F 0E8                     OI    ISW,X'08'               INDICATE ENABLED TWICE
001262    47 F0 F 1D2                     BC    UNC,IWAIT
001266    91 02 B 000           ISEN      TM    0(R11),X'02'            CHECK CONTROL SWITCH FOR SNS ON UC
00126A    47 80 F 28E                     BC    NONE,IDOSNS             BR. IF OFF TO ISSUE SENSE
00126E    91 40 F 0E8                     TM    ISW,X'40'               SEE IF 1ST CSW IN.
001272    47 80 F 318                     BC    NONE,IBSN               BR IF NONE.
001276    91 02 F 7A4                     TM    ICSW1+4,X'02'           CHECK FOR UNIT CHECK
00127A    47 10 F 28E                     BC    ALL,IDOSNS              IF YES BR. TO ISSUE SENSE
00127E    91 20 F 0E8                     TM    ISW,X'20'               CHECK FOR SECOND CSW
001282    47 80 F 318                     BC    NONE,IBSN               BR IF NONE.
001286    91 02 F 7AC                     TM    ICSW2+4,X'02'           CHECK FOR UNIT CHECK
00128A    47 80 F 318                     BC    NONE,IBSN               BR IF NONE.
00128E    41 80 F 768           IDOSNS    LA    R8,ISENSE               LOAD SENSE COMMAND ADDR.
001292    45 70 F 5F2                     BAL   R7,ISTRT                BR TO AUX START I-O.
001296    91 80 F 0E9                     TM    ISW+1,X'80'             CHK FOR DATA RECEIVED
00129A    47 80 F 2B4                     BC    NONE,IFUR               BR IF NOT.
00129E    96 04 F 0E8                     OI    ISW,X'04'               INDICATE SENSE RECIEVED
0012A2    94 7F F 0E9                     NI    ISW+1,X'7F'             TURN OFF DATA RECEIVED.
0012A6    D5 00 F 845 B 005               CLC   IACSNS+5(1),5(R11)      COMPARE FOR EXPECTED SENSE
0012AC    47 80 F 2B4                     BC    EQ,IFUR                 BR IF EQUAL.
0012B0    96 01 F 0E8                     OI    ISW,X'01'               INDICATE AN ERROR.
0012B4    91 80 B 001           IFUR      TM    1(R11),X'80'            SEE IF ONE DIAGNOSTIC CHK RD WANTED.
0012B8    47 80 F 318                     BC    NONE,IBSN               BR IF NOT.
0012BC    41 80 F 770                     LA    R8,DCRD                 PUT ADDR. OF CHK RD INTO 8.
0012C0    45 70 F 5F2                     BAL   R7,ISTRT                BR TO AUX, START I-O.
0012C4    91 80 F 0E9                     TM    ISW+1,X'80'             TEST FOR DATA RECIVED
0012C8    47 80 F 2D4                     BC    NONE,ISEA               BR IF NOT.
0012CC    96 40 F 0E9                     OI    ISW+1,X'40'             INDICATE 1ST CHK READ DATA RECEIVED.
0012D0    94 7F F 0E9                     NI    ISW+1,X'7F'             TURN OFF DATA RECEIVED SW.
0012D4    41 80 F 770           ISEA      LA    R8,DCRD                 PUT ADDR. OF CHK RD INTO 8.
0012D8    45 70 F 5F2                     BAL   R7,ISTRT                BR TO AUX, START I-O.
0012DC    91 80 F 0E9                     TM    ISW+1,X'80'             SEE IF DATA RECEIVED
0012E0    47 80 F 2EC                     BC    NONE,BTCD               BR IF NOT.
0012E4    96 20 F 0E9                     OI    ISW+1,X'20'             INDIC 2ND CHK READ DATA RECEIVED.
0012E8    94 7F F 0E9                     NI    ISW+1,X'7F'             TRN OFF GENERAL DATA REC. SW.
0012EC    45 10 F 574           BTCD      BAL   R1,ICDT                 BR TO CHK DATA.
0012F0    91 60 F 0E9                     TM    ISW+1,X'60'             SEE IF ANY OF THE CHK READS OK.
0012F4    47 50 F 318                     BC    ANY,IBSN                BR IF YES.
0012F8    96 01 F 0E8                     OI    ISW,X'01'               TURN ON ERROR SW.
0012FC    47 F0 F 318                     BC    UNC,IBSN                BR TO CONTINUE.
001300    91 40 F 0E8           INOEX1    TM    ISW,X'40'
001304    47 10 F 366                     BC    ALL,INDER               BR. IF CSW STORED
001308    47 F0 F 36A                     BC    UNC,IDUNCK              BR. UNCONDITIONAL
00130C    91 20 F 0E8           INOEX2    TM    ISW,X'20'
001310    47 10 F 366                     BC    ALL,INDER               BR. IF CSW 2 STORED
001314    47 F0 F 36A                     BC    UNC,IDUNCK              BR. UNCONDITIONAL
001318    D5 00 F 7DF B 004     IBSN      CLC   IACTCC+5(1),4(R11)      COMPARE FOR EXPECTED COND. CODE
00131E    47 60 F 366                     BC    UNEQ,INDER              BR. IF UNEQUAL
001322    91 08 B 000                     TM    0(R11),X'08'
001326    47 80 F 300                     BC    NONE,INOEX1             BR. IF NO CSW EXPECTED
00132A    91 40 F 0E8                     TM    ISW,X'40'
00132E    47 80 F 366                     BC    NONE,INDER              BR. IF NO CSW RECIEVED
001332    48 8B 0 006                     LH    R8,6(R11)               LOAD CSW ADDR
001336    40 80 F 33E                     STH   R8,ICCSW1+4             STORE IN COMPARE INSTR.
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00133A    D5 07 F 7A0 F 7A0     ICCSW1    CLC   ICSW1(8),ICSW1          COMPARE FOR EXPECTED CSW
001340    47 60 F 366                     BC    UNEQ,INDER              BR. IF UNEQUAL
001344    91 04 B 000                     TM    0(R11),X'04'
001348    47 80 F 30C                     BC    NONE,INOEX2             BR. IF NO CSW 2 EXPECTED
00134C    91 20 F 0E8                     TM    ISW,X'20'
001350    47 80 F 366                     BC    NONE,INDER              BR. IF NO CSW 2 RECIEVED
001354    41 88 0 008                     LA    R8,8(R8)                UPDATE TO SECOND CSW
001358    40 80 F 360                     STH   R8,ICCSW2+4
00135C    D5 07 F 7A8 F 7A8     ICCSW2    CLC   ICSW2(8),ICSW2          COMPARE FOR EXPECTED CSW 2
001362    47 80 F 36A                     BC    EQ,IDUNCK               BR. IF EQUAL
001366    96 01 F 0E8           INDER     OI    ISW,X'01'               INDICATE AN ERROR
00136A    92 64 F 3AA           IDUNCK    MVI   IFLAG1,X'64'            SET UP FOR ERROR PRINTOUT
00136E    92 C0 F 542                     MVI   IFLAG2,X'C0'
001372    91 01 F 0E8                     TM    ISW,X'01'               CHECK FOR A DETECTED ERROR
001376    47 10 F 38A                     BC    ALL,IOUTIT              BR. IF ERROR DETECTED
00137A    91 01 F 004                     TM    SNSW,X'01'              CHECK SECTION SENSE SWITCH 7
00137E    47 80 F 55E                     BC    NONE,ILEAVE             BR. IF OFF
001382    92 24 F 3AA                     MVI   IFLAG1,X'24'            SET UP FOR CORRECT PRINTOUT
001386    92 80 F 542                     MVI   IFLAG2,X'80'
00138A    95 40 F 845           IOUTIT    CLI   IACSNS+5,X'40'          SEE IF INTERVENTION REQUIRED.
00138E    47 80 F 5DC                     BC    EQ,RRM                  BR IF YES.
001392    91 01 F 7A4                     TM    ICSW1+4,X'01'           SEE IF UNIT EXCEPTION.
001396    47 10 F 5DC                     BC    ALL,RRM                 BR IF YES.
00139A    D2 01 F 86C B 002               MVC   ITSTNO+5(2),2(R11)      MOVE TEST NO. TO PRINT AREA.
0013A0    0A DD                           SVC   X'DD'                   CONVERT TEST NUMBER
0013A2    0002                            DC    AL2(2)
0013A4    086C                            DC    AL2(ITSTNO+5-SECNO)
0013A6    086C                            DC    AL2(ITSTNO+5-SECNO)
0013A8    0A D0                           SVC   X'D0'                   PRINT TEST NUMBER
0013AA    64                    IFLAG1    DC    X'64'
0013AB    09                              DC    X'09'
0013AC    F867                            DC    AL2(ITSTNO-SECNO+REG)
0013AE    41 80 0 004                     LA    R8,4                    ADJUST LINK ADDRESS FOR PRINTOUT
0013B2    1B 88                           SR    R11,R8
0013B4    50 B0 F 7F8                     ST    R11,ILINK+5
0013B8    0A DD                           SVC   X'DD'                   CONVERT LINK ADDRESS
0013BA    0003                            DC    AL2(3)
0013BC    07F9                            DC    AL2(ILINK+6-SECNO)
0013BE    07F8                            DC    AL2(ILINK+5-SECNO)
0013C0    0A D0                           SVC   X'D0'                   PRINT LINK ADDRESS
0013C2    A0                              DC    X'A0'
0013C3    10                              DC    X'10'
0013C4    F7F3                            DC    AL2(ILINK-SECNO+REG)
0013C6    41 BB 0 004                     LA    R11,4(R11)
0013CA    91 80 B 000                     TM    0(R11),X'80'
0013CE    47 10 F 44C                     BC    ALL,IOCSW               BR. IF NO I-O COMMAND ISSUED
0013D2    0A DD                           SVC   X'DD'                   CONVERT I-O ADDRESS
0013D4    0003                            DC    AL2(3)
0013D6    098A                            DC    AL2(IOADR-SECNO)
0013D8    07E9                            DC    AL2(IOADDR+5-SECNO)
0013DA    0A D0                           SVC   X'D0'                   PRINT I-O ADDRESS
0013DC    A0                              DC    X'A0'
0013DD    0F                              DC    X'0F'
0013DE    F7E4                            DC    AL2(IOADDR-SECNO+REG)
0013E0    95 9C F 18C                     CLI   ISSUE,X'9C'             COMPARE FOR SIO COMMAND
0013E4    47 60 F 43A                     BC    UNEQ,ICCOUT             BR. IF NOT
0013E8    50 A0 F 808                     ST    R10,ICAW+5              STORE CCW ADDR.
0013EC    0A DD                           SVC   X'DD'                   CONVERT CAW
0013EE    0003                            DC    AL2(3)
0013F0    0809                            DC    AL2(ICAW+6-SECNO)
0013F2    0808                            DC    AL2(ICAW+5-SECNO)
0013F4    0A D0                           SVC   X'D0'                   PRINT CAW
0013F6    A0                              DC    X'A0'
0013F7    0B                              DC    X'0B'
0013F8    F803                            DC    AL2(ICAW-SECNO+REG)
0013FA    D2 02 F 816 F 812               MVC   IBLAH+1(3),ICCW         MOVE -CCW- TO MESSAGE
001400    92 16 F 435                     MVI   ICNT,X'16'              ADJUST COUNT
001404    D2 07 F 788 A 000     ICWOUT    MVC   WORK(8),0(R10)          MOVE CCW TO WORK AREA
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00140A   45 90 F 41E                BAL   R9,ICOUT          BR. TO OUTPUT CCW
00140E   91 C0 A 004                TM    4(R10),X'C0'      CHECK FOR ANY CHAIN FLAGS
001412   47 80 F 43A                BC    NONE,ICCOUT       BR. IF NONE
001416   41 AA 0 008                LA    R10,8(R10)        UPDATE TO NEXT CCW
00141A   47 F0 F 404                BC    UNC,ICWOUT        BR. UNCONDITIONAL
00141E   0A DD              ICOUT   SVC   X'DD'             CONVERT
001420   0008                       DC    AL2(8)
001422   07B8                       DC    AL2(WORK-SECNO)
001424   07B8                       DC    AL2(WORK-SECNO)
001426   D2 07 F 81A F 788          MVC   IBLAH+5(8),WORK     MOVE TO MESSAGE
00142C   D2 07 F 823 F 7C0          MVC   IBLAH+14(8),WORK+8
001432   0A DO                      SVC   X'DO'             PRINT
001434   A0                         DC    X'A0'
001435   1A                  ICNT   DC    X'1A'
001436   F815                       DC    AL2(IBLAH-SECNO+REG)
001438   07 F9                      BCR   UNC,R9            RETURN VIA REG 9
00143A   D2 00 F 7D5 8 004  ICCOUT MVC   IEXPCC+5(1),4(R11) MOVE EXP CC TO MESSAGE
001440   0A DO                      SVC   X'DO'             PRINT EXPECTED COND. CODE
001442   A0                         DC    X'A0'
001443   0A                         DC    X'0A'
001444   F7D0                       DC    AL2(IEXPCC-SECNO+REG)
001446   0A DO                      SVC   X'DO'             PRINT ACTUAL COND. CODE
001448   A0                         DC    X'A0'
001449   0A                         DC    X'0A'
00144A   F7DA                       DC    AL2(IACTCC-SECNO+REG)
00144C   D2 02 F 816 F 80F  IOCSW  MVC   IBLAH+1(3),ICSW     MOVE -CSW- TO MESSAGE
001452   92 1A F 435                MVI   ICNT,X'1A'        ADJUST COUNT
001456   91 08 B 000                TM    0(R11),X'08'
00145A   47 80 F 47E                BC    NONE,IDIDI        BR. IF NO CSW EXPECTED
00145E   D2 02 F 82C F 832          MVC   IBLAH+23(3),IEXP  MOVE -EXP- TO MESSAGE
001464   48 8B 0 006                LH    R8,6(R11)
001468   40 80 F 478                STH   R8,ICHNG1+4
00146C   41 88 0 008                LA    R8,8(R8)
001470   40 80 F 4A8                STH   R8,ICHNG2+4
001474   D2 07 F 788 F 788  ICHNG1 MVC   WORK(8),WORK      MOVE EXPECTED CSW TO WORK AREA
00147A   45 90 F 41E                BAL   R9,ICOUT          BR. TO OUTPUT EXPECTED CSW
00147E   91 40 F 0E8          IDIDI TM    ISW,X'40'
001482   47 80 F 496                BC    NONE,IMORST       BR. IF NO CSW STORED
001486   D2 02 F 82C F 82F          MVC   IBLAH+23(3),IACT  MOVE -ACT- TO MESSAGE
00148C   D2 07 F 788 F 7A0          MVC   WORK(8),ICSW1     MOVE ACTUAL CSW TO WORK AREA
001492   45 90 F 41E                BAL   R9,ICOUT          BR. TO OUTPUT ACTUAL CSW
001496   91 04 B 000          IMORST TM    0(R11),X'04'
00149A   47 80 F 4AE                BC    NONE,IDID         BR. IF NOT EXPECTING 2 CSWS
00149E   D2 02 F 82C F 832          MVC   IBLAH+23(3),IEXP  MOVE -EXP- TO MESSAGE
0014A4   D2 07 F 788 F 788  ICHNG2 MVC   WORK(8),WORK      MOVE EXPECTED CSW TO WORK AREA
0014AA   45 90 F 41E                BAL   R9,ICOUT          BR. TO OUTPUT EXPECTED CSW 2
0014AE   91 20 F 0E8          IDID  TM    ISW,X'20'
0014B2   47 80 F 4C6                BC    NONE,IPAS         BR. IF NO SECOND CSW STORED
0014B6   D2 02 F 82C F 82F          MVC   IBLAH+23(3),IACT  MOVE -ACT- TO MESSAGE
0014BC   D2 07 F 788 F 7A8          MVC   WORK(8),ICSW2     MOVE CSW TO WORK AREA
0014C2   45 90 F 41E                BAL   R9,ICOUT
0014C6   D2 00 F 83A 8 005  IPAS   MVC   IEXSNS+5(1),5(R11) MOVE EXP SENSE TO MESSAGE
0014CC   91 04 F 0E8                TM    ISW,X'04'
0014D0   47 80 F 4F0                BC    NONE,IPASS        BR. IF NO SENSE DATA RECIEVED
0014D4   0A DD                      SVC   X'DD'             CONVERT EXPECTED SENSE
0014D6   0001                       DC    AL2(1)
0014D8   083A                       DC    AL2(IEXSNS+5-SECNO)
0014DA   083A                       DC    AL2(IEXSNS+5-SECNO)
0014DC   0A DO                      SVC   X'DO'             PRINT EXPECTED SENSE
0014DE   A0                         DC    X'A0'
0014DF   0B                         DC    X'0B'
0014E0   F835                       DC    AL2(IEXSNS-SECNO+REG)
0014E2   0A DD                      SVC   X'DD'
0014E4   0001                       DC    AL2(1)
0014E6   0845                       DC    AL2(IACSNS+5-SECNO)
0014E8   0845                       DC    AL2(IACSNS+5-SECNO)
0014EA   0A DO                      SVC   X'DO'             PRINT ACTUAL SENSE DATA
0014EC   A0                         DC    X'A0'
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0014ED   0B                         DC    X'0B'
0014EE   F840                       DC    AL2(IACSNS-SECNO+REG)
0014F0   95 30 E 181        IPASS   CLI   SYSMOD(R14),X'30'   CHECK FOR MOD 30.
0014F4   47 60 F 524                BC    UNEQ,ICD          BR. IF NOT
0014F8   D2 0B F 788 E 080  ILOGED  MVC   WORK(12),LOGOUT(R14) MOVE LOG OUT TO WORK AREA
0014FE   0A DD                      SVC   X'DD'             CONVERT
001500   000C                       DC    AL2(12)
001502   07B8                       DC    AL2(WORK-SECNO)
001504   07B8                       DC    AL2(WORK-SECNO)
001506   D2 01 F 850 F 788          MVC   IOLOG+5(2),WORK     MOVE LOG OUT TO MESSAGE
00150C   D2 05 F 853 F 78A          MVC   IOLOG+8(6),WORK+2
001512   D2 05 F 85A F 7C2          MVC   IOLOG+15(6),WORK+10
001518   D2 05 F 861 F 7CA          MVC   IOLOG+22(6),WORK+18
00151E   0A DO                      SVC   X'DO'             PRINT LOG OUT
001520   A0                         DC    X'A0'
001521   1C                         DC    X'1C'
001522   F84B                       DC    AL2(IOLOG-SECNO+REG)
001524   91 02 F 0E8         ICD    TM    ISW,X'02'         SEE IF UIO.
001528   47 80 F 534                BC    NONE,IBCD         BR IF NO
00152C   94 FD F 0E8                NI    ISW,X'FD'         RESET UIO SWITCH
001530   47 F0 F 102                BC    UNC,IWAIT         BR. UNCONDITIONAL
001534   91 80 B 001         IBCD   TM    1(R11),X'80'      SEE IF DIAG. CHK READ DONE.
001538   47 80 F 540                BC    NONE,IOPOUT       BR. IF NOT UIO
00153C   45 10 F 574                BAL   R1,ICDT           BR TO INDICATE ANY DATA ERRORS.
001540   0A DO               IOPOUT SVC   X'DO'             PRINT LOOP OPTIONS
001542   C0                  IFLAG2 DC    X'C0'
001543   36                         DC    X'36'
001544   F870                       DC    AL2(IOPT1-SECNO+REG)
001546   0A DO                      SVC   X'DO'             SPACE A LINE
001548   A0                         DC    X'A0'
001549   01                         DC    X'01'
00154A   F7F3                       DC    AL2(ILINK-SECNO+REG)
00154C   50 AD 0 048                ST    R10,HCAW(R13)     STORE CAW
001550   91 C0 F 004                TM    SNSW,X'C0'        CHECK SECTION SENSE SWITCH 0 AND 1
001554   47 50 F 12A                BC    ANY,ITRY1         BR. IF ANY ON
001558   91 80 F 0E8                TM    ISW,X'80'
00155C   07 15                      BCR   ALL,R5            RETURN VIA REG 5 IF HANG UP
00155E   91 08 B 000        ILEAVE TM    0(R11),X'08'
001562   47 80 F 56A                BC    NONE,IUP          BR. IF NO CSW EXPECTED
001566   41 BB 0 002                LA    R11,2(R11)        UPDATE LINK ADDRESS FOR RETURN
00156A   41 BB 0 006        IUP    LA    R11,6(R11)
00156E   98 09 F 778                LM    R0,R9,ISAVE       RESTORE WORKING REGS.
001572   07 FB                      BCR   UNC,R11           RETURN VIA REG 11
*********************************************************************************
*       DATA COMPARE ROUTINE
*********************************************************************************
001574   41 20 0 001         ICDT   LA    R2,1              PUT A 1 INTO REG 2.
001578   1B 33                      SR    R3,R3             ZERO REG 3.
00157A   43 30 F ADA                IC    R3,FIRST          PICK UP EXP 1ST BYTE.
00157E   42 30 F AD8        IT80   STC   R3,ICODAT         SAVE THE BYTE FOR COMPARE.
001582   41 42 F A83                LA    R4,CHKBUF-1(R2)   PICK UP ADDR OF CHK DATA BYTE.
001586   41 72 F A33                LA    R7,BUFFER-1(R2)   PICK UP ADDR OF DATA BYTE.
00158A   D2 24 F 923 F 922          MVC   GOODY+1(37),GOODY BLANK DATA PRINT AREA.
001590   91 20 F 004                TM    SNSW,X'20'        SEE IF BYPASS DATA COMPARE
001594   47 10 F 5A2                BC    ALL,ITCO          BR IF YES.
001598   D5 00 7 000 F AD8          CLC   0(1,R7),ICODAT    SEE IF DATA BYTE AS EXPECTED.
00159E   47 60 F 5C8                BC    UNEQ,ISIP1        BR IF NOT EQUAL.
0015A2   91 60 F 0E9        ITCO   TM    ISW+1,X'60'       SEE IF ANY CHK READS DONE.
0015A6   47 80 F 5B2                BC    NONE,IRTU         BR IF NO.
0015AA   91 FF 4 000                TM    0(R4),X'FF'       SEE IF ANY CHK BITS ON.
0015AE   47 50 F 5CC                BC    ANY,ISIP          BR IF YES.
0015B2   41 33 0 001        IRTU   LA    R3,1(R3)          ADD 1 TO EXP DATA BYTE.
0015B6   41 22 0 001                LA    R2,1(R2)          ADD 1 TO INDEX VALUE.
0015BA   55 20 F A28                CL    R2,ATE1           SEE IF END OF COMPARE
0015BE   47 60 F 57E                BC    UNEQ,IT80         BR IF NO.
0015C2   96 02 F 0E9        ISSW   OI    ISW+1,X'02'       TURN ON 1ST PASS SW.
0015C6   07 F1                      BCR   UNC,R1            RETURN.
0015C8   96 80 F ADC        ISIP1  OI    DERS,X'80'        TURN ON DATA ERR SW.
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0015CC   91 02 F 0E9          ISIP   TM    ISW+1,X'02'          SEE IF 1ST PASS SW ON.
0015D0   47 10 F 634                 BC    ALL,IGOP             BR IF YES
0015D4   96 01 F 0E8                 OI    ISW,X'01'            INDICATE AN ERROR
0015D8   47 F0 F 5C2                 BC    UNC,ISSW             BR TO EXIT ROUTINE
                              ********************************************************************************
                              *      INTERVENTION REQUIRED ROUTINE
                              ********************************************************************************
0015DC   0A D0                RRM    SVC   X'D0'                PRINT -MAKE DEVICE READY-
0015DE   2410                        DC    X'2410'
0015E0   F954                        DC    AL2(MDR-SECNO+REG)
0015E2   0A DA                       SVC   X'DA'                HALT
0015E4   9D 00 C 000                 TIO   0(R12)               TEST I-O
0015E8   0A D0                       SVC   X'D0'                PRINT A BLANK.
0015EA   8001                        DC    X'8001'
0015EC   F954                        DC    AL2(MDR-SECNO+REG)
0015EE   47 F0 F 10A                 BC    UNC,CONP             BR TO CONTINUE.
                              ********************************************************************************
                              *      AUXILIARY START I-O ROUTINE
                              ********************************************************************************
0015F2   58 9E 0 198          ISTRT  L     R9,WT(R14)           LOAD DM WAIT FACTOR.
0015F6   88 90 0 002                 SRL   R9,2                 CUT IT DOWN TO 2.5 SECS.
0015FA   50 8D 0 048                 ST    R8,HCAW(R13)         STORE IN CAW
0015FE   9C 00 C 000                 SIO   0(R12)               START I-O
001602   47 70 F 622                 BC    NCCO,IBACK
001606   9D 00 C 000          ITIOLP TIO   0(R12)               TEST I-O
00160A   47 40 F 614                 BC    CC1,ILOKE            BR. IF CSW STORED
00160E   46 90 F 606          ITIC   BCT   R9,ITIOLP
001612   07 F7                        BCR   UNC,R7               RETURN.
001614   91 04 D 044          ILOKE  TM    HCSW+4(R13),X'04'    CHECK FOR DEVICE END.
001618   47 80 F 60E                 BC    NONE,ITIC            BR IF NOT IN YET.
00161C   96 80 F 0E9                 OI    ISW+1,X'80'          INDICATE THE DATA RECEIVED.
001620   07 F7                        BCR   UNC,R7               RETURN.
001622   91 01 F 7A4          IBACK  TM    ICSW1+4,X'01'        SEE IF UNIT EXCEPTION.
001626   47 10 F 10A                 BC    ALL,CONP             BR IF YES.
00162A   91 F4 F 845                 TM    IACSNS+5,X'F4'       SEE IF INTERVENTION REQUIRED.
00162E   47 10 F 10A                 BC    ALL,CONP             BR IF YES.
001632   07 F7                        BCR   UNC,R7               RETURN.
                              ********************************************************************************
                              *      DATA PRINTOUT ROUTINE
                              ********************************************************************************
001634   91 60 F 0E9          IGOP   TM    ISW+1,X'60'          SEE IF AT LEAST ONE CHK READ OK.
001638   47 50 F 652                 BC    ANY,COPT             BR IF YES.
00163C   91 80 F AD9                 TM    CRSW,X'80'           SEE IF MSG ALREADY PRINTED.
001640   47 10 F 6A2                 BC    ALL,NTC              BR IF YES.
001644   0A D0                       SVC   X'D0'                PRINT BOTH CHK READS FAILED.
001646   8026                        DC    X'8026'
001648   F964                        DC    AL2(TCRA-SECNO+REG)
00164A   96 80 F AD9                 OI    CRSW,X'80'           TURN ON SWITCH FOR MSG.
00164E   47 F0 F 6A2                 BC    UNC,NTC              GO TO MSG.
001652   92 F0 F 938          COPT   MVI   GOODY+22,C'0'        MOVE ZERO INTO PRINT AREA.
001656   91 10 4 000                 TM    0(R4),X'10'          SEE IF XU ON IN DIAG CHK READ BYTE.
00165A   47 80 F 662                 BC    NONE,NXU             BR IF NOT ON.
00165E   92 F1 F 938                 MVI   GOODY+22,C'1'        MOVE ONE INTO PRINT AREA.
001662   92 F0 F 93B          NXU    MVI   GOODY+25,C'0'        PUT ZERO INTO PRINT AREA.
001666   91 08 4 000                 TM    0(R4),X'08'          SEE IF XL ON IN DIAG CHK DATA.
00166A   47 80 F 672                 BC    NONE,NXL             BR IF NOT ON.
00166E   92 F1 F 93B                 MVI   GOODY+25,C'1'        MOVE ONE INTO PRINTOUT
001672   92 F0 F 93E          NXL    MVI   GOODY+28,C'0'        MOVE ZERO INTO PRINTOUT.
001676   91 04 4 000                 TM    0(R4),X'04'          SEE IF BUFFER PARITY ON IN CHK DATA.
00167A   47 80 F 682                 BC    NONE,NBP             BR IF NOT ON.
00167E   92 F1 F 93E                 MVI   GOODY+28,C'1'        MOVE A ONE INTO PRINTOUT.
001682   92 F0 F 942          NBP    MVI   GOODY+32,C'0'        MOVE A ZERO INTO PRINTOUT.
001686   91 01 4 000                 TM    0(R4),X'01'          SEE IF ADDR CHK IN CHK DATA
00168A   47 80 F 692                 BC    NONE,NAC             BR IF NOT.
00168E   92 F1 F 942                 MVI   GOODY+32,C'1'        MOVE A ONE INTO THE PRINTOUT.
001692   92 F0 F 947          NAC    MVI   GOODY+37,C'0'        MOVE A ZERO INTO PRINTOUT.
001696   91 02 4 000                 TM    0(R4),X'02'          SEE IF TRANSLATE CHK
00169A   47 80 F 6A2                 BC    NONE,NTC             BR IF NO.
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00169E   92 F1 F 947                 MVI   GOODY+37,C'1'        MOVE A ONE INTO PRINTOUT.
0016A2   91 80 F AD7          NTC    TM    HDSW,X'80'           SEE IF HEADING PRINTED.
0016A6   47 10 F 6CC                 BC    ALL,IPDA             BR IF YES.
0016AA   0A D0                       SVC   X'D0'                PRINT 1ST HDR.
0016AC   A009                        DC    X'A009'
0016AE   F8A6                        DC    AL2(HD1-SECNO+REG)
0016B0   0A D0                       SVC   X'D0'                PRINT CARD LOCATION IN READER.
0016B2   A014                        DC    X'A014'
0016B4   F8AF                        DC    AL2(HD1A-SECNO+REG)
0016B6   0A D0                       SVC   X'D0'                PRINT A BLANK.
0016B8   A001                        DC    X'A001'
0016BA   F8D9                        DC    AL2(BIG-SECNO+REG)
0016BC   0A D0                       SVC   X'D0'                PRINT HEADING 3.
0016BE   A022                        DC    X'A022'
0016C0   F8D9                        DC    AL2(BIG-SECNO+REG)
0016C2   0A D0                       SVC   X'D0'                PRINT HEADING 4.
0016C4   A027                        DC    X'A027'
0016C6   F8FB                        DC    AL2(BEAUTY-SECNO+REG)
0016C8   96 80 F AD7                 OI    HDSW,X'80'           TURN ON THE HEADING SW.
0016CC   18 42                IPDA   LR    R4,R2                PUT THE COLUMN NO. INTO REG 4.
0016CE   4E 40 F 7B0                 CVD   R4,DBWD              CONV IT TO DECIMAL.
0016D2   F3 11 F 924 F 7B6           UNPK  GOODY+2(2),DBWD+6(2) PUT IT INTO PRINT AREA.
0016D8   96 F0 F 925                 OI    GOODY+3,X'F0'        COVER SIGN UP FOR PRINTING.
0016DC   91 20 F 004                 TM    SNSW,X'20'           SEE IF SSW 2 ON.
0016E0   47 10 F 75E                 BC    ALL,PRGD             BR IF YES TO PRINT ONLY DIAG DATA.
0016E4   D2 00 F 7B0 7 000           MVC   DBWD(1),0(R7)        MOVE ACTUAL DATA TO CONVERT AREA.
0016EA   0A DD                       SVC   X'DD'                CONVERT FROM HEX TO BINARY.
0016EC   0001                        DC    AL2(01)              1 BYTE.
0016EE   07B0                        DC    AL2(DBWD-SECNO)      FROM HERE.
0016F0   0934                        DC    AL2(GOODY+18-SECNO)  TO HERE
0016F2   0A DD                       SVC   X'DD'                CONVERT FROM HEX TO BINARY.
0016F4   0001                        DC    AL2(01)              1 BYTE.
0016F6   0AD8                        DC    AL2(ICODAT-SECNO)    FROM HERE
0016F8   0930                        DC    AL2(GOODY+14-SECNO)  TO HERE
0016FA   90 04 F D54                 STM   R0,R4,TWENTY         SAVE REGISTERS
0016FE   18 11                       SR    R1,R1                ZERO REG 1
001700   18 22                       SR    R2,R2                ZERO REG 2.
001702   18 33                       SR    R3,R3                ZERO REG 3.
001704   41 40 0 002                 LA    R4,2                 LOAD DIVISOR
001708   43 30 F AD8                 IC    R3,ICODAT            PICK UP HEX CHARACTER
00170C   18 13                       LR    R1,R3                SAVE HEX CHARACTER
00170E   1D 24                       DR    R2,R4                DIVIDE HEX CHARACTER BY 2
001710   1A 31                       AR    R3,R1                ADD DIVIDEND TO CHARACTER
001712   43 13 F D6A                 IC    R1,HOLES(R3)         PICK UP FIRST BYTE
001716   89 10 0 008                 SLL   R1,8                 SHIFT
00171A   43 13 F D68                 IC    R1,HOLES+1(R3)       PICK UP SECOND BYTE
00171E   41 30 0 0FF                 LA    R3,255               LOAD MASK
001722   14 23                       NR    R2,R3                AND WITH REMAINDER
001724   47 50 F 72C                 BC    ANY,**+8             BR. IF THERE WAS A REMAINDER
001728   88 10 0 004                 SRL   R1,4                 SHIFT OFF UNUSED 4 BITS
00172C   50 10 F 7B0                 ST    R1,DBWD              SAVE REG 1.
001730   41 40 0 006                 LA    R4,6                 SET UP FOR 6 POSSIBLE PUNCHES
001734   41 30 0 00C                 LA    R3,12                SET UP TO CHECK 12 PUNCHES
001738   41 00 0 001                 LA    R0,1                 LOAD MASK
00173C   43 23 F 947          PIK    IC    R2,PUNCHS-1(R3)      PICK UP PRINTABLE CHARACTER
001740   58 10 F 7B0                 L     R1,DBWD              RESTORE REG 1.
001744   14 10                       NR    R1,R0                TEST FOR PUNCH
001746   47 80 F 752                 BC    NONE,NXT             BR. IF NONE
00174A   42 24 F 927                 STC   R2,GOODY+5(R4)       STORE PRINTABLE CHARACTER
00174E   46 40 F 752                 BCT   R4,**+4              DECREMENT PRINT AREA INDEX
001752   89 00 0 001          NXT    SLL   R0,1                 SHIFT MASK FOR NEXT BIT
001756   46 30 F 73C                 BCT   R3,PIK               BR. UNTIL 12 CHECKED
00175A   98 04 F D54                 LM    R0,R4,TWENTY         RESTORE REGISTERS
00175E   0A D0                PRGD   SVC   X'D0'                PRINT THE DATA.
001760   8026                        DC    X'8026'
001762   F922                        DC    AL2(GOODY-SECNO+REG)
001764   47 F0 F 5B2                 BC    UNC,IRTU             RETURN TO COMPARE RTN.
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                                *      I-O HANDLER WORK AREA.
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001768  04 001845 0000 0001   ISENSE CCW   X'04',IACSNS+5,X'00',1
001770  C6 001A84 2000 0050   DCRD  CCW   X'C6',CHKBUF,X'20',80
001778  00000000              ISAVE  DC    10F'0'
00177C  00000000
001780  00000000
001784  00000000
001788  00000000
00178C  00000000
001790  00000000
001794  00000000
001798  00000000
00179C  00000000
0017A0  0000000000000000      ICSW1  DC    XL8'0'
0017A8  0000000000000000      ICSW2  DC    XL8'0'
0017B0  +00.00000000000000    DBWD   DC    D'0'
0017B8                        WORK   DS    24C
0017D0  40C3C34040E740C5E7    IEXPCC DC    C' CC  X EXP'
0017D9  D7
0017DA  40C3C34040E740C1C3    IACTCC DC    C' CC  X ACT'
0017E3  E3
0017E4  40C1C4D940E7E7E7E7    IOADDR DC    C' ADR XXXXXX XIO'
0017ED  E7E740E7C9D6
0017F3  00                            DC    X'00'
0017F4                                CNOP  0,4
                    0017F3            ORG   *-1
0017F3  40C1C4D940E7E7E7E7    ILINK  DC    C' ADR XXXXXX LINK'
0017FC  E7E740D3C9D5D2
001803  00                            DC    X'00'
001804                                CNOP  0,4
                    001803            ORG   *-1
001803  40C3C1E640E7E7E7E7    ICAW   DC    C' CAW XXXXXX '
00180C  E7E740
00180F  C3E2E6                ICSW   DC    C'CSW'
001812  C3C3E6                ICCW   DC    C'CCW'
001815  40C3E2E640E7E7E7E7    IBLAH  DC    C' CSW XXXXXXXX XX'
00181E  E7E7E7E740E7E7
001825  E7E7E7E7E7E740C5E7            DC    C'XXXXXX EXP'
00182E  D7
00182F  C1C3E3                IACT   DC    C'ACT'
001832  C5E7D7                IEXP   DC    C'EXP'
001835  40E2D5E240E7E740C5    IEXSNS DC    C' SNS XX EXP'
00183E  E7D7
001840  40E2D5E240E7E740C1    IACSNS DC    C' SNS XX ACT'
001849  C3E3
00184B  40D3D6C740E7E740E7    IOLOG  DC    C' LOG XX XXXXXX X'
001854  E7E7E7E7E740E7
00185B  E7E7E7E7E740E7E7E7            DC    C'XXXXX XXXXXX'
001864  E7E7E7
001867  40E3E2E340E7E7E7E7    ITSTNO DC    C' TST XXXX'
001870  40E2C5E340E2E240F0    IOPT1  DC    C' SET SS 0 ON FOR'
001879  40D6D540C6D6D9
001880  40D3D6D6D740D6D540            DC    C' LOOP ON XIO, SS'
001889  E7C9D66B40E2E2
001890  40F140D6D540C6D6D9            DC    C' 1 ON FOR TIO SI'
001899  40E3C9D640E2C9
0018A0  D640D3D6D6D7          HD1    DC    C'O LOOP'
0018A6  40D9C5C1C440C5D9D9    HD1A   DC    C' READ ERR'
0018AF  40C3C1D9C440C9D540    HD1A   DC    C' CARD IN '
0018B8  D7D9C5E2E3D2D940E2            DC    C'PRESTKR STA'
0018C1  E3C1
0018C3  D7D9C5E2E3D2D940E2    PRES   DC    C'PRESTKR STA'
0018CC  E3C1
0018CE  E2E3C1C3D2C5D940D9    STK1   DC    C'STACKER R1.'
0018D7  F14B
0018D9  40404040405E7D7C5     BIG    DC    C'     EXPECTED SH'
0018E2  C3E3C5C440E2C8
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0018E9  C4404040404040404040          DC    C'D              B'
0018F2  40404040404040C2
0018F9  E4C6                          DC    C'UF'
0018FB  40C3D6D340D7E4D5C3    BEAUTY  DC    C' COL PUNCHES  RD'
001904  C8C5E24040D9C4
00190B  4040D9C440E7E440E7            DC    C'  RD XU XL PAR A'
001914  D340D7C1D940C1
00191B  C4D940E3D9C1D5                DC    C'DR TRAN'
001922  4040404040404040404040 GOODY  DC    C'                '
00192B  4040404040404040
001932  4040404040404040404040        DC    C'                '
00193B  4040404040404040
001942  404040404040                 DC    C'      '
001948  E3C5F0F1F2F3F4F5F6    PUNCHS  DC    C'TE0123456789'
001951  F7F8F9
001954  4004C1D2C540C4C5E5    MDR     DC    C' MAKE DEVICE RDY'
00195D  C9C3C540D9C4E8
001964  40F240C4C9C1C740C3    TCRA    DC    C' 2 DIAG CHK RDS '
00196D  C8D240D9C4E240
001974  C1E3E3C5D4D7E3C5C4            DC    C'ATTEMPTED -BOTH '
00197D  40604C2D6E3C840
001984  C6C1C9D3C5C4                 DC    C'FAILED'
00198A  00118C                IOADR   DC    AL3(ISSUE)
00198D  FE                    MSK1    DC    X'FE'
00198E  01                    MSK2    DC    X'01'
00198F  00                    RTSV    DC    X'00'                  SAVE RT NO. FOR HANGUP.
001990  40E4C9D640C6D9D6D4    IUNEX   DC    C' UIO FROM DEVICE'
001999  404C4C5E5C9C3C5
0019A0  40E7E7E7E7                    DC    C' XXXX'
                                ********************************************************************************
                                *                          INITIALIZE ROUTINE
                                ********************************************************************************
0019A6  18 DD                 INIT    SR    R13,R13                ZERO REG 13
0019A8  91 40 E 196                   TM    406(R14),X'40'         CHECK FOR FORCED PROBLEM STATE
0019AC  47 80 F 982                   BC    NONE,NITWIT            BR. IF NOT
0019B0  18 DF                         LR    R13,R15                SET UP FOR PROBLEM STATE
0019B2  58 C0 F 0E4           NITWIT  L     R12,UNIT2              PICK UP THE PUNCH UNIT TABLE.
0019B6  54 C0 F A30                   N     R12,MOD50              SAVE ONLY THE PUNCH ADDR.
0019BA  50 C0 F A24                   ST    R12,PCH                SAVE IT
0019BE  58 C0 F 0E0                   L     R12,UNIT1              LOAD REG 12 WITH UNIT TABLE ENTRY
0019C2  54 C0 F A30                   N     R12,MOD50              SAVE ONLY THE READER ADDR.
0019C6  50 C0 F A20                   ST    R12,RDR                SAVE IT
0019CA  D7 02 F AD4 F AD4             XC    MSSW(3),MSSW           ZERO AUXILIARY SWITCHES.
0019D0  1B 66                         SR    R6,R6                  ZERO REG 6.
0019D2  43 6E 0 1B9                   IC    R6,DMIOL(R14)          PUT LENGTH OF DMIO TABLE INTO 6.
0019D6  4A 6E 0 1BC                   AH    R6,DMPTR(R14)          ADD OFFSET ADDRESS TO LENGTH.
0019DA  1A 6E                         AR    R6,R14                 ADD BASE REG VALUE.
0019DC  06 60                         BCTR  R6,0                   SUBTRACT 2 TO GET
0019DE  06 60                         BCTR  R6,0                     TO LOADER ADDR.
0019E0  49 C6 0 000                   CH    R12,0(R6)              SEE IF TEST DEVICE IS LOADER.
0019E4  47 60 F 9EC                   BC    UNEQ,BLOOP             BR IF NOT.
0019E8  96 80 F AD6                   OI    LDSW,X'80'             TURN ON LOADER SW.
0019EC  91 80 F 0E8           BLOOP   TM    ISW,X'80'              CHECK FOR HANG UP
0019F0  47 10 F A04                   BC    ALL,HANGUP             BR. IF DETECTED
0019F4  92 40 F A34                   MVI   BUFFER,C' '            CLEAR DATA AREA.
0019F8  D2 9E F A35 F A34             MVC   BUFFER+1(159),BUFFER   CLEAR DATA AREA.
0019FE  41 A0 F D48                   LA    R10,NOOP               PUT ADDR OF NOOP INTO REG 10.
001A02  07 F4                         BCR   UNC,R4                 RETURN VIA REG 4
001A04  D2 00 F 003 F 98F     HANGUP  MVC   SECNO+3(1),RTSV        RESTORE RT NO.
001A0A  0A D0                         SVC   X'D0'                  PRINT
001A0C  64                            DC    X'64'                  -PREVIOUS HANGUP DETECTED-
001A0D  1A                            DC    X'1A'
001A0E  FADD                          DC    AL2(HUNG-SECNO+REG)
001A10  96 01 F 0E8                   OI    ISW,X'01'              TURN ON ERROR SWITCH.
001A14  45 50 F 28E                   BAL   R5,IDOSNS              BR. TO OUTPUT AVAILABLE INFO
001A18  92 00 F 0E8                   MVI   ISW,X'00'              RESET HANGUP SWITCH
001A1C  47 F0 F 9EC                   BC    UNC,BLOOP
001A20                                CNOP  0,4
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                                *********************************************************************
                                *      AUXILIARY WORK AREA.
                                *********************************************************************
001A20  00000000        RDR     DC    F'0'
001A24  00000000        PCH     DC    F'0'
001A28  00000051        ATE1    DC    F'81'
001A2C  00000000        CNTR    DC    F'0'
001A30  00003FFF        MOD50   DC    X'00003FFF'
001A34                  BUFFER  DS    80C
001A84                  CHKBUF  DS    80C
001AD4  00              MSSW    DC    X'00'
001AD5  00              PS      DC    X'00'
001AD6  00              LDSW    DC    X'00'
001AD7  00              HDSW    DC    X'00'
001AD8  00              ICODAT  DC    X'00'
001AD9  00              CRSW    DC    X'00'
001ADA  00              FIRST   DC    X'00'
001ADB  00              SFLE    DC    X'00'
001ADC  00              DERS    DC    X'00'
001ADD  40D7D9C5E5C9D6E4E2      HUNG    DC    C' PREVIOUS HANG U'
001AE6  40C8C1D5C740E4
001AED  D740C4C5E3C5C3E3C5              DC    C'P DETECTED'
001AF6  C4
001AF8                          CNOP  0,4
                                *********************************************************************
                                * ROUTINE 01 - IF SECTION SENSE SWITCH 9 IS ON, THIS ROUTINE WILL
                                *              PUNCH A SET OF DATA CARDS FOR USE IN THE RIPPLE READ
                                *              ROUTINE. IF SECTION SENSE SWITCH 4 IS ALSO ON, MANY
                                *              SETS WILL BE PUNCHED CONTINUOUSLY.
                                *********************************************************************
001AF8  01              ROUTO1  DC    X'01'           ROUTINE NUMBER
001AF9  000BDC                  DC    AL3(ROUTO2-SECNO)       ADDRESS OF NEXT ROUTINE
001AFC  91 40 F 005             TM    SNSW+1,X'40'    SEE IF SENSE SW 9 IS ON.
001B00  47 80 F B9E             BC    NONE,EXTP       BR IF NOT.
001B04  45 40 F 9A6             BAL   R4,INIT         BR TO INITIALIZE.
001B08  96 80 F AD5             OI    PS,X'80'        TURN ON  1ST PASS SW.
001B0C  1B 77           DAG     SR    R7,R7           INITIALIZE 1ST BYTE TO ZERO.
001B0E  45 40 F BA0             BAL   R4,INDAT        BR TO SET UP PUNCH DATA.
001B12  41 60 0 01B             LA    R6,27           PUT 27  INTO REG 6.
001B16  58 C0 F A24             L     R12,PCH         PUT PUNCH ADDR. INTO REG 12.
001B1A  41 A0 F D38             LA    R10,PCHCMD      PUT PUNCH CMD ADDR. INTO REG 10.
001B1E  45 B0 F OEA     PSIO    BAL   R11,ISIO        BR TO ISSUE START I-O.
001B22  3E00                    DC    X'3E00'         CTRL SWITCHES
001B24  0010                    DC    X'0010'         T E S T   N U M B E R
001B26  F000                    DC    X'F000'         EXP COND. CODE AND SENSE.
001B28  FF04                    DC    AL2(EXP3-SECNO+REG)     EXP CSW ADDR,
001B2A  91 02 F 7A4             TM    ICSW1+4,X'02'   SEE IF UNIT CHECK IN 1ST CSW.
001B2E  47 10 F BBA             BC    ALL,BU102       BR IF ON.
001B32  91 02 F 7AC             TM    ICSW2+4,X'02'   SEE IF UNIT CHECK IN 2ND CSW.
001B36  47 10 F BBA             BC    ALL,BU102       BR IF ON.
001B3A  91 01 F OE8             TM    ISW,X'01'       SEE IF ERROR OTHER THAN UNIT CHK.
001B3E  47 10 F B1E             BC    ALL,PSIO        BR IF YES.
001B42  94 7F F AD5             NI    PS,X'7F'        TURN OFF 1ST PASS SW.
001B46  1B 77                   SR    R7,R7           ZERO REG 7.
001B48  43 70 F A3B             IC    R7,BUFFER+7     PICK UP 8TH COLUMN OF DATA IN BUFFER
001B4C  45 40 F BA0             BAL   R4,INDAT        BR TO SET UP NXT CARD DATA.
001B50  46 60 F B1E             BCT   R6,PSIO         BR TO PCH ALL 27 CARDS.
001B54  91 08 F 004             TM    SNSW,X'08'      SEE IF SENSE SW 4 IS ON.
001B58  47 10 F B0C             BC    ALL,DAG         BR IF YES.
001B5C  D2 00 F ADB F A34       MVC   SFLE(1),BUFFER  SAVE LAST BUFFER CHAR.
001B62  45 40 F 9A6             BAL   R4,INIT         BR TO INITIALIZE.
001B66  58 C0 F A24             L     R12,PCH         PUT PCH ADDR INTO REG 12.
001B6A  41 A0 F D38     PBLK    LA    R10,PCHCMD      PUT THE PCH CMD INTO REG 10.
001B6E  45 B0 F OEA             BAL   R11,ISIO        BR TO ISSUE START I-O
001B72  3E00                    DC    X'3E00'         CTRL SWITCHES
001B74  0010                    DC    X'0010'         T E S T   N U M B E R
001B76  F000                    DC    X'F000'         EXP COND CODE AND SENSE.
001B78  FF04                    DC    AL2(EXP3-SECNO+REG)     EXP CSW ADDRESS.
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001B7A  1B 66                   SR    R6,R6           ZERO REG 6.
001B7C  D2 00 F A34 F ADB       MVC   BUFFER(1),SFLE  RESTORE LAST CHAR IN BUFFER.
001B82  91 02 F 7A4             TM    ICSW1+4,X'02'   SEE IF UNIT CHK IN 1ST CSW.
001B86  47 10 F BBA             BC    ALL,BU102       BR IF YES.
001B8A  91 02 F 7AC             TM    ICSW2+4,X'02'   SEE IF UNIT CHK IN 2ND CSW.
001B8E  47 10 F BBA             BC    ALL,BU102       BR IF YES.
001B92  92 40 F A34             MVI   BUFFER,C' '     MOVE A BLANK TO BUFFER.
001B96  91 01 F OE8             TM    ISW,X'01'       SEE IF ERROR OTHER THAN UNIT CHK.
001B9A  47 10 F B6A             BC    ALL,PBLK        BR IF YES.
001B9E  0A D6           EXTP    SVC   X'D6'           ROUTINE EXIT
                                *********************************************************************
                                *      SET UP PUNCH DATA HERE
                                *********************************************************************
001BA0  41 80 F A34     INDAT   LA    R8,BUFFER       PUT ADDR OF BUFFER INTO REG 8.
001BA4  41 50 0 050             LA    R5,80           PUT 80 INTO REG 5.
001BA8  42 78 0 000     PIB     STC   R7,0(R8)        STORE THE CHARACTER INTO THE BUFFER.
001BAC  41 77 0 001             LA    R7,1(R7)        ADD 1 TO THE DATA BYTE
001BB0  41 88 0 001             LA    R8,1(R8)        ADD 1 TO BUFFER ADDR.
001BB4  46 50 F BA8             BCT   R5,PIB          BR UNTIL FULL BUFFER.
001BB8  07 F4                   BCR   UNC,R4          RETURN.
                                *********************************************************************
                                *      PUNCH ERROR ROUTINE.
                                *********************************************************************
001BBA  91 80 F AD5     BU102   TM    PS,X'80'        SEE IF 1ST PASS.
001BBE  47 10 F B1E             BC    ALL,PSIO        BR IF YES.
001BC2  1B 77                   SR    R7,R7           ZERO REG 7.
001BC4  43 70 F A34             IC    R7,BUFFER       PICK UP 1ST BYTE IN BUFFER.
001BC8  4B 70 F D68             SH    R7,SEV          SUB. 7 FROM THE 1ST BYTE.
001BCC  45 40 F BA0             BAL   R4,INDAT        BR TO GEN PREVIOUS CARD DATA.
001BD0  41 66 0 001             LA    R6,1(R6)        ADD 1 TO CD COUNTER TO COMPENSATE.
001BD4  96 80 F AD5             OI    PS,X'80'        TURN ON PASS SW. IN CASE 2 ERRS.
001BD8  47 F0 F B1E             BC    UNC,PSIO        BR TO PUNCH ROUTINE.
001BDC                          CNOP  0,4
                                *********************************************************************
                                * ROUTINE 02 - RIPPLE READ TEST. READ 27 DETAIL CARDS.
                                *********************************************************************
001BDC  02              ROUTO2  DC    X'02'           ROUTINE NUMBER
001BDD  00FFFF                  DC    X'00FFFF'       LAST ROUTINE
001BE0  45 40 F 9A6             BAL   R4,INIT         BR TO INITIALIZE
001BE4  D7 03 F A2C F A2C       XC    CNTR,CNTR       ZERO THE CARD COUNTER
001BEA  91 80 F AD6             TM    LDSW,X'80'      SEE IF LOADER IS TEST DEVICE.
001BEE  47 10 F C12             BC    ALL,IN2         BR IF YES.
001BF2  0A DO                   SVC   X'DO'           PRINT -DO NOPRO, PUT DETAIL CDS INTO
001BF4  0435                    DC    X'0435'
001BF6  FF24                    DC    AL2(DONPRO-SECNO+REG)
001BF8  91 40 F 005             TM    SNSW+1,X'40'    TEST SSW 9.
001BFC  47 10 F C06             BC    ALL,HALT        BR IF ON.
001C00  0A DO                   SVC   X'DO'           PRINT HOW TO GET DETAIL CDS.
001C02  A03A                    DC    X'A03A'
001C04  FF85                    DC    AL2(SSW9-SECNO+REG)
001C06  0A DA           HALT    SVC   X'DA'           -HALT-
001C08  0A DO                   SVC   X'DO'           PRINT A BLANK.
001C0A  8001                    DC    X'8001'
001C0C  FF24                    DC    AL2(DONPRO-SECNO+REG)
001C0E  9D 00 C 000             TIO   0(R12)          CLEAR NOT READY TO READY INTERRUPT.
001C12  94 7F F AD4     IN2     NI    MSSW,X'7F'      ZERO THE MSG BYPASS SW. FOR LOOPS.
001C16  92 00 F ADA             MVI   FIRST,X'00'     ZERO THE EXPECTED DATA BYTE.
001C1A  58 C0 F A20     RETN    L     R12,RDR         PICK UP READER ADDR.
001C1E  41 A0 F D28     LRNF1   LA    R10,RDNF        PUT ADDR OF RD NO FD CCW INTO 10.
001C22  D2 0A F 888 F 8C3       MVC   HD1A+9(11),PRES MOVE WORD -PRESTK- TO MSG.
001C28  45 B0 F OEA             BAL   R11,ISIO        BR TO ISSUE START I/O.
001C2C  2A80                    DC    X'2A80'         CTRL SWITCHES
001C2E  0020                    DC    X'0020'         T E S T   N U M B E R
001C30  F000            ESNS    DC    X'F000'         EXP COND. CODE AND SENSE.
001C32  FEEC                    DC    AL2(EXP1-SECNO+REG)     EXP CSW ADDRESS.
001C34  91 80 F ADC             TM    DERS,X'80'      SEE IF DATA ERROR.
001C38  47 10 F C42             BC    ALL,DOF         BR IF YES.
001C3C  D2 00 F ADA F A34       MVC   FIRST(1),BUFFER MOVE THE DATA BYTE FROM BUFFER.
```

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001C42   41 A0 F D30            DOF   LA    R10,FSS1          PUT FEED STK SEL R1 CCW ADDR. IN 10.
001C46   45 B0 F 0EA                  BAL   R11,ISIO          BR TO ISSUE START I-O.
001C4A   2E00                         DC    X'2E00'           CTRL SWITCHES
001C4C   0030                         DC    X'0030'           T E S T   N U M B E R
001C4E   F100                         DC    X'F100'           EXP COND. CODE AND SENSE.
001C50   FEF4                         DC    AL2(EXP2-SECNO+REG)  EXP CSW ADDRESS.
001C52   58 40 F A2C                 L     R4,CNTR           PICK UP CD COUNTER.
001C56   41 44 0 001                 LA    R4,1(R4)          ADD 1 TO CD COUNTER.
001C5A   50 40 F A2C                 ST    R4,CNTR           SAVE IT.
001C5E   1B 44                       SR    R4,R4             ZERO REG 4.
001C60   43 40 F ADA                 IC    R4,FIRST          PICK UP EXP DATA BYTE.
001C64   41 44 0 007                 LA    R4,7(R4)          ADD 7 TO IT TO POINT TO NXT CD DATA.
001C68   42 40 F ADA                 STC   R4,FIRST          PUT IT IN THE EXP DATA BYTE.
001C6C   91 20 F 005                 TM    SNSW+1,X'20'      SEE IF SENSE SW 10 IS ON.
001C70   47 80 F C9E                 BC    NONE,NOR1         BR IF OFF.
001C74   91 80 F AD6                 TM    LDSW,X'80'        SEE IF TESTING LOAD DEVICE.
001C78   47 80 F CEA                 BC    NONE,LP5          BR IF NO.
001C7C   91 80 F AD4                 TM    MSSW,X'80'        SEE IF MSG BYPASS SW IS ON.
001C80   47 10 F CEA                 BC    ALL,LP5           BR IF ON.
001C84   0A D0                       SVC   X'D0'             PRINT -LOOPING LOADER- KEEP ONLY
001C86   042C                        DC    X'042C'            DETAIL CARDS IN RDR.
001C88   FF59                        DC    AL2(TLD-SECNO+REG)
001C8A   0A DA                       SVC   X'DA'             -HALT-
001C8C   9D 00 C 000                 TIO   0(R12)            CLEAR NOT READY TO READY INTERRUPT.
001C90   96 80 F AD4                 OI    MSSW,X'80'        TURN ON MSG BYPASS SW.
001C94   0A D0                       SVC   X'D0'             PRINT A BLANK.
001C96   8001                        DC    X'8001'
001C98   FF24                        DC    AL2(DONPRO-SECNO+REG)
001C9A   47 F0 F CEA                 BC    UNC,LP5           BR TO LOOP RD, COMP, FD.
001C9E   95 1B F A2F            NOR1  CLI   CNTR+3,27         SEE IF 27 CDS READ.
001CA2   47 80 F CAA                 BC    EQ,EXT1           BR IF YES.
001CA6   47 F0 F C1A                 BC    UNC,RETN          BR TO CONTINUE TEST.
001CAA   D7 03 F A2C F A2C      EXT1  XC    CNTR,CNTR         ZERO THE CARD COUNTER.
001CB0   92 00 F ADA                 MVI   FIRST,X'00'       ZERO THE EXP DATA BYTE.
001CB4   91 20 F 005                 TM    SNSW+1,X'20'      SEE IF SSW 10 IS ON.
001CB8   47 10 F CEA                 BC    ALL,LP5           BR IF YES.
001CBC   91 08 F 004                 TM    SNSW,X'08'        TEST SSW 4.
001CC0   47 80 F CE8                 BC    NONE,EXT2         BR IF NO.
001CC4   91 80 F AD4                 TM    MSSW,X'80'        SEE IF MSG BYPASS SW ON.
001CC8   47 10 F C1A                 BC    ALL,RETN          BR IF YES.
001CCC   91 80 F AD6                 TM    LDSW,X'80'        SEE IF ON LOADER.
001CD0   47 80 F C1A                 BC    NONE,RETN         BR IF NOT.
001CD4   0A D0                       SVC   X'D0'             PRINT LOOPING LOADER- KEEP ONLY
001CD6   042C                        DC    X'042C'            DETAIL CARDS IN RDR.
001CD8   FF59                        DC    AL2(TLD-SECNO+REG)
001CDA   0A DA                       SVC   X'DA'             -HALT-
001CDC   9D 00 C 000                 TIO   0(R12)            TIO TO CLEAR NOT RDY TO RDY.
001CE0   96 80 F AD4                 OI    MSSW,X'80'        TURN ON MSG BYPASS SW.
001CE4   47 F0 F C1A                 BC    UNC,RETN          BR TO LOOP RTN.
001CE8   0A D6                  EXT2  SVC   X'D6'             ROUTINE EXIT
                                *****************************************************************
                                *     SENSE SWITCH 10 LOOP RD, FD, STK SEL R1 SET UP HERE       *
                                *****************************************************************
001CEA   41 A0 F D40            LP5   LA    R10,RDFD          PUT ADDR OF RD FD STK R1 CCW IN 10.
001CEE   58 C0 F A20                  L     R12,RDR           PUT RDR ADDR INTO 12.
001CF2   D2 0A F 8B8 F 8CE            MVC   HD1A+9(11),STK1   MOVE WORD -STK R1- TO MSG.
001CF8   45 B0 F 0EA            FF    BAL   R11,ISIO          BR TO ISSUE START I-O.
001CFC   3E80                         DC    X'3E80'           CTRL SWITCHES
001CFE   0040                         DC    X'0040'           T E S T   N U M B E R
001D00   F000                         DC    X'F000'           EXP COND. CODE AND SENSE.
001D02   FF14                         DC    AL2(EXP4-SECNO+REG)  EXP CSW ADDR.
001D04   D2 00 F ADA F A34            MVC   FIRST(1),BUFFER   MOVE 1ST POS. TO EXP DATA.
001D0A   1B 44                        SR    R4,R4             ZERO REG 4.
001D0C   43 40 F ADA                  IC    R4,FIRST          PICK UP EXP DATA BYTE.
001D10   41 44 0 007                  LA    R4,7(R4)          BUMP TO NXT EXP BYTE.
001D14   42 40 F ADA                  STC   R4,FIRST          PUT IT BACK.
001D18   91 20 F 005            TST10 TM    SNSW+1,X'20'      TEST SSW 10.
001D1C   47 80 F CE8                  BC    NONE,EXT2         BR IF NOT ON.
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001D20   47 F0 F CEA                  BC    UNC,LP5                LOOP RD FD.
                                *****************************************************************
                                *     CCW AREA                                                  *
                                *****************************************************************
001D28   C2 001A34 2000 0050    RDNF  CCW   X'C2',BUFFER,X'20',80 RD NO FEED CCW.
001D30   23 001A34 2000 0001    FSS1  CCW   X'23',BUFFER,X'20',1
001D38   41 001A34 2000 0050    PCHCMD CCW  X'41',BUFFER,X'20',80 PCH AND STK SEL P2.
001D40   02 001A34 0000 0050    RDFD  CCW   X'02',BUFFER,X'00',80
001D48   03 001A34 0000 0001    NOOP  CCW   X'03',BUFFER,X'00',1
001D50   0000000F               OF    DC    X'0000000F'
001D54                          TWENTY DS   20C
001D68   0007                   SEV   DC    H'0007'
                                *                    ***************
                                *                    * HOLES TABLE *
                                *                    ***************
001D6A   B039018818418218       HOLES DC    X'B039018818418218'
001D72   1180980580390388             DC    X'1180980580390388'
001D7A   3843823813808807             DC    X'3843823813808807'
001D82   D035014814414214             DC    X'D035014814414214'
001D8A   1140940540350348             DC    X'1140940540350348'
001D92   3443423413408407             DC    X'3443423413408407'
001D9A   7033012812412212             DC    X'7033012812412212'
001DA2   1120920520330328             DC    X'1120920520330328'
001DAA   3243223213208207             DC    X'3243223213208207'
001DB2   F031010810410210             DC    X'F031010810410210'
001DBA   1100900500310308             DC    X'1100900500310308'
001DC2   3043023013008007             DC    X'3043023013008007'
001DCA   000B01A81A41A21A             DC    X'000B01A81A41A21A'
001DD2   11A09A05A0390288             DC    X'11A09A05A0390288'
001DDA   2842822812808806             DC    X'2842822812808806'
001DE2   800D01C81C41C21C             DC    X'800D01C81C41C21C'
001DEA   11C09C05C0350248             DC    X'11C09C05C0350248'
001DF2   2442422412408406             DC    X'2442422412408406'
001DFA   4003006816416216             DC    X'4003006816416216'
001E02   1160960560330200             DC    X'1160960560330200'
001E0A   0242222212208206             DC    X'0242222212208206'
001E12   E00F01E81E41E21E             DC    X'E00F01E81E41E21E'
001E1A   11E09E05E0310208             DC    X'11E09E05E0310208'
001E22   2042022012008006             DC    X'2042022012008006'
001E2A   B02B00A80A40A20A             DC    X'B02B00A80A40A20A'
001E32   10A08A04A02A01A8             DC    X'10A08A04A02A01A8'
001E3A   2A42A22A12A0AA06             DC    X'2A42A22A12A0AA06'
001E42   D02D00C80C40C20C             DC    X'D02D00C80C40C20C'
001E4A   10C08C04C02C01C8             DC    X'10C08C04C02C01C8'
001E52   2C42C22C12C0AC06             DC    X'2C42C22C12C0AC06'
001E5A   7027006806406206             DC    X'7027006806406206'
001E62   1060860460260168             DC    X'1060860460260168'
001E6A   264262261260A606             DC    X'264262261260A606'
001E72   F02F00E80E40E20E             DC    X'F02F00E80E40E20E'
001E7A   10E08E04E02E01E8             DC    X'10E08E04E02E01E8'
001E82   2E42E22E12E0AE06             DC    X'2E42E22E12E0AE06'
001E8A   A009008808408208             DC    X'A009008808408208'
001E92   1080880480280 1A8            DC    X'1080880480280 1A8'
001E9A   3A43A23A13A0BA07             DC    X'3A43A23A13A0BA07'
001EA2   6005004804404204             DC    X'6005004804404204'
001EAA   1040840440240 1C8            DC    X'1040840440240 1C8'
001EB2   3C43C23C13C0BC07             DC    X'3C43C23C13C0BC07'
001EBA   2827012802402202             DC    X'2827012802402202'
001EC2   1020820420220168             DC    X'1020820420220168'
001ECA   3643623613608607             DC    X'3643623613608607'
001ED2   2001000800400200             DC    X'2001000800400200'
001EDA   1000800400200 1E8            DC    X'1000800400200 1E8'
001EE2   3E43E23E13E0BE07             DC    X'3E43E23E13E0BE07'
                                *****************************************************************
                                *     EXP CSW AREA                                              *
                                *****************************************************************
001EEC   00001D30               EXP1  DC    A(RDNF+8)
001EF0   0C000000                     DC    X'0C000000'
```

```
001EF4  00000000          EXP2   DC    XL4'00'
001EF8  08000000                 DC    X'08000000'
001EFC  00000000                 DC    XL4'0'
001F00  04000000                 DC    X'04000000'
001F04  00001D40          EXP3   DC    A(PCHCMD+8)
001F08  08000000                 DC    X'08000000'
001F0C  00000000                 DC    XL4'0'
001F10  04000000                 DC    X'04000000'
001F14  00001D48          EXP4   DC    A(RDFD+8)
001F18  08000000                 DC    X'08000000'
001F1C  00000000                 DC    XL4'00'
001F20  04000000                 DC    X'04000000'
                         ********************************************************************************
                         *      MESSAGES
                         ********************************************************************************
001F24  40C4D640D5D7D9D66B DONPRO DC    C' DO NPRO,PLACE D'
001F2D  D7D3C1C3C540C4
001F34  C5E3C1C9D340C3C4E2        DC    C'ETAIL CDS IN RDR'
001F3D  40C9D540D9C4D9
001F44  4B40C8D7D96BD4C1D2        DC    C'. HPR,MAKE RDY,E'
001F4D  C540D9C4E86BC5
001F54  D6C640D6D5                DC    C'OF ON'
001F59  40D3D6D6D7C9D5C740 TLD    DC    C' LOOPING LOADER-'
001F62  D3D6C1C4C5D960
001F69  40                        DC    C' '
001F6A  D2C5C5D740D6D5D3E8        DC    C'KEEP ONLY DETAIL'
001F73  40C4C5E3C1C9D3
001F7A  40C3C4E240C9D540D9        DC    C' CDS IN RDR'
001F83  C4D9
001F85  40E2C5E340E2E2E640 SSW9   DC    C' SET SSW 9 ON, D'
001F8E  F940D6D56B40C4
001F95  D640D7E2E640D9C5E2        DC    C'O PSW RESTART IF'
001F9E  E3C1D9E340C9C6
001FA5  40E2C5E340D6C640C4        DC    C' SET OF DETAIL C'
001FAE  C5E3C1C9D340C3
001FB5  C4E240C4C5E2C9D9C5        DC    C'DS DESIRED'
001FBE  C4
                         ********************************************************************************
                         *      EQUATES
                         ********************************************************************************
                  000000 NEVER  EQU   0
                  000007 NCCO   EQU   7
                  00000F UNC    EQU   15
                  000008 NONE   EQU   8
                  000004 SOME   EQU   4
                  000001 ALL    EQU   1
                  000005 ANY    EQU   5
                  000008 CC0    EQU   8
                  000004 CC1    EQU   4
                  000002 CC2    EQU   2
                  000001 CC3    EQU   1
                  00000A CC02   EQU   10
                  000006 CC12   EQU   6
                  000008 EQ     EQU   8
                  000004 LO     EQU   4
                  000002 HI     EQU   2
                  000006 UNEQ   EQU   6
                  00000C EQLO   EQU   12
                  00000A EQHI   EQU   10
                  000080 LOGOUT EQU   X'80'
                  000181 SYSMOD EQU   X'181'
                  00F000 REG    EQU   X'F000'
                  00005A WHAT   EQU   90
                  000000 R0     EQU   0
                  000001 R1     EQU   1
                  000002 R2     EQU   2
                  000003 R3     EQU   3
                  000004 R4     EQU   4
```



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                  000005 R5     EQU   5
                  000006 R6     EQU   6
                  000007 R7     EQU   7
                  000008 R8     EQU   8
                  000009 R9     EQU   9
                  00000A R10    EQU   10
                  00000B R11    EQU   11
                  00000C R12    EQU   12
                  00000D R13    EQU   13
                  00000E R14    EQU   14
                  00000F R15    EQU   15
                  000198 WT     EQU   408
                  000040 HCSW   EQU   64
                  000048 HCAW   EQU   72
                  0001A0 DMSSW  EQU   X'01A0'
                  000189 DMIOL  EQU   X'0189'
                  0018BC DMPTR  EQU   X'018BC'
                         END    ROUT01
```

POST ASSEMBLY DATA.

REFERENCES TO DEFINED SYMBOLS.

1	8	EQ	12AC, 1362, 138E, 1CA2
4	1CF8	FF	
1	2	HI	
1	4	LO	
4	1D50	OF	
1	1AD5	PS	1B08, 1B42, 1BBA, 1BD4
1	0	R0	1100, 156E, 16FA, 1738, 1744, 1752, 175A
1	1	R1	12EC, 153C, 15C6, 16FE, 16FE, 170C, 1710
			1712, 1716, 171A, 1728, 172C, 1740, 1744
1	2	R2	1574, 1582, 1586, 1586, 1586, 15BA, 16CC
			1700, 1700, 170E, 1722, 173C, 174A
1	3	R3	1578, 1578, 157A, 157E, 15B2, 15B2, 1702
			1702, 1708, 170C, 1710, 1712, 171A, 171E
			1722, 1734, 173C, 1756
1	4	R4	1582, 15AA, 1656, 1666, 1676, 1686, 1696
			16CC, 16CE, 16FA, 1704, 170E, 1730, 174A
			174E, 175A, 1A02, 1B04, 1B0E, 1B4C, 1B62
			1BB8, 1BCC, 1BE0, 1C52, 1C56, 1C56, 1C5A
			1C5E, 1C5E, 1C60, 1C64, 1C64, 1C68, 1D0A
			1D0A, 1D0C, 1D10, 1D10, 1D14
1	5	R5	155C, 1A14, 1BA4, 1BB4
1	6	R6	19D0, 19D0, 19D2, 19D6, 19DA, 19DC, 19DE
			19E0, 1B12, 1B50, 1B7A, 1B7A, 1BD0, 1BD0
1	7	R7	1292, 12C0, 12D8, 1586, 1598, 1612, 1620
			1632, 16E4, 1B0C, 1B0C, 1B46, 1B46, 1B48
			1BA8, 1BAC, 1BAC, 1BC2, 1BC2, 1BC4, 1BC8
1	8	R8	128E, 12BC, 12D4, 1332, 1336, 1354, 1354
			1358, 13AE, 13B2, 1464, 1468, 146C, 146C
			1470, 15FA, 1BA0, 1BA8, 1BB0, 1BB0
1	9	R9	1100, 115A, 115E, 116A, 11D2, 11D6, 11E2
			1238, 140A, 1438, 147A, 1492, 14AA, 14C2
			156E, 15F2, 15F6, 160E
1	198	WT	115A, 11D2, 15F2
1	1	ALL	111E, 11CA, 1202, 125A, 127A, 1304, 1310
			1376, 1396, 13CE, 155C, 1594, 15D0, 1626
			162E, 1640, 16A6, 16E0, 19F0, 1B2E, 1B36
			1B3E, 1B58, 1B86, 1B8E, 1B9A, 1BBE, 1BEE
			1BFC, 1C38, 1C80, 1CB8, 1CC8
1	5	ANY	12F4, 1554, 15AE, 1638, 1724
16	18D9	BIG	168A, 16C0
4	1048	CAW	
1	8	CC0	1166, 1190
1	4	CC1	1194, 160A
1	2	CC2	1198
1	1	CC3	
8	1040	CSW	
2	1B0C	DAG	1B58
4	1C42	DOF	1C38
9	18A6	HD1	16AE
4	1524	ICD	14F4
2	100A	ICM	
4	115A	IHI	113E, 114E
4	1C12	IN2	1BEE
2	10E8	ISW	116E, 116E, 1174, 11B6, 11C2, 11CE, 11DA
			11EA, 11FA, 11FE, 120C, 123C, 124A, 1256
			125E, 126E, 127E, 1296, 129E, 12A2, 12B0
			12C4, 12CC, 12D0, 12DC, 12E4, 12E8, 12F0
			12F8, 1300, 130C, 132A, 134C, 1366, 1372
			147E, 14AE, 14CC, 1524, 152C, 1558, 15A2
			15C2, 15CC, 15D4, 161C, 1634, 19EC, 1A10
			1A18, 1B3A, 1B96

4	156A	IUP	1562
4	1CEA	LP5	1C78, 1C80, 1C9A, 1CB8, 1D20
16	1954	MDR	15E0, 15EC
4	1692	NAC	168A
4	1682	NBP	167A
4	16A2	NTC	1640, 164E, 169A
4	1672	NXL	166A
4	1752	NXT	1746
4	1662	NXU	165A
4	1A24	PCH	19BA, 1B16, 1B66
4	1BA8	PIB	1BB4
4	173C	PIK	1756
1	A	R10	110A, 13E8, 1404, 140E, 1416, 1416, 154C
			19FE, 1B1A, 1B6A, 1C1E, 1C42, 1CEA
1	B	R11	10FA, 111A, 11C6, 124E, 1266, 12A6, 12B4
			1318, 1322, 1332, 1344, 139A, 13B2, 13B4
			13C6, 13C6, 13CA, 143A, 1456, 1464, 1496
			14C6, 1534, 155E, 1566, 1566, 156A, 156A
			1572, 1B1E, 1B6E, 1C28, 1C46, 1CF8
1	C	R12	1132, 1142, 1152, 1162, 118C, 11F2, 15E4
			15FE, 1606, 19B2, 19B6, 19BA, 19BE, 19C2
			19C6, 19E0, 1B16, 1B66, 1C0E, 1C1A, 1C8C
			1CDC, 1CEE
1	D	R13	110A, 110E, 110E, 11B0, 154C, 15FA, 1614
			19A6, 19A6, 19B0
1	E	R14	1114, 1114, 115A, 11D2, 14F0, 14F8, 15F2
			19A8, 19D2, 19D6, 19DA
1	F	R15	1206, 1214, 1244, 19B0
4	1A20	RDR	19C6, 1C1A, 1CEE
1	F000	REG	1226, 13AC, 13C4, 13DE, 13F8, 1436, 1444
			144A, 14E0, 14EE, 1522, 1544, 154A, 15E0
			15EC, 1648, 16AE, 16B4, 16BA, 16C0, 16C6
			1762, 1A0E, 1B28, 1B78, 1BF6, 1C04, 1C0C
			1C32, 1C50, 1C88, 1C98, 1CD8, 1D02
2	15DC	RRM	138E, 1396
2	1D68	SEV	1BC8
16	1F59	TLD	1C88, 1CD8
1	F	UNC	1136, 1156, 11A0, 11A8, 11BA, 11EE, 1210
			1240, 1262, 12FC, 1308, 1314, 141A, 1438
			1530, 1572, 15C6, 15D8, 15EE, 1612, 1620
			1632, 164E, 1764, 1A02, 1A1C, 1BB8, 1BD8
			1C9A, 1CA6, 1CE4, 1D20
4	1A28	ATE1	15BA
4	12EC	BTCD	12E0
1	A	CC02	
1	6	CC12	
4	1A2C	CNTR	1BE4, 1BE4, 1C52, 1C5A, 1C9E, 1CAA, 1CAA
4	110A	CONP	15EE, 1626, 162E
4	1652	COPT	1638
1	1AD9	CRSW	1178, 163C, 164A
8	17B0	DBWD	16CE, 16D2, 16E4, 16EE, 172C, 1740
8	1770	DCRD	12BC, 12D4
1	1ADC	DERS	117C, 15C8, 1C34
1	A	EQHI	
1	C	EQLO	
2	1C30	ESNS	
4	1EEC	EXP1	1C32
4	1EF4	EXP2	1C50
4	1F04	EXP3	1B28, 1B78
4	1F14	EXP4	1D02
6	1CAA	EXT1	1CA2
2	1CE8	EXT2	1CC0, 1D1C
2	1B9E	EXTP	1B00
8	1D30	FSS1	1C42
4	1162	GREG	116A
2	1C06	HALT	1BFC
1	48	HCAW	110A, 154C, 15FA
1	40	HCSW	110E, 110E, 11B0, 1206, 1214, 1244, 1614

9	18AF	HD1A	16B4, 1C22, 1CF2
1	1AD7	HDSW	1180, 16A2, 16C8
16	1ADD	HUNG	1A0E
3	182F	IACT	1232, 1486, 14B6
4	1534	IBCD	1528
6	1318	IBSN	1272, 1282, 128A, 12B8, 12F4, 12FC
12	1803	ICAW	13E8, 13F0, 13F2, 13F8
3	1812	ICCW	13FA
4	1574	ICDT	12EC, 153C
1	1435	ICNT	122E, 1400, 1452
3	180F	ICSW	1228, 144C
4	14AE	IDID	149A
3	1832	IEXP	145E, 149E
4	1284	IFUR	129A, 12AC
4	1634	IGOP	15D0
2	19A6	INIT	1B04, 1B62, 1BE0
4	11C2	INOW	111E, 11A0, 11A8, 11BA
4	124E	INT3	1210
4	11AC	IONE	1194
6	14C6	IPAS	14B2
2	16CC	IPDA	16A6
4	15B2	IRTU	15A6, 1764
4	12D4	ISEA	12C8
4	1266	ISEN	11CA, 11EE, 1252, 125A
4	10EA	ISIO	1B1E, 1B6E, 1C28, 1C46, 1CF8
4	15CC	ISIP	15AE
4	15C2	ISSW	15D8
6	1244	ISV2	1202
4	157E	IT80	15BE
4	15A2	ITCO	1594
4	160E	ITIC	1618
4	11A4	ITWO	1198
6	1214	IUIO	11F6
6	116E	JOHN	1126, 1166
1	1AD6	LDSW	19E8, 1BEA, 1C74, 1CCC
1	198D	MSK1	11DE
1	198E	MSK2	11E6
1	1AD4	MSSW	19CA, 19CA, 1C12, 1C7C, 1C90, 1CC4, 1CE0
1	7	NCCO	1146, 1602
1	100D	NIOU	
1	8	NONE	1126, 112E, 113E, 114E, 1252, 126A, 1272 1282, 128A, 129A, 1288, 12C8, 12E0, 1326 132E, 1348, 1350, 137E, 1412, 145A, 1482 149A, 14B2, 14D0, 1528, 1538, 1562, 15A6 1618, 165A, 166A, 167A, 168A, 169A, 1746 19AC, 1B00, 1C70, 1C78, 1CC0, 1CD0, 1D1C
8	1D48	NOOP	19FE
4	1C9E	NOR1	1C70
4	186A	PBLK	1B9A
11	18C3	PRES	1C22
2	175E	PRGD	16E0
4	181E	PSIO	1B3E, 1B50, 1BBE, 1BD8
8	1D40	RDFD	1CEA, 1F14
8	1D28	RDNF	1C1E, 1EEA
4	1C1A	RETN	1CA6, 1CC8, 1CD0, 1CE4
1	198F	RTSV	1104, 1A04
1	100C	SDMF	
1	1ADB	SFLE	1B5C, 1B7C
4	1004	SNSW	1122, 112A, 113A, 114A, 137A, 1550, 1590 16DC, 1AFC, 1B54, 1BF8, 1C6C, 1CB4, 1CBC 1D18
1	4	SOME	
3	105D	SRET	
16	1F85	SSW9	1C04
11	18CE	STK1	1CF2
16	1964	TCRA	1648
1	10E1	U1OP	
1	10E5	U2OP	

1	6	UNEQ	11F6, 131E, 1340, 13E4, 14F4, 159E, 15BE 19E4
1	5A	WHAT	
1	17B8	WORK	1214, 1404, 1422, 1424, 1426, 142C, 1474 1474, 148C, 14A4, 14A4, 14BC, 14F8, 1502 1504, 1506, 150C, 1512, 1518
4	19EC	BLOOP	19E4, 1A1C
4	1BBA	BU102	1B2E, 1B36, 1B86, 1B8E
1	1B9	DMIOL	19D2
1	1BC	DMPTR	19D6
1	1AO	DMSSW	
1	1ADA	FIRST	157A, 1C16, 1C3C, 1C60, 1C68, 1CB0, 1D04 1D0C, 1D14
1	100E	FLAG1	
1	100F	FLAG2	
16	1922	GOODY	158A, 158A, 1652, 165E, 1662, 166E, 1672 167E, 1682, 168E, 1692, 169E, 16D2, 16D8 16F0, 16F8, 174A, 1762
8	1D6A	HOLES	1712, 171A
4	1622	IBACK	1602
16	1815	IBLAH	1228, 1232, 13FA, 1426, 142C, 1436, 144C 145E, 1486, 149E, 14B6
2	141E	ICOUT	1238, 140A, 147A, 1492, 14AA, 14C2
8	17AO	ICSW1	11B0, 1206, 1276, 133A, 133A, 1392, 148C 1622, 1B2A, 1B82
8	17A8	ICSW2	1244, 1286, 135C, 135C, 14BC, 1B32, 1B8A
4	147E	IDIDI	145A
4	1142	IHANG	1156
16	17F3	ILINK	13B4, 13BC, 13BE, 13C4, 154A
4	1614	ILOKE	160A
4	1132	ILOOP	10EE
4	1BAO	INDAT	1B0E, 1B4C, 1BCC
4	1366	INDER	1304, 1310, 131E, 132E, 1340, 1350
5	1010	INPSW	
3	198A	IOADR	13D6
6	144C	IOCSW	13CE
16	1848	IOLOG	1506, 150C, 1512, 1518, 1522
16	1870	IOPT1	10F2, 1544
4	14FO	IPASS	14D0
4	1778	ISAVE	1100, 156E
4	15C8	ISIP1	159E
4	118C	ISSUE	10EA, 13E0, 198A
4	15F2	ISTRT	1292, 12C0, 12D8
4	112A	ITRY1	1136, 1146, 1554
4	113A	ITRY2	112E
16	1990	IUNEX	1220, 1226
4	11D2	IWAIT	1262, 1530
4	11BE	IZERO	1190
4	1C1E	LRNF1	
4	1A30	MOD50	19B6, 19C2
1	0	NEVER	
4	1000	SECNO	1104, 121E, 1220, 1226, 13A4, 13A6, 13AC 13BC, 13BE, 13C4, 13D6, 13D8, 13DE, 13FO 13F2, 13F8, 1422, 1424, 1436, 1444, 144A 14D8, 14DA, 14E0, 14E6, 14E8, 14EE, 1502 1504, 1522, 1544, 154A, 15E0, 15EC, 1648 16AE, 16B4, 16BA, 16C0, 16C6, 16EE, 16F0 16F6, 16F8, 1762, 1A04, 1A0E, 1AF9, 1B28 1B78, 1BF6, 1C04, 1C0C, 1C32, 1C50, 1C88 1C98, 1CD8, 1D02
4	1D18	TST10	
1	10E0	UNIT1	19BE
1	10E4	UNIT2	19B2
16	18FB	BEAUTY	16C6
1	1A34	BUFFER	1586, 19F4, 19F8, 19F8, 1B48, 1B5C, 1B7C 1B92, 1BA0, 1BC4, 1C3C, 1D04, 1D28, 1D30 1D38, 1D40, 1D48
1	1A84	CHKBUF	1582, 1770

2540 READER FUNCTION TESTS - SECTION 3 F812

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16   1F24 DONPRO   1BF6,  1C0C,  1C98
 5   1058 EXNPSW
 8   1018 EXOPSW
 6   1A04 HANGUP   19F0
11   1840 IACSNS   1184,  12A6,  138A,  14E6,  14E8,  14EE,  162A
                   1768
10   17DA IACTCC   1188,  119C,  11A4,  11AC,  11BE,  1318,  144A
 6   143A ICCOUT   13E4,  1412
 6   133A ICCSW1   1336
 6   135C ICCSW2   1358
 6   1474 ICHNG1   1468
 6   14A4 ICHNG2   1470
 1   1AD8 ICODAT   157E,  1598,  16F6,  1708
 6   1404 ICWOUT   141A
 4   128E IDOSNS   126A,  127A,  1A14
 4   136A IDUNCK   1308,  1314,  1362
10   17D0 IEXPCC   143A,  1444
11   1835 IEXSNS   14C6,  14D8,  14DA,  14E0
 6   10FA IEYEOH
 1   13AA IFLAG1   136A,  1382
 1   1542 IFLAG2   136E,  1386
 4   155E ILEAVE   137E
 6   14F8 ILOGED   1240
 4   1496 IMORST   1482
 4   1300 INOEX1   1326
 4   130C INOEX2   1348
15   17E4 IOADDR   10F6,  13D8,  13DE
 4   1078 IONPSW
 8   1038 IOOPSW   11F2,  121E
 2   1540 IOPOUT   1538
 4   138A IOUTIT   1376
 4   11F2 IRETRN   107C
 8   1768 ISENSE   128E
 4   1606 ITIOLP   160E
 9   1867 ITSTNO   10FA,  139A,  13A4,  13A6,  13AC
 1     80 LOGOUT   1114,  1114,  14F8
 8   1070 MCNPSW
 8   1030 MCOPSW
 4   19B2 NITWIT   19AC
 8   1D38 PCHCMD   1B1A,  1B6A,  1F04
 8   1068 PGNPSW
 8   1028 PGOPSW
12   1948 PUNCHS   173C
 1   1AF8 ROUT01   1015,  1FBF
 1   1BDC ROUT02   1AF9
 8   1060 SVNPSW
 8   1020 SVOPSW
 1    181 SYSMOD   14F0
 1   1D54 TWENTY   16FA,  175A
 2   10E2 U1ADDR
 2   10E6 U2ADDR
 1   1000 XF8120
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NO ERROR DETECTED IN ABOVE ASSEMBLY

F812 2540 RD FUNCTION SEC 3

PERIODS CORRESPOND TO BLANK COLUMNS.

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COLS.  1 THROUGH 20     COLS.  21 THROUGH 40     COLS.  41 THROUGH 60     COLS.  61 THROUGH 80

BESD......AA..AAXF81    20..AAAA.AGG........     ................840      573.130498..81200001
9         YQ  Y9            YYQY Y8Q
          99  9             9999 990

BTXT.AAA..A8..AA8KAA    AAAAAAAAABOAADAAAAK8     AAAAAAAAAAAAAAAAAAAA     AAAAAAAAAAAA81200002
9    YQY  Y9  Y9 9YY    YYYYYYYYY9+Y99YYYY8      YYYYYYYYYYYYYYYYYYYY     YYYYYYYYYYYY
     999  9   9   99    999999999  9  99999      99999999999999999999     999999999999

BTXT.AA8..A8..AAAAAA    AAAAAAAAAAAAAAAAAAAA     AAAAAAAAADAAAAAAAAAA     AAAAAAAAAAAA81200003
9    YQ9  Y9  Y9YYYY    YYYYYYYYYYYYYYYYYYYY     YYYYYYYYY9YYYYYYYYYY     YYYYYYYYYYYY
     99   9   9 9999    99999999999999999999     999999999 9999999999     999999999999

BTXT.AA0..AA..AAAAAA    AAAAADAAAAJ2........     ....................     ............81200004
9    YQ+  YQ  Y9YYYY    YYYY99YYYY9
     99-  99  9 9999    9999  9999

BTXT.AAS..A8..AAAAAA    BAAAAABD1DBD12BS8IBS     7OKA8UABAA7HKA9GOC+N     AHPGO.O.PCSA81200005
9    YQ8  Y9  Y90YYY    0YYYYY-Q Y-Q 9-  0-        9 8Q9Q8 R Y Y 9 Y      YZ 9- -   88Y
     99   9   9  9 9     9 999                       0  9 0 9             9         9

BTXT.AJQ..A8..AASAAA    AAGA1BA0ODGA1WAA0DGA     12DA0AG01SA.0DGA1KEA     0AG01SA.0DGA81200006
9     Y99  Y9  Y98Y-Y   QYZQ  -+ 9ZY 8-Y 9ZY      8QY+YZ  8-  9ZY 8QY     +YZ+ 8-  9ZY
      9    9   9        09 9                      9 9 9   9          9     9 - 9

BTXT.AJ+..A8..AA1KDA    0AG01BHFAHHAACEA0AGA     1WFA1KPA0Y0YFA0YDABR     DABDDABPBX8E81200007
9     Y9   Y9  Y9 8QY   +YZ  ZRQ9-0QY9QY+YZY      8ZQ Z 9    -Y  -YQ      -YQQ-YQ -  Z
      9    9   9    9    9            9  9 9                       9Z       9Z9 9Z

BTXT.AJH..A8..AABX7G    DA0AGA1FG.1MGJ1MB37G     G01BB27GG01BB17GKG7J     0.F.0YG01BB081200008
9     Y90  Y9  Y9-  Q   QY+YZY QZ  YZY 0-  Q     Z  -  QZ  -  Q 9 Y       - -   Z  -
      9    9   9    9    9 9  0     9     9            9       9

BTXT.AJ0..A8..AA7GD7    0YA.AAGA2OFA0YHFAHHA     ACFA0YAA9EFA1SAA9FD7     0YG02DA002G-81200009
9     Y9+  Y9  Y9 Q-8     - QYZQ Z-Q  RQ9-0Q     Y9-Y  YY YZQ  YY Y-8       Z  Z8+ 8Z
      9    9   9  9         09 9   9             9      9       9                9

BTXT.AJ8..A8..AA2MD7    0YA.0YGA2DKG7J0.F.0Y     G02FKG7H0.BEABA2AJB0     MN9AKB8D8GBK81200010
9     Y9   Y9  Y9 9-8     -    ZQ Z 9 Y  -       Z  8 9 0  8QY9Y8808-     Z9 Q 9 9 8-8
      9    9   9                9                      -  999 999 9                9 9

BTXT.AKA..A8..AA45KB    8U8XEA4OFB0YG048KG7Q     0.FJ0YAAAAGA2OAH0YGA     2OFH0YG01KAB81200011
9     Y9Q  Y9  Y9 9 9    8 8ZQ 8-9  Z     9 0      -Y  -QQYZY Z-9  ZQ      Z-9  Z    -9
      9 Z  9   9         9 9   9                  9   909          9

BTXT.AKQ..A8..AAAAGA    2FA.0YGA3QAB7MGA2FAJ     0YGA3QAB7MGA3QAA7QE0     52AA0ZGA2DFD81200012
9     Y9Z  Y9  Y9QYZY    Y-    ZY 9-9 0ZQ Y-Y      ZY 9-9 YZY 9ZY ZZ+      -Y  ZY 0-9
      9    9   9 09                      9  9                     -             -

BTXT.AKJ..A8..AA0YD7    0ZNA8EAEGA2DFA0YAAAA     GA3QAA70E052AA0ZGA2M     F.0ZD70ZAA7081200013
9     Y9Y  Y9  Y9  -8      Y ZQ9ZY 0-9   -YQ9    ZY 9ZY +Z+  -Y  ZY       -    -8  ZY +
      9    9   9           9  0    -      0             - -                       -

BTXT.AKQ..A8..AAE052    AA0ZGA2MFJ0ZD70ZEA5D     A-0ZG+3QFA0YG03QA.0Y     GA30G03+AJ0Y81200014
9     Y9   Y9  Y9Z+     -Y  ZY Y-Y  -8   ZQ R    -    Z  9-9  Z  9-       ZQ ZZ  --Y
      9    9   9 -               9 9      9 0                              9        9

BTXT.ALA..A8..AAGA3D    G03+NA7GADG-3OAHAAGA     3AA.0YGA3OHCAF.A36NG     7J7JG-3OADAA81200015
9     Y9Q  Y9  Y9ZQ Z   Z  - Y QQ9Z  Z-9QYZY      Y-    ZY ZZYY9 Y 8 9     Y YZ  Z-9QY
      9 9  9   9  9           9 90       09      9           9    9              09

BTXT.ALH..A8..AAGA3D    AJ0YGA3OAHAH.A3-NG7Q     7QGA3+FA0YBM3KB05BAA     0YGA3BAA0DGA81200016
9     Y9Z  Y9  Y9ZY 8   -Y  ZY ZZ0Y9 Y    9 0     0ZY --9  -Z Y-+ Z-9      ZQ Y-9 9ZY
      9    9   9    9    9        9                                        9
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F812 2540 RD FUNCTION SEC 3

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BTXT.ALA..A8..AA50BU   3KBA5BE.8EGA5DAA7MGA   5DKA8UABBEABHUHUBOMA   8PAAADLH+A7881200017
9    Y9Y  Y9  Y9 8-9    Y-Y Z-  ZZY Q-9 0ZQ    Q 9 8Q98QY998988-Z8    ZZYY980 Q
     9    9   9                   9     9     9    0 999      9  9       9 9- 0

BTXT.ALH..A8..AABEAC   G9G8BOJA73ACADAAAAGA   4DBEACABGZBOJG7UED1D   G-42+J8HBEAC81200018
9    Y90  Y9  Y98QY9   9 9 8-YQ  ZQY9-YQYZQ    88QY98Y9 8-Y8  -Q Y   Z  8 Y 98QY9
     9 -  9   9 999        9 9   09   09 9      999 9   9  9             9    999

BTXT.ALO..A8..AAHAHH   BOJC8CKB808KB045KG7H   JAEA4DAOJDGA42AKAHGO   4DBEAHGHGHKG81200019
9    Y9   Y9  Y99899   8-Y8 9 9 9 9-9 9 9 0   YYZQ 8-+Y9ZY 8ZYY9Z      98QY99090 9
     9    9   9  9     9  9                -     9   9        9  9     999  - -

BTXT.AMY..A8..AA8K7H   KG8T70BOJK8NG9KA7NAD   BOJB70BOJB7BKB808GBK   45AHAAGA46KB81200020
9    Y99  Y9  Y9 8 0    9 9 +8-Y8 99  Y  Q9   8-Y8 -8-Y8 Q 9 9 8-8     9-9QYZY 8 9
     9    9   9  9 -          9 9     9  0    9  9  9  9 9      9 9       09

BTXT.AM-..A8..AA8U82   HCAF.A4HAHAH.A4QKG7H   7HEA4OA.OYGA4FKB8U8X   KG7H7JEA4OAD81200021
9    Y9   Y9  Y9 8 9   ZYY9 Y RZOY9 Y 0 9 0    0ZQ 8-   ZY - 9 8 8     9 0 YZQ 8-9
     9    9   9  9        9    0 9         -     -   9             9 9      -      9

BTXT.AMH..A8..AAAAGA   4OKB8U82KG7H7HEA4OAJ   OYGA4FKB8U8XKG7H7QEA   4DKA82AEADOY81200022
9    Y9-  Y9  Y9QYZY    Y 9 8 9 9 0 0ZQ 8-Y     ZY    9 8 8 9 0 0ZQ    8 Y 8Q9-9
     9    9   9 09            9     - -   9 9          9 9   -         9 9 90

BTXT.AMO..A8..AAGA4O   BEAAH2H2BOJC85BEAAHE   HEBOJC8.EAJAG-5UKC7H   SABEADGHGHKA81200023
9    Y9-  Y9  Y9ZY     8QY998988-Y8 98QY99Z   9Z8-Y8   -QZOZ  9 8 0   8Y8QY89090 9
     9    9   9        999  9 99  9  999        9  9    Z       9 -     9999 - -

BTXT.ANH..A8..AA8+7H   KE8C7BKE8K7BKE8/7BBO   JM8CABOYGA54DEOYGO1K   AAAAGA5.EA5D81200024
9    Y99  Y9  Y9   0    9 R Q 9 8   9   Y8-   Y8 8-9  ZY 9-Q  Z       -YQ9ZY  ZQ R
     9    9   9    -          0          99    9         Z              0        9 0

BTXT.AN.\.A8..AAB006   8OBOJA73+NAHAOODG+1S   AAOYGNAHAAGA5+ACABAC   AFHA7HGCAJAA81200025
9    Y9   Y9  Y98-+9    +8-Y9    YYZ-+ 9Z  8   -Y   99-9QYZY -ZQY9ZQ   Y9-8 R9QZYY9
     9    9   9 9       -9          9      9              09      09  0   9  9 0 Z 99

BTXT.ANH..A8..AAL3CA   BBBABQABBCABB3KU9T9S   AJODGA5KNAOABQG-5HA-   OZGA5BAG.AG+81200026
9    Y9R  Y9  Y989ZQ   QQZQQ ZZQOZRQ9 9 9 9   -Y 9ZQ 0 Y+YQ Z    -      ZY 0-Q  YZ
     9 0  9   9 9  Z   Z9 ZZ    Z   0Z         9   9   9-9Z                - Z 9

BTXT.ANA..A8..AA5DA3   AAASAAEJBYG-56FBOZG1   FABDABOZGA64FAOYG05B   BOUA9DBBEAOA81200027
9    Y9Q  Y9  Y9 YZ9   Y9Z9Y9RYQ9Z  8-9  9    -YQQ-9   ZQ 9-9   Z     8-9Q R8QQY+Y
     9 0  9   9  9     9   9  9Z                Z9      9            9  9  99 9 9

BTXT.ANY..A8..AAB0AA   9DGO1BHFAHHAAB+EAHDA   OAGO6SEAOAG.6MFA6FG7   ADODGA6FFACZ81200028
9    Y9   Y9  Y98-Y9    RZ  8RQ9-OQY9 YYZQY   +YZ+ 9QY+YZ  9ZQ 99     -9-ZZY 8-Y
     9    9   9 9              9       9  9 9  9 -   9 9                      9

BTXT.ADJ..A8..AAG7AA   7MGA1BA48EGA1BG7A-OZ   G+6BAABRGA6KBOAW9MFA   BRGO6KBO98AA81200029
9    Y9Y  Y9  Y99 -9    OZQ 8-  ZZQ 89 -      Z  R-YQ ZQ O8-Y9 Z-Y    Q Z  O-   9-Q
     9 9  9   9            9 9      9 9              Z  9  9          Z            9

BTXT.ADH..A8..AA.AGA   6KB198B093AH.AGA6BB1   93BO96AD.AGA6BB196BO   9BAA.AGA6BB181200030
9    Y9R  Y9  Y9 YZY    Z-  9-  8-9 YZY R-     8-  8-9 YZY O-   8-     Z-9 YZY --
     9    9   9  9                9   9   0    9   9   9         9           9

BTXT.ADA..A8..AA9BBO   9GAB.AGA6KB19GAABPGA   6DBOJA8OBOJM8PBOJA8R   BOJS8RBOJX8C81200031
9    Y9Q  Y9  Y9 Z-     Z-9 YZY O-   Z-YQ ZQ   Y8-Y8 O8-Y9 Y8-Y9     8-Y9   8-Y9 Q
     9    9   9             9           Z  9   99  9   9      9        9      9   Z

BTXT.ADH..A8..AAFABP   QBF.7A3J9U7FF09VAJOD   GA7OKA7AOABEAAGAA4BE   AABQAAADEDLJ81200032
9    Y9   Y9  Y9-YQ    9Z8   Q 9 9 0-   9-Y 9  ZQ 8  Y Q+Y8QY99Q898Q   Y98 8QQ9QR89
     9    9   9   Z          0      -       9   9    9 0-9999  09 99   9 9 9Z  Z 9

BTXT.APA..A8..AALSL3   A.ABCABQQLNUKICLE+IA   AHCLETAAAGMTG+7UHAAD   +A7AA.AFAAAD81200033
9    Y9Y  Y9  Y98989   Z Y9ZQQ 998989Z9Q-OQ   Y9Z9Q8ZQYQ99Z   8OQY9    Q QZ  Y9ZQY8
     9 9  9   9 9 9      9  ZZ     9 9   Z 9   9   Z  Z9Z      9 99    9 0  9  Z99
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F812 2540 RD FUNCTION SEC 3

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BTXT.AP8..A8..AAAAAA   CT9GHA7AMAGA7BBU9XF.   7BIAAAFA74HDEDBOAW9S   GO5BDAQEAAAA81200034
9    Y99  Y9  Y9ZYY9   Z9 ZRQ Q9QZY RZ9 9Z     ROYY9ZQ 8-9QR8-Y9 9   Z  09Y9ZYYY9
     9    9   9  99          9 0 9               99  Z 9  Z 9           - 9  999

BTXT.APO..A8..AAFAKD   JAA+AAAAAAAAAAAAAAAA   AAAAAAAAAAAAAAAAAAAA   AAAAAAAAAAAA81200035
9    Y9+  Y9  Y9 Y80   YYY YYYYYYYYYYYYYYYY   YYYYYYYYYYYYYYYYYYYY   YYYYYYYYYYYY
     9 -  9   9  99    999 9999999999999999   99999999999999999999   999999999999

BTXT.APQ..AA..AAAAAA   AAAAAAAAAAAA........   ....................   ............81200036
9    Y90  YQ  Y9YYYY   YYYYYYYYYYYY
     9    99  9 9999   999999999999

BTXT.APO..AU..AA.CC.   .X.EXP.CC..X.ACT.ADR   .XXXXXX.XIOA........   ............81200037
9    Y9-  Y9  Y9                                         Y
     9    9   9                                          9

BTXT.AP3..AJ..AA.ADR   .XXXXXX.LINKA.......   ....................   ............81200038
9    Y9   Y9  Y9                   Y
     9    9   9                    9

BTXT.AQC..A8..AA.CAW   .XXXXXX.CSWCCW.CSW.X   XXXXXXX.XXXXXXXX.EXP   ACTEXP.SNS.X81200039
9    Y99  Y9  Y9
     9    9   9

BTXT.AQ3..A8..AAX.EX   P.SNS.XX.ACT.LOG.XX.   XXXXXX.XXXXXX.XXXXXX   .TST.XXXX.SE81200040
9    Y98  Y9  Y9
     9 9  9   9

BTXT.AQC..A8..AAT.SS   .O.ON.FOR.LOOP.ON.XI   OT.SS.1.ON.FOR.TIO.S   IO.LOOP.READ81200041
9    Y9R  Y9  Y9                               8
     9 0  9   9

BTXT.AQL..A8..AA.ERR   .CARD.IN.PRESTKR.STA   PRESTKR.STASTACKER.R   1C.....EXPEC81200042
9    Y9Y  Y9  Y9                                                      8
     9    9   9

BTXT.AQT..A8..AATED.   SHD..............BUF   .COL.PUNCHES..RD..RD   .XU.XL.PAR.A81200043
9    Y9   Y9  Y9
     9    9   9

BTXT.AJL..A8..AADR.T   RAN.................   ....................   .TE012345678812000 44
9    Y88  Y9  Y9
     999  9   9

BTXT.AJC..A8..AA9.MA   KE.DEVICE.RDY.2.DIAG   .CHK.RDS.ATTEMPTED.-   BOTH.FAILEDA81200045
9    Y8R  Y9  Y9                                                                Y
     99   9   9                                                                 9

BTXT.AJC..A8..AAJDFA   A.UIO.FROM.DEVICE.XX   XXALEA.JFGA9BQGHOOUD   OBA+OBUHOOSD81200046
9    Y8Y  Y9  Y99YQ9   Y                        Y8Q- Z-ZY 09QR+  R   +QQ  +Q9R+  8R
     99   9   9   Z    9                        999         - 9       ZZ  Z

BTXT.AJC..A8..AAOBA+   OBJPBBMBMLOCWAIBWADK   WF-F-AFAAG-9MFABOAAO   YGABDB.B4KFB81200047
9    Y8   Y9  Y9+QQ    +QY 9Q Q 8ZZ890889Q8   89 9 8 YYZ  Y-YQ -Y     ZQQ9- Q9 QQ
     99   9   9  ZZ     Z9  Z Z 9    -    09          99  9  Z          9Z   Z   Z

BTXT.AJC..A8..AA5B4A   JEHG4KAOC9GBOMKBEFAO   YE+2FBAOYGO9MAAAAAAA   AAAAAAAAAAA781200048
9    Y8Q  Y9  Y99Q9Z   YQZ9  Y 9 Y8-Z8QQ-9     Z  Y-Y  Z  YYYYYYYY   YYYYR YYYYYY8
     99Z  9   9  Z      Z     9     9  9Z9            9     99999999   9999 9999999

BTXT.AK3..AA..AAG...   ....................   ....................   ............81200049
9    Y89  Y9  Y9Q
     99   9   9 Z

BTXT.AKM..A8..AAAAAA   AAAAA.PREVIOUS.HANG.   UP.DETECTEDAAACDA.OE   GACFE.9OFABN81200050
9    Y8   Y9  Y9YYYY   YYYYY                              Y9Y8Q-  9   ZYQQZ  O-YQ
     99   9   9 9999   99999                              9 999         Z       Z
```

```
BTXT.ALD..A8..AALGE.    CJA-ALHOBUAJE8EAOK6A    AAOAGDAB7MGACBAB7MGA    CBAAOYGACOD781200051
9    Y88  Y9  Y98RZ     QYZ Y8R+Q9ZYQ9ZQ Y8Y    YQ YQ9-9 0ZQQQ-9 YZQ    QQ-9  ZQQ8-8
     999  9   9 90      Z   99  Z   Z  0 999    99 9Z      9Z0     9    Z0     9Z9

BTXT.ALD..A8..AABNLG    COB3E.CJF-COAHODGACD    KABCB4E.9OHOBUAJE8EA    OK6AAAOAGDLO81200052
9    Y8Z  Y9  Y9Q 8R    Z+Q8Z QYZ Q8-9 9ZQQ8     YQQQ9Z  OR+Q9ZYQ9ZQ     Y8YYQ  YQ98Z
     99   9   9 Z 90     -Z9  Z   Z9     9Z9     9Z9Z        Z   Z  0    99999 9Z 9

BTXT.AL4..A8..AAKAB4    BCAB7MGACBAB7MGACBB.    B4AAOYGAC+BOAAB4A+A+    BHAAAGAAAHAA81200053
9    Y88  Y9  Y9 YQ9    QQ-9 0ZQQQ-9 YZQQQ-     Q9-9  ZQQ-8 ZYQ9Z Y     ZRYYZRY9Z0Y9
     99   9   9  9Z     Z9     9Z0     9Z0      Z       9Z 9   Z   9     099 09   9

BTXT.ALD..A8..AAF+CQ    G4AABNGACOLGCOB4COEQ    E.CJADAAFABNGOCDBAGG    E.9DPCBUBUAA81200054
9    Y80  Y9  Y9Z Q0    9 -YQ ZQQ88RZ+Q98+QZ    Z QYZZY9-YQ Z Q89YQQ    Z  0 9Q8Q8-Y
     99-  9   9   Z          Z  9Z990 -Z  -Z      Z  9   Z   Z9 9ZZ           Z9Z9

BTXT.ALM..A8..AABOGA    DKBOD5GUA.OEGADFBOJ2    GEBBBOAAGUEAOAD7BMBA    BBHOBJAJEYKB81200055
9    Y8Y  Y9  Y9Q ZQ    Q98-99Q9-   9ZQQ98-Y8   Q08Q8-Y9Q9QY+Y-8Q -Y    QQR+QYZYQ9 8
     999  9   9 Z  9    Z 9   Z        9Z 9  9  Z 999   Z  9 9  Z  9    Z9  Z9  Z  9

BTXT.AMU..A8..AA8H8C    EAOKSAAJOAFMAABDGADB    KABBB4AJEAEAOKWAAA1A    F4H.BUADAA+.81200056
9    Y89  Y9  Y9 0      ZQ Y8YYY YQY-YQQZQQZ     YQQQ9ZYQQZQ Y8YYQ Y    Q R Q8ZZY9
     99   9   9  -       0 99 99 9Z9  Z9 9Z      9Z9Z  ZZ 0 9999Z 9     Z   Z9  9

BTXT.AMM..A8..AABULD    C.BBADAGB.BBAJOEGADF    AABOGADKAABMGADKBODU    GJBBEAOAFABM81200057
9    Y88  Y9  Y9Q88Z    Z QQZZY9Z QQ-Y 9ZYQQ    -YQ ZYQY-YQ ZQQY8-98    Q88QQY+Y-YQ
     99   9   9 Z99       Z9  9   Z9 9    Z       Z   Z9  Z  9Z99  9    Z 99 9 9  Z

BTXT.AMD..A8..AABOAA    GUGODKELBXGADKGODKPC    BUBUBABBAJOEGADKAHOD    GADYAABMGADK81200058
9    Y8-  Y9  Y98-Y9    Q9Z QY-8Q8ZYQYZ Q8 9    Q8Q8-YQQ-Y 9ZQQY-9 9    ZYQ -YQ ZQQ8
     99   9   9 9       Z   Z9 9Z9  Z   Z9      Z9Z9 9Z9 9   9Z9         Z   Z  9Z9

BTXT.AMD..A8..AAAABO    GADKBODUGJBBEAOAFABM    GODKBOAJE.HOBJKB8H8F    EAOK6AA.OAGM81200059
9    Y8Y  Y9  Y9-YQ     ZYQ88-98Q88QQY+Y-YQ     Z Q88 ZYQ R+QY 8 0 Y    ZQ Y8YY  YQ9
     999  9   9   Z       Z99  9Z 99 9 9  Z       Z99   Z   Z9 9 - 9     0 99 9  9Z

BTXT.AND..A8..AAKABB    B4LDC.BBADAGB.BBAJOE    GADYGODKAAAABAK4JAA+    TAK4JAAAAAK481200060
9    Y89  Y9  Y9 YQQ    Q98ZZ QQZZY9Z QQ-Y 9    ZYQ Z QYYYYY Y89YYY     9Y89YYY9ZY89
     99   9   9  9Z9    Z 9   Z9  9   Z9 9        Z  Z99999 99 999       99 999  99

BTXT.AN4..AQ..AAJAA+    BAK4AAA+CAK4AAAAAAAG    ....................    ............81200061
9    Y88  Y9  Y9YYY     9Y89YYY 9Y89YYY9YYY8
     999  9   9 999      99 999  99 999 9999

BTXT.ANQ..A8..AAAGA1    AHQABQJAHEA1CH8CB8LA    HGO5AHMABMJ.DE.5CH4C    B4L.DGO3AYKA81200062
9    Y8Z  Y9  Y9Y9Q8    909Z099Y-9Y8909Z099Y    09-99Z9ZZ99 -9 99Z9Z    Z99 09+9999Z
     99   9   9 9 09                9           -                          - -

BTXT.ANJ..A8..AASKJJ    BEJ3CY2CS2LJBG01AHAA    BAJAAEA1CHACBALAAGAC    AQKAKKJJBEJ181200063
9    Y8Y  Y9  Y9999Y    -9Y9999Z999Y09 999QZ    9Q9YQ9Y999QZ9Q9YQ9Y8    908Z089YQ9Y8
     99   9   9     9     9         9-     9     9 9  9   Z  Z 90 99      9  9     9

BTXT.ANQ..A8..AABHYB    BYKAQFAEAHMABMJODE05    BHUBBUK.MF.CAQOAKOJ-    FE-3BOBBSSKJ81200064
9    Y8   Y9  Y9909Z    099Y09Y89 8Z 89+Q9+9    9Z9ZZ99 09 9YZ9ZZ99     -9 99+9Z999Y
     99   9   9                  9  9  9                   9                       9

BTXT.ADA..A8..AAKFSG    AYDASOJSFES1BHJBBJKA    JFATAQB.KBAJBDJSAQSB    KSKJKFOVAHD.81200065
9    Y8Q  Y9  Y90988    9 8Z 898Q98999YZ9Y9Y    Y9Q8Y08 08QYY9Y8908Z    089YY9-8Y 8
     999  9   9     9     9  9         9  9 9     099 9  99     9  9     9       99 9

BTXT.AOH..A8..AABDAO    DDOUAHUBBUKOMFOXAQF.    KFA-FD-WAQWBKWK-DFOX    AYF.SFASFDSW81200066
9    Y8Z  Y9  Y9 8Q+    Y9+89 8Z 89+Y9+9YZ9     Z9Q 09 99Z9ZZ99 09 8    Y 8  8Q8Y988
     99   9   9  99        9  9  9    - 9        9                  9    9 9  99    9

BTXT.ADA..A8..AAAYWB    SWKSOFJAAHH.BHAAHDAY    AQ2CK2LJBG-EAHD.BDA.    DD.UAH4CB4L081200067
9    Y8Y  Y9  Y99 8Z     898Y9Y8Y09 09QY09Y9    908Z089YQ9 9YZ9 Z9Q     09 99 8Z 89+
     99   9   9   9     9       99      9         9  9  0   9    9             9  9
```



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BTXT.AOH..A8..AADGYX    AYB.SBAJBDJSAQ6CK6L-    FGJAAHA.BAAAADAJAY6C    S6LSFGAAAANA81200068
9    Y80  Y9  Y9Q999    999 99QY09Y99Z9ZZ99     09Y9Y9Y 9YQYY9YY9 8Z     898Q9YYYY8Q
     99-  9   9 0              99  9            - 9 9 9  999  99  9      9  0 99999Z

BTXT.AOO..A8..AADAAA    AAAAHAAAAAAADAAAAAN.    HAAAAAAADAAAAANHHAAA    AAAADAAA.DO.81200069
9    Y8   Y9  Y98YYY    YYYY9YYYYYYYY9YYYYY8    9YYYYYYY9YYYYY8Z9YYY    YYYY9YYY
     99   9   9 9999    9999 9999999 999999      9999999 999999   999   9999 999

BTXT.APY..A8..AANPRO    TPLACE.DETAIL.CDS.IN    .RDRC.HPRTMAKE.RDYTE    OF.ON.LOOPIN81200070
9    Y89  Y9  Y9        8                             8     8        8
     99   9   9

BTXT.AP-..A8..AAG.LO    ADER-.KEEP.ONLY.DETA    IL.CDS.IN.RDR.SET.SS    W.9.ONT.DO.P81200071
9    Y8   Y9  Y9                                                                  8
     99   9   9

BTXT.APH..AX..AASW.R    ESTART.IF.SET.OF.DET    AIL.CDS.DESIRED.....    ............81200072
9    Y8-  Y9  Y9
     99   9   9

BRLD......A8....AAAA    AAANEAA4AAP/AAPAAAJB    AAN/AAN1AAN1AANAAANA    EAOMEAPDDAPM81200073
9         Y9    Y9Y9    8YQ98YQ88Y988Y9R8Y8Y    8Y888Y898Y888Y8Z8Y88    8Y8Y8Y898Y89
          9     9 9     999 999 99  99 0999     9999999 9999999 999     9999999 999

BEND.AK8......AA....    ....................    ....................    ............81200074
9    Y8         Y9
     99         9

BDAT................    ....................    ....................    ............81200075
9

AABCDEFGHABCDEFGAJKL    MNOPQJKLMNOPJ/STUVWX    Y/STUVWXA12345678123    4567.ABCDEFGHABCDEFG
Y99999999888888Q999     99999888888Y9999999     988888880999999999888   8888 ZZZZZZZ8888888
9         99999999            99999999           9999999Z         999   9999

GHABCDEFGAJKLMNOPQJK    LMNOPJ/STUVWXY/STUVW    XA123456781234567.AB    CDEFGHABCDEFG+ABCDEF
998888888Q9999999988    88888Y99999999888888    8Q999999998888888 ZZ    ZZZZZZ8888888 RRRRRR
  99999999          99  999999        999999    9Z         9999999

FGAJKLMNOPQJKLMNOPJ/    STUVWXY/STUVWXA12345    6781234567.ABCDEFGHA    BCDEFG+ABCDEFGHJKLMN
88Q9999999988888Y9      99999998888888Q99999    9998888888 ZZZZZZZZ8    888888 RRRRRRR88888
999         99999999             9999999Z         9999999

NOPQJKLMNOPJ/STUVWXY    /STUVWXA123456781234    567.ABCDEFGHABCDEFG+    ABCDEFGHJKLMNOP-/KLM
99998888888Y99999999    8888888Q999999998888    888 ZZZZZZZ8888888      RRRRRRR8888888  ZZZ
    99999999            9999999Z        9999    999

MNOPJ/STUVWXY/STUVWX    A123456781234567.ABC    DEFGHABCDEFG+ABCDEFG    HJKLMNOP-/KLMNOPQ/+T
8888Y99999999888888     Q99999999888888 ZZZ     ZZZZZ8888888 RRRRRRR    R8888888  ZZZZZZ8-8
99999         9999999   Z           9999999

TUVWXY/STUVWXA123456    781234567.ABCDEFGHAB    CDEFG+ABCDEFGHJKLMNO    P-/KLMNOPQ/+TUVWXOAB
99999988888888Q999999   998888888 ZZZZZZZ88     88888 RRRRRRR888888     8  ZZZZZZZ8-88888+RR
       9999999Z            9999999                                                       -00

STUVWXA1234567812345    67.ABCDEFGHABCDEFG+A    BCDEFGHJKLMNOP-/KLMN    OPQ/+TUVWXOABCDEFGH1
888888Q9999999988888    88 ZZZZZZZ8888888 R     RRRRRRR8888888  ZZZZ    ZZZ8-88888+RRRRRRR8
999999Z         99999   99                                                    -00000000

123456781234567.ABCD    EFGHABCDEFG+ABCDEFGH    JKLMNOP-/KLMNOPQ/+TU    VWXOABCDEFGH1234567A
999999998888888 ZZZZ    ZZZZ8888888 RRRRRRR     8888888  ZZZZZZZ8-88    888+RRRRRRR8888888Y
         9999999                                                           -00000000

81234567.ABCDEFGHABC    DEFG+ABCDEFGHJKLMNOP    -/KLMNOPQ/+TUVWXOABC    DEFGH1234567AABCDEFG
98888888 ZZZZZZZ888     8888 RRRRRRR8888888       ZZZZZZZ8-88888+RRR    RRRRR888888Y0000000
 9999999                                                        -000    00000
```

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7.ABCDEFGHABCDEFG+AB    CDEFGHJKLMNOP-/KLMNO    PQ/+TUVWXOABCDEFGH12    34567AABCDEFGHIBCDEF
8 ZZZZZZZZ8888888 RR    RRRRRR8888888  ZZZZZ    ZZ8-88888+RRRRRRRR88    88888YOOOOOOOOOYYYYY
9                                                       -00000000

FGHABCDEFG+ABCDEFGHJ    KLMNOP-/KLMNOPQ/+TUV    WXOABCDEFGH1234567AA    BCDEFGHIBCDEFGAABCDE
ZZZ8888888 RRRRRRRR8    888888  ZZZZZZZ8-888    88+RRRRRRRR8888888YO    OOOOOOOOYYYYYYQ-----
                                                  -00000000

EFG+ABCDEFGHJKLMNOP-    /KLMNOPQ/+TUVWXOABCD    EFGH1234567AABCDEFGH    IBCDEFGAABCDEFGHIBCD
888 RRRRRRRR8888888     ZZZZZZZ8-88888+RRRR    RRRR8888888YOOOOOOOO    OYYYYYYQ---------QQQ
                                    -0000                   0000

DEFGHJKLMNOP-/KLMNOP    Q/+TUVWXOABCDEFGH123    4567AABCDEFGHIBCDEFG    AABCDEFGHIBCDEFGJJKL
RRRRR8888888  ZZZZZZ    Z8-88888+RRRRRRRR888    8888YOOOOOOOOYYYYYY    Q---------QQQQQQYOOO
                              -00000000

LMNOP-/KLMNOPQ/+TUVW    XOABCDEFGH1234567AAB    CDEFGHIBCDEFGAABCDEF    GHIBCDEFGJJKLMNOPQRK
88888  ZZZZZZZ8-8888     8+RRRRRRR8888888YOO    OOOOOOOYYYYYYQ------    ---QQQQQQYOOOOOOOOY
                          -OOQOOOOO

KLMNOPQ/+TUVWXOABCDE    FGH1234567AABCDEFGHI    BCDEFGAABCDEFGHIBCDE    FGJJKLMNOPQRKLMNOPAA
ZZZZZZZ8-88888+RRRRR    RRR8888888YOOOOOOOO    YYYYYYQ---------QQQQ    QQYOOOOOOOOYYYYYYQO
            -00000              000                                     0-

/+TUVWXOABCDEFGH1234    567AABCDEFGHIBCDEFGA    ABCDEFGHIBCDEFGJJKLM    NOPQRKLMNOPAABCDEFGH
8-88888+RRRRRRRR8888    888YOOOOOOOOYYYYYYQ    ---------QQQQQQYOOOO    OOOOOYYYYYYQOOCOOOOO
      -00000000                                                       0--------

OABCDEFGH1234567AABC    DEFGHIBCDEFGAABCDEFG    HIBCDEFGJJKLMNOPQRKL    MNOPAABCDEFGHIBCDEFG
+RRRRRRRR8888888YOOO    OOOOOYYYYYYQ-------    --QQQQQQYOOOOOOOOYY    YYYYQOOOOCOOOQQQQQQ
-00000000                                                       0---------COOOOO

GH1234567AABCDEFGHIB    CDEFGAABCDEFGHIBCDEF    GJJKLMNOPQRKLMNOPAAB    CDEFGHIBCDEFGOABCDEF
RR8888888YOOOOOOOOY    YYYYYQ---------QQQQQ    QYOOOOOOOOYYYYYYQOO    OOOOOOOQQQQQQ+
OO                                                      0--             -------OOOOOO

67AABCDEFGHIBCDEFGAA    BCDEFGHIBCDEFGJJKLMN    OPQRKLMNOPAABCDEFGHI    BCDEFGOABCDEFGHIBCDE
88YOOOOOOOOOYYYYYYQ-    --------QQQQQQYOOOOO    OOOOYYYYYYQOOOOOOOOO    QQQQQQ+         YYYY
                                                        0---------      OOOOOO          9999

EFGHIBCDEFGAABCDEFGH    IBCDEFGJJKLMNOPQRKLM    NOPAABCDEFGHIBCDEFGO    ABCDEFGHIBCDEFGOJKLM
OOOOOYYYYYYQ--------    -QQQQQQYOOOOOOOOOYYY    YYYQOOOOOOOOOQQQQQQ+            YYYYYY-
                                                   0---------OOOOOO              999999

DEFGAABCDEFGHIBCDEFG    JJKLMNOPQRKLMNOPAABC    DEFGHIBCDEFGOABCDEFG    HIBCDEFGOJKLMNOPQRBC
YYYYQ---------QQQQQQ    YOOOOOOOOYYYYYYQOOO    OOOOOOQQQQQQ+             YYYYYY-          QQ
                                        0---    ------OOOOOO              999999          99

CDEFGHIBCDEFGJJKLMNO    PQRKLMNOPAABCDEFGHIB    CDEFGOABCDEFGHIBCDEF    GOJKLMNOPQRBCDEFGSJS
-------QQQQQQYOOOOOO    OOOYYYYYYQOOOOOOOOQ    QQQQQ+          YYYYY    Y-          QQQQQQ8Z
                              0---------0       OOOOO           99999    9           999999

BCDEFGJJKLMNOPQRKLMN    OPAABCDEFGHIBCDEFGOA    BCDEFGHIBCDEFGOJKLMN    OPQRBCDEFGSJSTUVWXYZ
QQQQQQYOOOOOOOOOYYYY    YYQOOOOOOOOOQQQQQQ+            YYYYYY-          QQQQQQ8Z
                          0---------OOOOOO              999999           999999

JKLMNOPQRKLMNOPAABCD    EFGHIBCDEFGOABCDEFGH    IBCDEFGOJKLMNOPQRBCD    EFGSJSTUVWXYZKLMNOPO
OOOOOOOOOYYYYYYQOOOO    OOOOOQQQQQQ+            YYYYYY-          QQQ    QQQ8Z           YYYYYY
                  0----    -----OOOOOO            999999           999    999             999999

QRKLMNOPAABCDEFGHIBC    DEFGOABCDEFGHIBCDEFG    OJKLMNOPQRBCDEFGSJST    UVWXYZKLMNOPO1234567
OOYYYYYYQOOOOOOOOOQQ    QQQQ+           YYYYYY    -          QQQQQQ8Z          YYYYYY
         0---------OO    OOOO            999999              999999            999999

PAABCDEFGHIBCDEFGOAB    CDEFGHIBCDEFGOJKLMNO    PQRBCDEFGSJSTUVWXYZK    LMNOPO123456789BCDEF
YQOOOOOOOOOQQQQQQ+      YYYYYY-                 QQQQQQ8Z          Y    YYYYY           QQQQQ
 0---------OOOOOO       999999                  999999            9    99999           ZZZZZ
```



```
FGHIBCDEFGOABCDEFGHI    BCDEFGOJKLMNOPQRBCDE    FGSJSTUVWXYZKLMNOPO1    23456789BCDEFGAABCDE
OOOOQQQQQQ+             YYYYYY-          QQQQ    QQ8Z            YYYYYY          QQQQQQY99999
----OOOOOO              999999           9999    99              999999                  ZZZZZZ9

BLDT.................   ....................    ....................    ............81200103
9
```

LAST PAGE

2540 READER STACKER SELECT TEST

TABLE OF CONTENTS

1. PURPOSE

1.1 INTENT.

F819 2540 READER STACKER SELECT TEST
TESTS ABILITY TO...
1. ISSUE 360 STACKER SELECT COMMANDS.
2. READ AND STACKER SELECT USING 1400 COMPATIBILITY COMMANDS.

2. PREREQUISITES

2.1 PROGRAM REQUIREMENTS.

THE EXCLUSIVE CPU FLAG IS ON IN ALL SECTIONS.

DM MUST HAVE A FOUR BYTE UDT ENTRY, ONLY THE FIRST TWO BYTES ARE SHOWN BELOW. THE NEXT TWO BYTES MUST CONTAIN THE CHANNEL AND UNIT ADDRESS.

UNIT TYPE		OPTIONAL FEATURE DIGIT 1				OPTIONAL FEATURE DIGIT 2			
UNIT	ZZ	BIT 0 HEX 8	BIT 1 HEX 4	BIT 2 HEX 2	BIT 3 HEX 1	BIT 4 HEX 8	BIT 5 HEX 4	BIT 6 HEX 2	BIT 7 HEX 1
2540 READER	81		CARD IMAGE		51 COL FEAT.	1400 FEAT.			2 CHNL SW ON 2821

2.2 EQUIPMENT REQUIREMENTS.

INPUT DEVICE FOR LOADING PROGRAM -TEST DEVICE CAN BE LOADER-.
OUTPUT DEVICE.
4K OF STORAGE
CPU
CHANNEL

3. USE PROCEDURE

3.1 PROGRAM LOADING.

STANDARD AS DESCRIBED IN USERS GUIDE.

3.2 PROGRAM OPERATE.

```
************************** NOTE ****************************
*   IF 2 CHANNEL SWITCH FEATURE IS INSTALLED, DISABLE THE  *
*   UNUSED INTERFACE TO PREVENT NOT READY TO READY STATUS  *
*   FROM BEING PRESENTED TO THE OTHER CHANNEL.             *
************************************************************
```


2540 READER STACKER SELECT TEST

IF MORE THAN ONE 2540 IS DEFINED IN THE DM UDT, ALL ROUTINES IN EACH SECTION WILL BE EXECUTED ON THE FIRST 2540 ALLOCATED BY DM BEFORE ANY TESTING OCCURS ON THE NEXT.

3.2.1 SECTION SENSE SWITCHES

THE SENSE SWITCHES SHOWN BELOW ARE IN THE SENSE SWITCH BYTES OF THEIR RESPECTIVE SECTION PREFACES. THE CHARACTER X REPRESENTS THE RELOCATION FACTOR CONTAINED IN REGISTER 15 DURING RUN TIME. THE SWITCH BITS ARE ZERO WHEN OFF, AND ONE WHEN ON.

NOTE. RESETTING SENSE SWITCH 0 OR 1 AFTER LOOPING MAY CAUSE ERRORS IN THE NORMAL PROGRAM RUN.

SENSE SW. NO.	FUNCTION	SECTION OR ROUTINE	BYTE AND BIT
0	OFF-PROCEED ON--LOOP ON CURRENT I-O COMMAND.	F819	X004 0
1	OFF-PROCEED ON--LOOP ON CURRENT SIO, TIO COMMAND.	F819	X004 1
4	OFF-PROCEED ON--LOOP ROUTINE CURRENTLY BEING EXECUTED.	F819	X004 4
7	OFF-PROCEED ON--PRINT CORRECT RESULTS.	F819	X004 7
11	OFF-PROCEED ON--LOOP STACKER SELECT R1 * SEE NOTES	F819	X005 3
12	OFF-PROCEED ON--LOOP STACKER SELECT R2 * SEE NOTES	F819	X005 4
13	OFF-PROCEED ON--LOOP STACKER SELECT RP3 * SEE NOTES	F819	X005 5

* NOTES

* WILL LOOP 360 STACKER COMMAND IF IN SECTION F819, ROUTINE 01.
* WILL LOOP 1400 STACKER COMMAND IF IN SECTION F819, ROUTINE 02.
* LOWEST SENSE SWITCH HAS PRECEDENCE IF MORE THAN 1 IS ON AT THE SAME TIME.

3.3 PROGRAM HALTS

F819 IF THE TESTS ARE EXECUTED, A MESSAGE AND HALT OCCUR TO ALLOW THE OPERATOR TO PREPARE FOR THE STACKER SELECT TESTS. TEST DECKS MUST BE REMOVED IF TESTING THE LOADER DEVICE.

4. PRINTOUTS

4.1 OPERATOR INSTRUCTIONS

AN SDO HEADER IS GIVEN WITH EVERY MESSAGE TO DEFINE THE I-O DEVICE ADDRESS THAT IS ASSOCIATED WITH THE MESSAGE.

F819 - REMOVE CDS FROM STACKER OF LOADER DEVICE-
- REMOVE THE REMAINING TEST DECKS,IF ANY, FROM THE LOADER HPR-
- DO NOPRO AND PLACE CDS RUN OUT IN FRONT OF REMAINING TEST DECKS-
- SAVE REMAINING TEST DECKS UNTIL A MSG REQUESTS THEM TO BE PUT IN HPR-

THE ABOVE MESSAGE IS ISSUED WHEN THE INTERVENTION ROUTINE IS TO BE EXECUTED ON THE LOADER DEVICE. IT PREVENTS THE READING OF TEST DECKS BY THE ROUTINE.

- PLACE APPROX 100 VALID SCRAP CDS IN RDR. HPR,MAKE RDY,EOF ON-

THIS MESSAGE IS GIVEN AT THE START OF THE STACKER SELECT TEST. VALID SCRAP CARDS CAN BE EITHER BLANK CARDS OR CARDS WHICH HAVE ANY OF THE 360 EBCDIC CHARACTERS PUNCHED IN THEM.

- RTN BYPASSED -

THE ABOVE MESSAGE WILL OCCUR WHEN A ROUTINE IS BYPASSED.

ROUTINE 02 WILL BE BYPASSED IF THE 2540 DOES NOT HAVE 1400 COMPATIBILITY.

- EMPTY RDR HPR AND STKRS -DO NOPRO- PUT TEST DKS IN AND MAKE RDY,EOF ON -

THE ABOVE MESSAGE IS ISSUED WHEN THE EXECUTION OF SECTION F819 IS COMPLETED AFTER TESTING THE LOADER DEVICE. THIS ALLOWS THE OPERATOR TO READY ANY REMAINING TEST DECKS FOR LOADING.

4.2 STATUS MESSAGES

4.2.1 SAMPLE CORRECT PRINTOUT

LINE	MESSAGE
01	- SDO F819R 08 00135C 00C-
02	- TST 0010-
03	- ADR 001BA4 LINK-
04	- ADR 001182 SIO-
05	- CAW 001BB8-
06	- CCW 02001831 80000020-
	- CCW 00001831 00000030-
07	- CC 0 EXP-
08	- CC 0 ACT-
09	- CSW 000018C8 08000001 EXP-
10	- CSW 000018C8 08000001 ACT-
11	- CSW 00000000 04000000 EXP-
12	- CSW 00000000 04000000 ACT-
13	- SNS 00 EXP-
14	- SNS 00 ACT-
15	- LOG 00 000000 000000 000000-
16	- SET SS 0 ON FOR LOOP ON SIO, SS 1 ON FOR TIO SIO LOOP-

4.2.2 ANALYSIS OF SAMPLE PRINTOUT

LINE	EXPLANATION
01	THIS IS THE HEADER LINE PRINTED BY DN. IF AN ASTERISK PRECEDES THE -SDO- AN ERROR HAS CAUSED THE MESSAGE PRINTOUT. IF NO ASTERISK IS PRINTED, THE MESSAGE IS A RESULT OF EITHER HAVING THE CORRECT PRINTOUT SWITCH ON OR AN OPERATOR MESSAGE IS TO FOLLOW. ALL LINES THAT FOLLOW THE -SDO- ARE PART OF THAT SAME MESSAGE. THE START OF A NEW MESSAGE IS INDICATED BY ANOTHER -SDO- PRINTOUT. THE -F819R- IS THE SECTION ID NUMBER WHERE -R- REPRESENTS THE REVISION LEVEL OF THE PROGRAM. THE -08- IS THE PROGRAM ROUTINE NUMBER WHILE THE -00C- IS THE ADDRESS OF THE DEVICE UNDER TEST.
02	THIS IS THE TEST NUMBER ASSOCIATED WITH THE MESSAGE. AT THE BEGINNING OF THE PROGRAM LISTING, THERE IS A LIST OF TEST NUMBERS. WITH THE TEST NUMBER IS A SHORT EXPLANATION OF WHAT WAS BEING DONE, AND WHAT SHOULD OCCUR.
03	THIS LINE SHOWS THE ADDRESS FROM WHICH THE I-O HANDLER SUB-ROUTINE WAS ENTERED. ALL I-O COMMANDS ARE ISSUED FROM THIS SUB-ROUTINE, SO IT IS ENTERED MANY TIMES FROM MANY PLACES. TO INSURE THE SPECIFIC I-O OPERATION YOU WANT TO LOOK AT WILL BE THE NEXT ONE PERFORMED, YOU SHOULD RESTART THE PROGRAM WITH A SYSTEM RESET, PSW RESTART, AND ADDRESS STOP AT THE GIVEN ADDRESS.
04	THIS LINE SHOWS THE ADDRESS OF THE START I-O, TEST I-O, OR HALT I-O THAT WAS ISSUED IN THE I-O HANDLER SUB-ROUTINE.
05	THIS LINE SHOWS THE ADDRESS OF THE CCW TO BE ISSUED BY A START I-O COMMAND. IF CCWS ARE CHAINED, THE ADDRESS GIVEN REFERS TO THE FIRST CCW IN THE CHAIN.
06	THIS LINE DISPLAYS THE FIRST CCW. THE FIRST BYTE CONTAINS THE COMMAND CODE. THE NEXT 3 BYTES CONTAIN AN ADDRESS IN STORAGE, WHICH WILL BE USED IF DATA TRANSFER IS PERFORMED. THE NEXT BYTE CONTAINS FLAGS USED BY THE CHANNEL. THE LAST 3 BYTES ARE THE COUNT FIELD. IF CHAINING IS INDICATED IN BYTE 4, ADDITIONAL CCWS WILL BE SHOWN BELOW THIS LINE.
07	THIS LINE SHOWS THE CONDITION CODE EXPECTED, BY THE PROGRAM, IN RESPONSE TO ISSUING THE I-O COMMAND.
08	THIS LINE SHOWS THE ACTUAL CONDITION CODE SET IN RESPONSE TO THE I-O COMMAND.
09	THIS LINE DISPLAYS THE FIRST CSW EXPECTED BY THE PROGRAM. A BIT BY BIT DESCRIPTION OF THE DEVICE STATUS BYTE PORTION OF THE CSW APPEARS IN THE PROGRAM LISTING FOLLOWING THE TEST NUMBER DESCRIPTIONS.
10	THIS LINE DISPLAYS THE ACTUAL CSW RECEIVED BY THE PROGRAM. NOTE. FOR EVERY EXPECTED (EXP) CSW PRINTED OUT THERE SHOULD BE A CORRESPONDING ACTUAL (ACT) CSW PRINTED OUT ON THE NEXT LINE. THE ABSENCE OF A (ACT) CSW PRINTOUT INDICATES A MACHINE FAILURE. A MACHINE FAILURE IS ALSO INDICATED IF THERE ARE (ACT) CSW PRINTOUTS WHERE THERE ARE NONE EXPECTED.
11	THIS LINE WILL APPEAR IF THE PROGRAM EXPECTS MORE THAN ONE CSW.

12 THIS LINE WILL APPEAR IF THE PROGRAM RECEIVED A SECOND CSW.

13 THIS LINE SHOWS THE SENSE BYTE EXPECTED BY THE PROGRAM. A BIT BY BIT DESCRIPTION OF THE 2540 SENSE BYTE APPEARS IN THE PROGRAM LISTING, AFTER THE TEST NUMBER DESCRIPTIONS.

14 THIS LINE SHOWS THE ACTUAL SENSE BYTE RECEIVED BY THE PROGRAM.

15 THIS LINE DISPLAYS THE CPU AND CHANNEL LOGOUT AREA ON MODEL 30 SYSTEMS. IT WILL NOT APPEAR ON ANY OTHER SYSTEM.

16 THIS LINE SHOWS THE SECTION SENSE SWITCH LOOP OPTIONS. IF AN ERROR HAD OCCURRED, AND DM SENSE SWITCH 25 WAS ON, A HALT WOULD NOW OCCUR, TO ALLOW SETTING OF THE SECTION SENSE SWITCHES. TO INSURE THAT LOOPING OCCURS ON THE COMMAND THAT FAILED, THE OPERATOR SHOULD HAVE THE DM SENSE SWITCH ON THAT ENABLES HALTING WHEN AN ERROR OCCURS, SET THE PROPER SECTION SENSE SWITCH ON, AND PRESS THE EXTERNAL INTERRUPT KEY TO EXECUTE.

4.2.3 PSW RESTART AFTER I/O HANG UP

- PREVIOUS HANG UP DETECTED-

THE ABOVE MESSAGE WILL APPEAR IF A SYSTEM RESET PSW RESTART IS PERFORMED AFTER A HANG UP CONDITION ON AN I-O COMMAND. FOLLOWING THIS LINE WILL BE A PRINTOUT SIMILAR TO THE ABOVE SAMPLE MESSAGE IN 4.2.1.

4.2.4 UNEXPECTED I/O INTERRUPT MESSAGE

```
*SDO  F819R 02    001254 XXX          EXAMPLE SHOWS F819 -R IS REVISION LEVEL-
UID FROM DEVICE  XXXX                 WHERE  XXXX  IS THE DEVICE ADDRESS OF THE INTERRUPT.
CSW 00000000 04000000 ACT
LOG 00 000000 000000 000000           CPU AND CHANNEL LOG OUT  (MODEL 30 ONLY)
```

5. COMMENTS

5.1 LOOPING

IN SOME CASES, IT MAY BE DESIRED TO LOOP ON AN ENTIRE ROUTINE RATHER THAN USE THE SECTION SENSE SWITCH LOOPS PROVIDED. ONE METHOD OF DOING THIS IS TO MANUALLY ENTER THE NUMBER OF THE ROUTINE IN X04C. WHERE X STANDS FOR THE 4K BLOCK RELOCATION ADDRESS. THEN PERFORM A SYSTEM RESET-PSW RESTART, AND THE PROGRAM WILL LOOP ON THE ROUTINE.

SENSE SWITCHES MAY BE SET BY MANUALLY ENTERING THE DESIRED BITS.

```
                8190   TITLE
                ********************************************************************************
                *                                                                              *
                * MODIFICATIONS                                                                *
                *                                                                              *
                *                                                                              *
                * REVISION LEVEL 0.  INITIAL RELEASE OF THE PROGRAM.                           *
                *     THIS SECTION CONTAINS THE 360 STACKER SELECT TEST WHICH WAS               *
                *     FORMERLY IN SECTION F811 THIS SECTION ALSO CONTAINS THE 1400              *
                *     COMPATIBILITY STACKER SELECT PROGRAM, FORMERLY LOCATED IN                 *
                *     SECTION F817. SECTION F817 IS MADE OBSOLETE BY THIS SECTION.              *
                *     1.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE TEST NUMBERS AND            *
                *         COMMON MESSAGE FORMAT.                                               *
                *                                                                              *
                * E.C. PREREQUISITES                                                           *
                *     MACHINE . . . NONE                                                       *
                *     PROGRAM . . . NONE                                                       *
                *                                                                              *
                * USE DESCRIPTION F819* AT EC 130498, DATED 15 JUN 67.                         *
                *                                                                              *
                ********************************************************************************
                XF8190 START 4096
001000                USING *,15
                *
                *
                ********************************************************************************
                *                          TEST NUMBER DESCRIPTION                             *
                ********************************************************************************
                ********************************************************************************
                * TEST      DESCRIPTION
                *
                *
                *                        **************
                *                          ROUTINE 01
                *                        **************
                *
                * 0010 - OPERATION ATTEMPTED
                *
                *        THIS TEST NUMBER IS USED TO INDICATE PROBLEMS IN THE 360
                *        STACKER SELECT TEST.  A READ FEED STACKER SELECT IS DONE IN
                *        THE FOLLOWING PATTERN, R1, R2, R1, RP3, REPEATING 10 TIMES.
                *        THIS ROUTINE SHOULD PLACE 20 CARDS IN R1, 10 CARDS IN R2, AND
                *        10 IN RP3 AT A CARD SPEED OF APPROXIMATELY 1000 CARDS PER
                *        MINUTE.  CARD TIMING CAN BE ALTERED WITH THE USE OF THE
                *        ALTERNATE CLUTCH SWITCH IN THE 2540.
                *
                *        EXPECTED RESPONSE
                *
                *        CONDITION CODE 0 WITH CHANNEL AND DEVICE ENDS IN 2 SEPARATE
                *        CSWS.
                *
                *        POSSIBLE FAILURE CAUSES
                *
                *        A STACKER MAGNET MAY FAIL TO PICK OR MAY FAIL TO RELEASE.
                *        THIS CAN ONLY BE VISUALLY DETERMINED.
                *
                *
                *                        **************
                *                          ROUTINE 02
                *                        **************
                *
                * 0020 - OPERATION ATTEMPTED
                *
                *        THIS TEST NUMBER IS USED TO INDICATE PROBLEMS IN THE 1400
                *        STACKER SELECT TEST.  A 1400 READ NO FEED IS ISSUED FOLLOWED
                *        BY THE VARIOUS 1400 FEED AND STACKER SELECT COMMANDS.  THE
```



```
                *        FOLLOWING STACKER SELECT PATTERN IS USED, R1, R2, R1, RP3,
                *        REPEATING 10 TIMES.  THIS ROUTINE SHOULD PLACE 20 CARDS IN
                *        R1, 10 CARDS IN R2, AND 10 CARDS IN RP3.  THE CARD SPEED IN
                *        THIS TEST IS LIMITED DUE TO THE SEPARATE COMMANDS INVOLVED
                *        AND ALSO DUE TO THE SAVING OF DATA DURING EXECUTION.
                *        IF 1400 COMPATIBILITY EXISTS ON THE TEST DEVICE, BOTH THE
                *        360 AND 1400 STACKER SELECT TESTS WILL BE EXECUTED.  DOUBLE
                *        THE AMOUNT OF CARDS WILL BE IN EACH STACKER AT PROGRAM
                *        COMPLETION IF THIS IS THE CASE.
                *
                *        EXPECTED RESPONSE
                *
                *        CONDITION CODE 0 WITH CHANNEL AND DEVICE ENDS RETURNED IN THE
                *        SAME CSW BECAUSE NO FEED CYCLE OCCURS.
                *
                *        POSSIBLE FAILURE CAUSES
                *
                *        A STACKER MAGNET MAY FAIL TO PICK OR MAY FAIL TO RELEASE.
                *        THIS CAN ONLY BE VISUALLY DETERMINED.
                *
                *        THE DM UDT ENTRY FOR THE OPTION BYTE OF THE 2540 MAY HAVE
                *        BEEN ERRONEOUSLY SET UP TO INDICATE THAT 1400 COMPATIBILITY
                *        HARDWARE EXISTS IN THE 2540.  THE 1400 COMPATIBILITY TESTS
                *        WILL BE ATTEMPTED AND WILL INDICATE ERRORS.
                *
                *        ALL OTHER ERRORS WILL HAVE TO BE ANALYZED BY THE INDICATIONS
                *        GIVEN IN THE ERROR MESSAGE.
                *
                * 0030 - OPERATION ATTEMPTED
                *
                *        THIS TEST NUMBER IS USED TO INDICATE PROBLEMS IN THE FEED
                *        STACKER SELECT PORTION OF THE 1400 STACKER SELECT TEST.  REFER
                *        TO TEST NUMBER 0020 FOR FURTHER INFORMATION.
                *
                *        EXPECTED RESPONSE
                *
                *        CONDITION CODE 1 -COMMAND IMMEDIATE WITH CHANNEL AND DEVICE
                *        ENDS IN TWO SEPARATE CSWS. SENSE IS ISSUED IF UNIT CHECK IS
                *        DETECTED DURING THE FEED COMMAND.
                *
                *        POSSIBLE ERROR CAUSES
                *
                *        1. IF USING DME-2 ON A 2 MICROSECOND MODEL 30,
                *           THE PROGRAM FAILS DUE TO TOO MUCH TIME TAKEN IN INTERNAL
                *           INSTRUCTIONS WHICH CAUSES A DELAY IN STACKER SELECTION.
                *           PROVISIONAL FEED STARTS BEFORE THE PROGRAM CAN ISSUE THE
                *           STACKER COMMAND.
                *        2. ANY MALFUNCTION DURING TEST 0020 CAN CAUSE DELAY BECAUSE
                *           OF THE MESSAGE OUTPUT IN TEST 0020. THIS WOULD ALLOW THE
                *           PROVISIONAL FEED CIRCUITRY TO FUNCTION BEFORE THE PROGRAM
                *           HAD TIME TO ISSUE THE FEED COMMAND.
                *
                *        1400 PROVISIONAL FEED OPERATION AND DEFINITION.
                *
                *        THE FOLLOWING IS AN EXPLANATION OF 1400 PROVISIONAL FEED
                *        OPERATION.
                *
                *        A 1400 READ NO FEED COMMAND IS ISSUED AND CHANNEL AND DEVICE
                *        ENDS RETURN IN THE SAME CSW BECAUSE NO FEED CYCLE IS TAKEN.
                *
                *        THE PROGRAM HAS TO ISSUE A FEED AND STACKER SELECT COMMAND
                *        WITHIN 6 MILLISECONDS. IF IT DOES NOT, THE PROVISIONAL
                *        FEED CIRCUITRY AUTOMATICALLY STACKER SELECTS THE CARD. IF
                *        THE PROGRAM ISSUES A STACKER SELECT AFTER THE PROVISIONAL
                *        FEED HAS STARTED, THE DEVICE WILL ACT BUSY OR PRESENT BOTH
                *        BUSY AND DEVICE ENDS IN STATUS IF THE PROGRAM ACCEPTS THE
                *        INTERRUPT.
```

```
                            *         A COMMAND.REJECT COULD BE GENERATED ON THE DEVICE UNDER
                            *         THE CONDITION THAT THE PROVISIONAL FEED WAS DONE AND THE
                            *         PROGRAM ATTEMPTS A FEED AND STACKER SELECT ALSO, DUE TO
                            *         2 FEEDS IN A ROW BEING ATTEMPTED.
                            *
                            *         IF THIS ERROR IS INDICATED, THE SINGLE SHOT THAT GOVERNS
                            *         THE 6 MILLISECOND DELAY FOR THE PROVISIONAL FEED SHOULD BE
                            *         SCOPED TO INSURE PROPER SETTING. IF THE SINGLE SHOT IS ALL
                            *         RIGHT, THE MONITOR BEING USED MUST BE TOO SLOW AND THE ERROR
                            *         IGNORED.
                            *
                            *
                            ***********************************************************************
                            ******************                                   ******************
                            * SECTION PREFACE *********************************** SECTION PREFACE *
                            ******************                                   ******************
001000   F8190000           SECNO  DC    XL4'F8190000'         PROGRAM,SECTION AND REVISION NOS.  *
001004   00000000           SNSW   DC    XL4'00'               SECTION SENSE SWITCHES             *
001008   0000                      DC    XL2'00'                                                  *
00100A   0000               ICM    DC    XL2'00'               INTERRUPTION CONDITION MASK        *
00100C   00                 SDMF   DC    XL1'00'               SECTION DM FLAGS                   *
00100D   02                 NIOU   DC    XL1'02'               NUMBER OF UNIT TABLE ENTRYS        *
00100E   C0                 FLAG1  DC    X'C0'                 EXCLUSIVE CPU                      *
00100F   00                 FLAG2  DC    X'00'                 I/O INT ARE ERR, EXT INT TO PROG   *
001010   0104000000         INPSW  DC    X'0104000000'         DISABLED, SPVSR STATE, NO PGM MASK *
001015   001878                    DC    AL3(ROUT01)           ADR OF 1ST ROUTINE PREFIX          *
001018   0000000000000000   EXOPSW DC    XL8'0'                SECTION OLD EXTERNAL PSW           *
001020   0000000000000000   SVOPSW DC    XL8'00'               CLEAR ALL OLD PSWS                 *
001028   0000000000000000   PGOPSW DC    XL8'00'               PROGRAM OLD PSW                    *
001030   0000000000000000   MCOPSW DC    XL8'00'               MACHINE CHECK OLD PSW              *
001038   0000000000000000   IOOPSW DC    XL8'00'               I/O OLD PSW                        *
001040   0000000000000000   CSW    DC    XL8'00'               CHANNEL STATUS WORD                *
001048   00000000           CAW    DC    XL4'00'               CAW                                *
00104C   000000000000000000        DC    XL12'00'              RESERVED FOR DM USE                *
001055   000000
001058   0004000000         EXNPSW DC    X'0004000000'         EXTERNAL NEW PSW                   *
00105D   000000             SRET   DC    XL3'0'                ADR OF EXT INTRPT ROUTINE          *
001060   0000000000000000   SVNPSW DC    XL8'00'               SUPERVISOR NEW PSW                 *
001068   0000000000000000   PGNPSW DC    XL8'00'               PROGRAM NEW PSW                    *
001070   0000000000000000   MCNPSW DC    XL8'00'               MACHINE CHECK NEW PSW              *
001078   01040000           IONPSW DC    XL4'01040000'         I/O NEW PSW                        *
00107C   000011F6                  DC    AL4(IRETRN)           ADDRESS OF I/O INTRPT ROUTINE      *
001080                             DS    96C                   96 BYTE REG DUMP AREA FOR DM USE   *
0010E0   81                 UNIT1  DC    X'81'                 UNIT TYPE - 2540 READER
0010E1   00                 U1OP   DC    X'00'                 OPTIONAL FEATURES BYTE             *
0010E2   8000               U1ADDR DC    X'8000'               FLAGS AND CHAN/UNIT ADDRESS        *
0010E4   82                 UNIT2  DC    X'82'                 UNIT TYPE - 2540 PUNCH
0010E5   00                 U2OP   DC    X'00'                 OPTIONAL FEATURES BYTE
0010E6   0000               U2ADDR DC    X'0000'               FLAGS AND CHAN/UNIT ADDRESS
                            ***********************************************************************
                            *     OPTIONAL FEATURE BYTE DEFINITION
                            ***********************************************************************
                            *  * BIT 0 * BIT 1 * BIT 2 * BIT 3 * BIT 4 * BIT 5 * BIT 6 * BIT 7 *
                            *  * HEX 8 * HEX 4 * HEX 2 * HEX 1 * HEX 8 * HEX 4 * HEX 2 * HEX 1 *
                            *  * ASCII * CARD  *       *  51   * 1400  *       *       * 2821  *
                            *  *       * IMAGE *       * COL RD* COMP  *       *       * 2 CHN *
                            *  *       *       *       *       *       *       *       *  SW.  *
                            ***********************************************************************
                            *                      2540 READER SENSE BYTE
                            ***********************************************************************
                            *       BIT    MEANING
                            *        0     COMMAND REJECT
                            *        1     INTERVENTION REQUIRED
                            *        2     BUS OUT CHECK
                            *        3     EQUIPMENT CHECK
                            *        4     DATA CHECK - VALIDITY CHECK - INVALID CARD CODE
                            *        5     OVERRUN - NOT USED
                            *        6     UNUSUAL COMMAND SEQUENCE-2 READS WITHOUT INTERVENING FEED
```



```
*        7     NOT USED
***********************************************************************
*                    2540 READER STATUS BYTE
***********************************************************************
*       BIT    MEANING
*        0     ATTENTION - 1400 COMPATIBILITY FEATURE ONLY - INDICATES
*                             SENSE WAS ISSUED BEFORE 6 MS TIME OUT AFTER
*                             A 1400 COMPATIBILITY READ.
*        1     STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
*        2     CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
*        3     DEVICE BUSY
*        4     CHANNEL END
*        5     DEVICE END
*        6     UNIT CHECK
*        7     UNIT EXCEPTION - LAST CARD PREVIOUSLY READ, AND END OF
*                                 FILE WAS ON.
***********************************************************************
*          2540 READER DIAGNOSTIC CHECK READ BYTE DEFINITION
***********************************************************************
*       BIT    MEANING
*        0     NOT USED
*        1     NOT USED
*        2     NOT USED
*        3     XU CHECK PLANE
*        4     XL CHECK PLANE
*        5     BUFFER PARITY CHECK
*        6     READ TRANSLATE CHECK
*        7     READER BUFFER ADDRESS CHECK
***********************************************************************
***********************************************************************
***********************************************************************
*                             PARAMETERS USED TO ENTER
*                             THE I-O HANDLER ROUTINE
***********************************************************************
*        BAL   R11,ISIO                 LINK TO I-O HANDLER
*        DC    XL2'0000'                CONTROL SWITCHES
*        DC    X'0014'                  TEST NO. IN DEC EXPRESSED IN HEX
*        DC    X'F0'                    EXPECTED COND. CODE
*        DC    X'00'                    EXPECTED SENSE DATA
*        DC    AL2(ADR-BASE+REG)        ADDR. OF EXPECTED CSW IF NEEDED
***********************************************************************
***********************************************************************
*                             I-O HANDLER CONTROL SWITCHES
*                             2 BYTE PARAMETER FOLLOWING BAL
***********************************************************************
* SWITCH       DESCRIPTION
*   0   ----   OFF - ISSUE AN I-O COMMAND
*              ON  - DO NOT ISSUE AN I-O COMMAND
*   1   ----   OFF - ENABLE
*              ON  - DO NOT ENABLE
*   2   ----   OFF - EXPECT NO INTERRUPT
*              ON  - EXPECT AN INTERRUPT
*   3   ----   OFF - DO NOT EXPECT 2 INTERRUPTS
*              ON  - EXPECT 2 INTERRUPTS
*   4   ----   OFF - EXPECT NO CSWS
*              ON  - EXPECT A CSW
*   5   ----   OFF - DO NOT EXPECT 2 CSWS
*              ON  - EXPECT 2 CSWS
*   6   ----   OFF - ALWAYS TRY TO ISSUE SENSE
*              ON  - SENSE ON UNIT CHECK ONLY
*
***********************************************************************
***********************************************************************
*                             SWITCHES USED BY I-O HANDLER
***********************************************************************
* SWITCH       DESCRIPTION
*   0   ----   OFF - NO HANGUP ON INTERFACE
*              ON  - HANGUP OCCURRED
```

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*   1  ----  OFF - NO CSWS STORED
*            ON  - ONE CSW STORED
*   2  ----  OFF - SECOND CSW NOT RECEIVED
*            ON  - SECOND CSW RECEIVED
*   3  ----  OFF - DID NOT ENABLE
*            ON  - ENABLED ONCE
*   4  ----  OFF - DID NOT ENABLE TWICE
*            ON  - ENABLED TWICE
*   5  ----  OFF - NO SENSE DATA RECEIVED
*            ON  - SENSE DATA RECEIVED
*   6  ----  OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*            ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*   7  ----  OFF - NO ERROR DETECTED
*            ON  - AN ERROR WAS DETECTED
*********************************************************************
*                    REGISTERS USED IN I-O HANDLER
*********************************************************************
*      REG          COMMENTS
*       5    USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
*            PREVIOUS HANGUP ON INTERFACE DETECTED.
*
*       8    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       9    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*      10    MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
*
*      11    MUST BE USED AS LINK REG TO THIS ROUTINE
*
*      12    MUST CONTAIN DEVICE ADDRESS
*
*********************************************************************
0010E8  0000          ISW   DC    XL2'0'
*********************************************************************
*********************************************************************
*                        * I-O HANDLER SUB-ROUTINE *
*********************************************************************
0010EA  92 9D F 190    ITIO  MVI   ISSUE,X'9D'          SET UP FOR TEST I-O
0010EE  92 9D F 146          MVI   ILOOP,X'9D'
0010F2  92 E3 F 69D          MVI   IOPT1+25,X'E3'       MOVE -T- TO OPTION MSG.
0010F6  92 E3 F 604          MVI   IOADDR+12,X'E3'
0010FA  47 F0 F 10E          BC    UNC,IEYEOH           BR. UNCONDITIONAL
0010FE  92 9C F 190    ISIO  MVI   ISSUE,X'9C'          SET UP FOR START I-O
001102  92 9C F 146          MVI   ILOOP,X'9C'
001106  92 E2 F 69D          MVI   IOPT1+25,X'E2'       MOVE -S- TO OPTION MSG.
00110A  92 E2 F 604          MVI   IOADDR+12,X'E2'
00110E  D2 01 F 680 B 002 IEYEOH MVC   ITSTNO+5(2),2(R11) SAVE TEST NUMBER
001114  90 09 F 588          STM   R0,R9,ISAVE          SAVE WORK REGISTERS.
001118  D2 00 F 708 F 003    MVC   RTSV(1),SECNO+3      SAVE RT NO. FOR HANGUP.
00111E  50 AD 0 048    CONP  ST    R10,HCAW(R13)        STORE CMD ADDRESS.
001122  D7 07 D 040 D 040    XC    HCSW(8,R13),HCSW(R13)
001128  D7 0B E 080 E 080    XC    LOGOUT(12,R14),LOGOUT(R14)
00112E  91 80 B 000          TM    0(R11),X'80'         CHECK CONTROL SWITCH FOR NO I-O
001132  47 10 F 1C6          BC    ALL,INOW             BR. IF ON
001136  91 C0 F 004          TM    SNSW,X'C0'
00113A  47 80 F 182          BC    NONE,JOHN
*********************************************************************
*                          SENSE SWITCH LOOPS
*********************************************************************
00113E  91 80 F 004    ITRY1 TM    SNSW,X'80'           CHECK SECTION SENSE SWITCH 0
001142  47 80 F 14E          BC    NONE,ITRY2           BR. IF OFF
001146  9C 00 C 000    ILOOP SIO   0(R12)               SIO, TIO, OR HIO
00114A  47 F0 F 13E          BC    UNC,ITRY1            BR. UNCONDITIONAL
00114E  91 40 F 004    ITRY2 TM    SNSW,X'40'           CHECK SECTION SENSE SWITCH 1
001152  47 80 F 16E          BC    NONE,IHI             BR. IF OFF
001156  9D 00 C 000    IHANG TIO   0(R12)               TEST I-O
00115A  47 70 F 13E          BC    NCCO,ITRY1           BR. IF NOT COND. CODE 0
00115E  91 40 F 004          TM    SNSW,X'40'           CHECK SECTION SENSE SWITCH 1
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001162  47 80 F 16E          BC    NONE,IHI             BR. IF OFF
001166  9C 00 C 000          SIO   0(R12)               START I-O
00116A  47 F0 F 156          BC    UNC,IHANG            BR. UNCONDITIONAL
00116E  58 9E 0 198    IHI   L     R9,WT(R14)           PICK UP DM WAIT FACTOR.
001172  88 90 0 003          SRL   R9,3                 CUT IT DOWN TO 1.25 SECS.
001176  9D 00 C 000    GREG  TIO   0(R12)               TEST I-O TO DEVICE.
00117A  47 80 F 182          BC    CCO,JOHN             BR IF AVAILABLE.
00117E  46 90 F 176          BCT   R9,GREG              LOOP UNTIL TIME OUT.
001182  D7 01 F 0E8 F 0E8    XC    ISW(2),ISW           ZERO THE I-O HANDLER SWITCHES.
001188  96 80 F 0E8    JOHN  OI    ISW,X'80'            TURN ON THE HANG SWITCH.
00118C  92 E7 F 5F3          MVI   IACTCC+5,C'X'        MOVE IN A -X-
001190  9C 00 C 000    ISSUE SIO   0(R12)               I-O COMMAND- SIO, TIO, OR HIO
001194  47 80 F 1C2          BC    CCO,IZERO            BR. IF COND. CODE 0
001198  47 40 F 1B0          BC    CC1,IONE             BR. IF COND. CODE 1
00119C  47 20 F 1A8          BC    CC2,ITWO             BR. IF COND. CODE 2
0011A0  92 F3 F 5F3          MVI   IACTCC+5,X'F3'       INDICATE COND. CODE 3
0011A4  47 F0 F 1C6          BC    UNC,INOW             BR. UNCONDITIONAL
0011A8  92 F2 F 5F3    ITWO  MVI   IACTCC+5,X'F2'       INDICATE COND. CODE 2
0011AC  47 F0 F 1C6          BC    UNC,INOW             BR. UNCONDITIONAL
0011B0  92 F1 F 5F3    IONE  MVI   IACTCC+5,X'F1'       INDICATE COND. CODE 1
0011B4  D2 07 F 5B0 D 040    MVC   ICSW1(8),HCSW(R13)   SAVE CSW
0011BA  96 40 F 0E8          OI    ISW,X'40'            INDICATE 1 CSW
0011BE  47 F0 F 1C6          BC    UNC,INOW             BR. UNCONDITIONAL
0011C2  92 F0 F 5F3    IZERO MVI   IACTCC+5,X'F0'       INDICATE COND. CODE 0
0011C6  94 7F F 0E8    INOW  NI    ISW,X'7F'            TURN OFF HANG UP SWITCH
0011CA  91 40 B 000          TM    0(R11),X'40'         CHECK CONTROL SWITCH FOR NO ENABLE
0011CE  47 10 F 26A          BC    ALL,ISEN             BR. IF ON
0011D2  96 10 F 0E8          OI    ISW,X'10'            INDICATE ENABLED ONCE
0011D6  58 9E 0 198    IWAIT L     R9,WT(R14)           LOAD DM WAIT FACTOR
0011DA  88 90 0 003          SRL   R9,3                 ADJUST
0011DE  96 80 F 0E8          OI    ISW,X'80'            TURN ON HANG UP SW
0011E2  80 00 F 706          SSM   MSK1                 ENABLE
0011E6  46 90 F 1E6          BCT   R9,*                 WAIT
0011EA  80 00 F 707          SSM   MSK2                 DISABLE
0011EE  94 7F F 0E8          NI    ISW,X'7F'            TURN OFF HANG SW
0011F2  47 F0 F 26A          BC    UNC,ISEN             BR. UNCONDITIONAL
*********************************************************************
*                      ALL I-O INTERRUPTS RETURN HERE
*********************************************************************
0011F6  49 C0 F 03A    IRETRN CH   R12,IOOPSW+2         COMPARE FOR CURRENT I-O ADDRESS
0011FA  47 60 F 218          BC    UNEQ,IUIO            BR. IF UNEQUAL
0011FE  94 7F F 0E8          NI    ISW,X'7F'            RESET HANG UP SW
001202  91 40 F 0E8          TM    ISW,X'40'
001206  47 10 F 248          BC    ALL,ISV2             BR. IF 1 CSW ALREADY STORED
00120A  D2 07 F 5B0 F 040    MVC   ICSW1(8),HCSW(R15)   SAVE CSW 1
001210  96 40 F 0E8          OI    ISW,X'40'            INDICATE 1 CSW STORED
001214  47 F0 F 252          BC    UNC,INT3             BR. UNCONDITIONAL
001218  D2 07 F 5C8 F 040    MVC   WORK(8),HCSW(R15)
00121E  0A DD                SVC   X'DD'                CONVERT ADDRESS
001220  0032                 DC    AL2(2)               2 BYTES OF I-O OLD PSW.
001222  003A                 DC    AL2(IOOPSW+2-SECNO)  FROM HERE.
001224  071A                 DC    AL2(IUNEX+17-SECNO)  TO HERE
001226  0A D0                SVC   X'D0'                PRINT UNEXPECTED INTERRUPT DEVICE
001228  64                   DC    X'64'                ADDRESS
001229  15                   DC    X'15'
00122A  F709                 DC    AL2(IUNEX-SECNO+REG)
00122C  D2 02 F 62A F 623    MVC   IBLAH+1(3),ICSW      MOVE -CSW- TO MESSAGE
001232  92 1A F 3F9          MVI   ICNT,X'1A'           ADJUST COUNT
001236  D2 02 F 640 F 643    MVC   IBLAH+23(3),IACT     MOVE -ACT- TO MESSAGE
00123C  45 90 F 3E2          BAL   R9,ICOUT             BR. TO OUTPUT CSW
001240  96 02 F 0E8          OI    ISW,X'02'            INDICATE UIO
001244  47 F0 F 4C4          BC    UNC,ILOGED           BR. UNCONDITIONAL
001248  D2 07 F 5B8 F 040    MVC   ICSW2(8),HCSW(R15)   SAVE CSW 2
00124E  96 20 F 0E8    ISV2  OI    ISW,X'20'            INDICATE 2 CSWS STORED
001252  91 10 8 000          TM    0(R11),X'10'         CHECK CTRL SW FOR 2 INTR EXPECTED
001256  47 80 F 26A          BC    NONE,ISEN            BR. IF NOT
00125A  91 08 F 0E8          TM    ISW,X'08'
00125E  47 10 F 26A          BC    ALL,ISEN             BR. IF ALREADY ENABLED TWICE
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001262   96 08 F 0E8              OI    ISW,X'08'          INDICATE ENABLED TWICE
001266   47 F0 F 1D6              BC    UNC,IWAIT
00126A   91 80 F AB8       ISEN  TM    SS,X'80'           SEE IF 1400 STK SELECT.
00126E   47 10 F 2DC              BC    ALL,IBSN           BR IF YES.
001272   91 02 B 000              TM    0(R11),X'02'       CHECK CTRL SW FOR SNS ON UC.
001276   47 80 F 29A              BC    NONE,IDOSNS        BR. IF OFF TO ISSUE SENSE
00127A   91 40 F 0E8              TM    ISW,X'40'          SEE IF 1ST CSW IN.
00127E   47 80 F 2DC              BC    NONE,IBSN          BR IF NONE.
001282   91 02 F 584              TM    ICSW1+4,X'02'      CHECK FOR UNIT CHECK
001286   47 10 F 29A              BC    ALL,IDOSNS         IF YES BR. TO ISSUE SENSE
00128A   91 20 F 0E8              TM    ISW,X'20'          CHECK FOR SECOND CSW
00128E   47 80 F 2DC              BC    NONE,IBSN          BR IF NONE.
001292   91 02 F 5BC              TM    ICSW2+4,X'02'      CHECK FOR UNIT CHECK
001296   47 80 F 2DC              BC    NONE,IBSN          BR IF NONE.
00129A   41 80 F 580       IDOSNS LA    R8,ISENSE          LOAD SENSE COMMAND ADDR.
00129E   45 70 F 54A              BAL   R7,ISTRT           BR TO AUX START I-O.
0012A2   91 80 F 0E9              TM    ISW+1,X'80'        CHK FOR DATA RECEIVED
0012A6   47 80 F 2DC              BC    NONE,IBSN          BR IF NONE.
0012AA   96 04 F 0E8              OI    ISW,X'04'          INDICATE SENSE RECIEVED
0012AE   94 7F F 0E9              NI    ISW+1,X'7F'        TURN OFF DATA RECEIVED.
0012B2   D5 00 F 659 B 005        CLC   IACSNS+5(1),5(R11) COMPARE FOR EXPECTED SENSE
0012B8   47 80 F 2DC              BC    EQ,IBSN            BR IF EQUAL.
0012BC   96 01 F 0E8              OI    ISW,X'01'          INDICATE AN ERROR.
0012C0   47 F0 F 2DC              BC    UNC,IBSN           BR TO CONTINUE.
0012C4   91 40 F 0E8       INDEX1 TM    ISW,X'40'
0012C8   47 10 F 32A              BC    ALL,INDER          BR. IF CSW STORED
0012CC   47 F0 F 32E              BC    UNC,IDUNCK         BR. UNCONDITIONAL
0012D0   91 20 F 0E8       INDEX2 TM    ISW,X'20'
0012D4   47 10 F 32A              BC    ALL,INDER          BR. IF CSW 2 STORED
0012D8   47 F0 F 32E              BC    UNC,IDUNCK         BR. UNCONDITIONAL
0012DC   D5 00 F 5F3 B 004 IBSN   CLC   IACTCC+5(1),4(R11) COMPARE FOR EXPECTED COND. CODE
0012E2   47 60 F 32A              BC    UNEQ,INDER         BR. IF UNEQUAL
0012E6   91 08 B 000              TM    0(R11),X'08'
0012EA   47 80 F 2C4              BC    NONE,INDEX1        BR. IF NO CSW EXPECTED
0012EE   91 40 F 0E8              TM    ISW,X'40'
0012F2   47 80 F 32A              BC    NONE,INDER         BR. IF NO CSW RECIEVED
0012F6   48 8B 0 006              LH    R8,6(R11)          LOAD CSW ADDR
0012FA   40 80 F 302              STH   R8,ICCSW1+4        STORE IN COMPARE INSTR.
0012FE   D5 07 F 580 F 580 ICCSW1 CLC   ICSW1(8),ICSW1   COMPARE FOR EXPECTED CSW
001304   47 60 F 32A              BC    UNEQ,INDER         BR. IF UNEQUAL
001308   91 04 B 000              TM    0(R11),X'04'
00130C   47 80 F 2D0              BC    NONE,INDEX2        BR. IF NO CSW 2 EXPECTED
001310   91 20 F 0E8              TM    ISW,X'20'
001314   47 80 F 32A              BC    NONE,INDER         BR. IF NO CSW 2 RECIEVED
001318   41 88 0 008              LA    R8,8(R8)           UPDATE TO SECOND CSW
00131C   40 80 F 324              STH   R8,ICCSW2+4
001320   D5 07 F 588 F 588 ICCSW2 CLC   ICSW2(8),ICSW2   COMPARE FOR EXPECTED CSW 2
001326   47 80 F 32E              BC    EQ,IDUNCK          BR. IF EQUAL
00132A   96 01 F 0E8       INDER  OI    ISW,X'01'          INDICATE AN ERROR
00132E   92 64 F 36E       IDUNCK MVI   IFLAG1,X'64'       SET UP FOR ERROR PRINTOUT
001332   92 C0 F 502              MVI   IFLAG2,X'C0'
001336   91 01 F 0E8              TM    ISW,X'01'          CHECK FOR A DETECTED ERROR
00133A   47 10 F 34E              BC    ALL,IOUTIT         BR. IF ERROR DETECTED
00133E   91 01 F 004              TM    SNSW,X'01'         CHECK SECTION SENSE SWITCH 7
001342   47 80 F 51E              BC    NONE,ILEAVE        BR. IF OFF
001346   92 24 F 36E              MVI   IFLAG1,X'24'       SET UP FOR CORRECT PRINTOUT
00134A   92 80 F 502              MVI   IFLAG2,X'80'
00134E   95 40 F 659       IOUTIT CLI   IACSNS+5,X'40'     SEE IF INTERVENTION REQUIRED.
001352   47 80 F 534              BC    EQ,RRM             BR IF YES.
001356   91 01 F 5B4              TM    ICSW1+4,X'01'      SEE IF UNIT EXCEPTION.
00135A   47 10 F 534              BC    ALL,RRM            BR IF YES.
00135E   D2 01 F 680 B 002        MVC   ITSTNO+5(2),2(R11) MOVE TEST NUMBER TO PRINT
001364   0A DD                    SVC   X'DD'              CONVERT TEST NUMBER
001366   0002                     DC    AL2(2)
001368   0680                     DC    AL2(ITSTNO+5-SECNO)
00136A   0680                     DC    AL2(ITSTNO+5-SECNO)
00136C   0A D0                    SVC   X'D0'              PRINT TEST NUMBER
00136E   64              IFLAG1 DC    X'64'
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00136F   09                       DC    X'09'
001370   F67B                     DC    AL2(ITSTNO-SECNO+REG)
001372   41 80 0 004              LA    R8,4               ADJUST LINK ADDRESS FOR PRINTOUT
001376   1B 88                    SR    R11,R8
001378   50 80 F 60C              ST    R11,ILINK+5
00137C   0A DD                    SVC   X'DD'              CONVERT LINK ADDRESS
00137E   0003                     DC    AL2(3)
001380   060D                     DC    AL2(ILINK+6-SECNO)
001382   060C                     DC    AL2(ILINK+5-SECNO)
001384   0A D0                    SVC   X'D0'              PRINT LINK ADDRESS
001386   A0                       DC    X'A0'
001387   10                       DC    X'10'
001388   F607                     DC    AL2(ILINK-SECNO+REG)
00138A   41 BB 0 004              LA    R11,4(R11)
00138E   91 80 B 000              TM    0(R11),X'80'
001392   47 10 F 410              BC    ALL,IOCSW          BR. IF NO I-O COMMAND ISSUED
001396   0A DD                    SVC   X'DD'              CONVERT I-O ADDRESS
001398   0003                     DC    AL2(3)
00139A   0703                     DC    AL2(IOADR-SECNO)
00139C   05FD                     DC    AL2(IOADDR+5-SECNO)
00139E   0A D0                    SVC   X'D0'              PRINT I-O ADDRESS
0013A0   A0                       DC    X'A0'
0013A1   0F                       DC    X'0F'
0013A2   F5F8                     DC    AL2(IOADDR-SECNO+REG)
0013A4   95 9C F 190              CLI   ISSUE,X'9C'        COMPARE FOR SIO COMMAND
0013A8   47 60 F 3FE              BC    UNEQ,ICCOUT        BR. IF NOT
0013AC   50 A0 F 61C              ST    R10,ICAW+5         STORE CCW ADDR.
0013B0   0A DD                    SVC   X'DD'              CONVERT CAW
0013B2   0003                     DC    AL2(3)
0013B4   061D                     DC    AL2(ICAW+6-SECNO)
0013B6   061C                     DC    AL2(ICAW+5-SECNO)
0013B8   0A D0                    SVC   X'D0'              PRINT CAW
0013BA   A0                       DC    X'A0'
0013BB   0B                       DC    X'0B'
0013BC   F617                     DC    AL2(ICAW-SECNO+REG)
0013BE   D2 02 F 62A F 626        MVC   IBLAH+1(3),ICCW    MOVE -CCW- TO MESSAGE
0013C4   92 16 F 3F9              MVI   ICNT,X'16'         ADJUST COUNT
0013C8   D2 07 F 5C8 A 000 ICWOUT MVC   WORK(8),0(R10)     MOVE CCW TO WORK AREA
0013CE   45 90 F 3E2              BAL   R9,ICOUT           BR. TO OUTPUT CCW
0013D2   91 C0 A 004              TM    4(R10),X'C0'       CHECK FOR ANY CHAIN FLAGS
0013D6   47 80 F 3FE              BC    NONE,ICCOUT        BR. IF NONE
0013DA   41 AA 0 008              LA    R10,8(R10)         UPDATE TO NEXT CCW
0013DE   47 F0 F 3C8              BC    UNC,ICWOUT         BR. UNCONDITIONAL
0013E2   0A DD             ICOUT  SVC   X'DD'              CONVERT
0013E4   0008                     DC    AL2(8)
0013E6   05C8                     DC    AL2(WORK-SECNO)
0013E8   05C8                     DC    AL2(WORK-SECNO)
0013EA   D2 07 F 62E F 5C8        MVC   IBLAH+5(8),WORK    MOVE TO MESSAGE
0013F0   D2 07 F 637 F 5D0        MVC   IBLAH+14(8),WORK+8
0013F6   0A D0                    SVC   X'D0'              PRINT
0013F8   A0                       DC    X'A0'
0013F9   1A             ICNT   DC    X'1A'
0013FA   F629                     DC    AL2(IBLAH-SECNO+REG)
0013FC   07 F9                    BCR   UNC,R9             RETURN VIA REG 9
0013FE   D2 00 F 5E9 B 004 ICCOUT MVC   IEXPCC+5(1),4(R11) MOVE EXP CC TO MESSAGE
001404   0A D0                    SVC   X'D0'              PRINT EXPECTED COND. CODE
001406   A0                       DC    X'A0'
001407   0A                       DC    X'0A'
001408   F5E4                     DC    AL2(IEXPCC-SECNO+REG)
00140A   0A D0                    SVC   X'D0'              PRINT ACTUAL COND. CODE
00140C   A0                       DC    X'A0'
00140D   0A                       DC    X'0A'
00140E   F5EE                     DC    AL2(IACTCC-SECNO+REG)
001410   D2 02 F 62A F 623 IOCSW  MVC   IBLAH+1(3),ICSW    MOVE -CSW- TO MESSAGE
001416   92 1A F 3F9              MVI   ICNT,X'1A'         ADJUST COUNT
00141A   91 08 B 000              TM    0(R11),X'08'
00141E   47 80 F 442              BC    NONE,IDIDI         BR. IF NO CSW EXPECTED
001422   D2 02 F 640 F 646        MVC   IBLAH+23(3),IEXP   MOVE -EXP- TO MESSAGE
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001428  48 8B 0 006              LH    R8,6(R11)
00142C  40 80 F 43C              STH   R8,ICHNG1+4
001430  41 88 0 008              LA    R8,8(R8)
001434  40 80 F 46C              STH   R8,ICHNG2+4
001438  D2 07 F 5C8 F 5C8  ICHNG1 MVC   WORK(8),WORK       MOVE EXPECTED CSW TO WORK AREA
00143E  45 90 F 3E2              BAL   R9,ICOUT           BR. TO OUTPUT EXPECTED CSW
001442  91 40 F 0E8        IDIDI TM    ISW,X'40'
001446  47 80 F 45A              BC    NONE,IMORST        BR. IF NO CSW STORED
00144A  D2 02 F 640 F 643        MVC   IBLAH+23(3),IACT   MOVE -ACT- TO MESSAGE
001450  D2 07 F 5C8 F 5B0        MVC   WORK(8),ICSW1      MOVE ACTUAL CSW TO WORK AREA
001456  45 90 F 3E2              BAL   R9,ICOUT           BR. TO OUTPUT ACTUAL CSW
00145A  91 04 B 000        IMORST TM    0(R11),X'04'
00145E  47 80 F 472              BC    NONE,IDID          BR. IF NOT EXPECTING 2 CSWS
001462  D2 02 F 640 F 646        MVC   IBLAH+23(3),IEXP   MOVE -EXP- TO MESSAGE
001468  D2 07 F 5C8 F 5C8  ICHNG2 MVC   WORK(8),WORK       MOVE EXPECTED CSW TO WORK AREA
00146E  45 90 F 3E2              BAL   R9,ICOUT           BR. TO OUTPUT EXPECTED CSW 2
001472  91 20 F 0E8        IDID  TM    ISW,X'20'
001476  47 80 F 48A              BC    NONE,IPAS          BR. IF NO SECOND CSW STORED
00147A  D2 02 F 640 F 643        MVC   IBLAH+23(3),IACT   MOVE -ACT- TO MESSAGE
001480  D2 07 F 5C8 F 5B8        MVC   WORK(8),ICSW2      MOVE CSW TO WORK AREA
001486  45 90 F 3E2              BAL   R9,ICOUT
00148A  D2 00 F 64E B 005  IPAS  MVC   IEXSNS+5(1),5(R11) MOVE EXP SENSE TO MESSAGE
001490  91 04 F 0E8              TM    ISW,X'04'
001494  47 80 F 4BC              BC    NONE,IPASS         BR. IF NO SENSE DATA RECIEVED
001498  0A DD                    SVC   X'DD'              CONVERT EXPECTED SENSE
00149A  0001                     DC    AL2(1)
00149C  064E                     DC    AL2(IEXSNS+5-SECNO)
00149E  064E                     DC    AL2(IEXSNS+5-SECNO)
0014A0  0A DO                    SVC   X'DO'              PRINT EXPECTED SENSE
0014A2  A0                       DC    X'AO'
0014A3  0B                       DC    X'0B'
0014A4  F649                     DC    AL2(IEXSNS-SECNO+REG)
0014A6  0A DD                    SVC   X'DD'
0014A8  0001                     DC    AL2(1)
0014AA  0659                     DC    AL2(IACSNS+5-SECNO)
0014AC  0659                     DC    AL2(IACSNS+5-SECNO)
0014AE  0A DO                    SVC   X'DO'              PRINT ACTUAL SENSE DATA
0014B0  A0                       DC    X'AO'
0014B1  0B                       DC    X'0B'
0014B2  F654                     DC    AL2(IACSNS-SECNO+REG)
0014B4  95 F4 F 659              CLI   IACSNS+5,C'4'      TEST FOR INTERVENTION REQUIRED.
0014B8  47 10 F 534              BC    ALL,RRM            BR IF YES.
0014BC  95 30 E 181        IPASS CLI   SYSMOD(R14),X'30'  CHECK FOR MODEL 30
0014C0  47 60 F 4F0              BC    UNEQ,ICUIO         BR IF NOT.
0014C4  D2 0B F 5C8 E 080  ILOGED MVC  WORK(12),LOGOUT(R14) MOVE LOG OUT TO WORK AREA
0014CA  0A DD                    SVC   X'DD'              CONVERT
0014CC  000C                     DC    AL2(12)
0014CE  05C8                     DC    AL2(WORK-SECNO)
0014D0  05C8                     DC    AL2(WORK-SECNO)
0014D2  D2 01 F 664 F 5C8        MVC   IOLOG+5(2),WORK    MOVE LOG OUT TO MESSAGE
0014D8  D2 05 F 667 F 5CA        MVC   IOLOG+8(6),WORK+2
0014DE  D2 05 F 66E F 5D2        MVC   IOLOG+15(6),WORK+10
0014E4  D2 05 F 675 F 5DA        MVC   IOLOG+22(6),WORK+18
0014EA  0A DO                    SVC   X'DO'              PRINT LOG OUT
0014EC  A0                       DC    X'AO'
0014ED  1C                       DC    X'1C'
0014EE  F65F                     DC    AL2(IOLOG-SECNO+REG)
0014F0  91 02 F 0E8        ICUIO TM    ISW,X'02'          SEE IF UIO.
0014F4  47 80 F 500              BC    NONE,IOPOUT        BR. IF NOT UIO
0014F8  94 FD F 0E8              NI    ISW,X'FD'          RESET UIO SWITCH
0014FC  47 F0 F 1D6              BC    UNC,IWAIT          BR. UNCONDITIONAL
001500  0A DO              IOPOUT SVC   X'DO'              PRINT LOOP OPTIONS
001502  C0                 IFLAG2 DC    X'C0'
001503  36                       DC    X'36'
001504  F684                     DC    AL2(IOPT1-SECNO+REG)
001506  0A DO                    SVC   X'DO'              SPACE A LINE
001508  A0                       DC    X'AO'
001509  01                       DC    X'01'
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00150A  F607                     DC    AL2(ILINK-SECNO+REG)
00150C  50 AD 0 048              ST    R10,HCAW(R13)      STORE CAW
001510  91 C0 F 004              TM    SNSW,X'C0'         CHECK SECTION SENSE SWITCH 0 AND 1
001514  47 50 F 13E              BC    ANY,ITRY1          BR. IF ANY ON
001518  91 80 F 0E8              TM    ISW,X'80'
00151C  07 15                    BCR   ALL,R5             RETURN VIA REG 5 IF HANG UP
00151E  91 08 B 000        ILEAVE TM   0(R11),X'08'
001522  47 80 F 52A              BC    NONE,IUP           BR. IF NO CSW EXPECTED
001526  41 BB 0 002              LA    R11,2(R11)         UPDATE LINK ADDRESS FOR RETURN
00152A  41 BB 0 006        IUP   LA    R11,6(R11)
00152E  98 09 F 588              LM    R0,R9,ISAVE        RESTORE WORKING REGS.
001532  07 FB                    BCR   UNC,R11            RETURN VIA REG 11
                           ********************************************************************
                           *      INTERVENTION REQUIRED ROUTINE
                           ********************************************************************
001534  0A DO              RRM   SVC   X'DO'              PRINT -MAKE DEVICE READY-
001536  2410                     DC    X'2410'
001538  F6BA                     DC    AL2(MDR-SECNO+REG)
00153A  0A DA                    SVC   X'DA'              HALT
00153C  9D 00 C 000              TIO   0(R12)             TEST I-O
001540  0A DO                    SVC   X'DO'              PRINT A BLANK.
001542  8001                     DC    X'8001'
001544  F6BA                     DC    AL2(MDR-SECNO+REG)
001546  47 F0 F 11E              BC    UNC,CONP           BR TO CONTINUE.
                           ********************************************************************
                           *      AUXILIARY START I-O ROUTINE
                           ********************************************************************
00154A  58 9E 0 198        ISTRT L     R9,WT(R14)         LOAD DM WAIT FACTOR.
00154E  88 90 0 002              SRL   R9,2               CUT IT DOWN TO 2.5 SECS.
001552  50 8D 0 048              ST    R8,HCAW(R13)       STORE IN CAW
001556  9C 00 C 000              SIO   0(R12)             ISSUE SENSE
00155A  47 70 F 56A              BC    NCCO,IBACK
00155E  9D 00 C 000        ITIOLP TIO  0(R12)             TEST I-O
001562  47 40 F 56C              BC    CC1,ILOKE          BR. IF CSW STORED
001566  46 90 F 55E        ITIC  BCT   R9,ITIOLP
00156A  07 F7              IBACK BCR   UNC,R7             BR UNCONDITIONAL BACK TO RTN.
00156C  91 04 D 044        ILOKE TM    HCSW+4(R13),X'04'  CHECK FOR DEVICE END.
001570  47 80 F 566              BC    NONE,ITIC          BR IF NOT IN YET.
001574  96 80 F 0E9              OI    ISW+1,X'80'        INDICATE THE DATA RECEIVED.
001578  47 F0 F 56A              BC    UNC,IBACK          RETURN TO MAIN ROUTINE.
                           ********************************************************************
                           *      I-O HANDLER WORK AREA.
                           ********************************************************************
001580  04 001659 0000 0001      ISENSE CCW  X'04',IACSNS+5,X'00',1
001588  00000000           ISAVE DC    10F'0'
00158C  00000000
001590  00000000
001594  00000000
001598  00000000
00159C  00000000
0015A0  00000000
0015A4  00000000
0015A8  00000000
0015AC  00000000
0015B0  0000000000000000   ICSW1  DC    XL8'0'
0015B8  0000000000000000   ICSW2  DC    XL8'0'
0015C0  +00.00000000000000 DBWD   DC    D'0'
0015C8                     WORK   DS    24C
0015E0  00000000           RANDOM DC    F'0'
0015E4  40C3C34040E740C5E7 IEXPCC DC    C' CC  X EXP'
0015ED  D7
0015EE  40C3C34040E740C1C3 IACTCC DC    C' CC  X ACT'
0015F7  E3
0015F8  40C1C4D940E7E7E7E7 IOADDR DC    C' ADR XXXXXX XIO'
001601  E7E740E7C9D6
001607  00                       DC    X'00'
001608                           CNOP  0,4
                    001607       ORG   *-1
```

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001607    40C1C4D940E7E7E7E7        ILINK  DC    C' ADR XXXXXX LINK'
001610    E7E740D3C9D5D2
001617    00                               DC    X'00'
001618                                     CNOP  0,4
                      001617               ORG   *-1
001617    40C3C1E640E7E7E7E7        ICAW   DC    C' CAW XXXXXX '
001620    E7E740
001623    C3E2E6                    ICSW   DC    C'CSW'
001626    C3C3E6                    ICCW   DC    C'CCW'
001629    40C3E2E640E7E7E7E7        IBLAH  DC    C' CSW XXXXXXXX XX'
001632    E7E7E7E740E7E7
001639    E7E7E7E7E7E740C5E7               DC    C'XXXXXX EXP'
001642    D7
001643    C1C3E3                    IACT   DC    C'ACT'
001646    C5E7D7                    IEXP   DC    C'EXP'
001649    40E2D5E240E7E740C5        IEXSNS DC    C' SNS XX EXP'
001652    E7D7
001654    40E2D5E240E7E740C1        IACSNS DC    C' SNS XX ACT'
00165D    C3E3
00165F    40D3D6C740E7E740E7        IOLOG  DC    C' LOG XX XXXXXX X'
001668    E7E7E7E7E740E7
00166F    E7E7E7E7E740E7E7E7               DC    C'XXXXX XXXXXX'
001678    E7E7E7
00167B    40E3E2E340E7E7E7E7        ITSTNO DC    C' TST XXXX'
001684    40E2C5E340E2E240F0        IOPT1  DC    C' SET SS 0 ON FOR'
00168D    40D6D540C6D6D9
001694    40D3D6D6D740D6D540               DC    C' LOOP ON XIO, SS'
00169D    E7C9D66B40E2E2
0016A4    40F140D6D540C6D6D9               DC    C' 1 ON FOR TIO SI'
0016AD    40E3C9D640E2C9
0016B4    D640D3D6D6D7                     DC    C'O LOOP'
0016BA    40D4C1D2C540C4C5E5        MDR    DC    C' MAKE DEVICE RDY'
0016C3    C9C3C540D9C4E8
0016CA    40E2C8C440C8C1E5C5        SHDAVE DC    C' SHD HAVE '
0016D3    40
0016D4    4040404040C3C4E240        RIP    DC    C'     CDS IN R1, '
0016DD    C9D540D9F16B40
0016E4    4040404040C3C4E240               DC    C'     CDS IN R2, '
0016ED    C9D540D9F26B40
0016F4    4040404040C3C4E240               DC    C'     CDS IN RP3'
0016FD    C9D540D9D7F3
001703    001190                    IOADR  DC    AL3(ISSUE)
001706    FE                        MSK1   DC    X'FE'
001707    01                        MSK2   DC    X'01'
001708    00                        RTSV   DC    X'00'                 SAVE RT NO. FOR HANGUP.
001709    40E4C9D640C6D9D6D4        IUNEX  DC    C' UIO FROM DEVICE'
001712    40C4C5E5C9C3C5
001719    40E7E7E7E7                       DC    C' XXXX'
                                    ************************************************************************
                                    *                     INITIALIZE ROUTINE
                                    ************************************************************************
00171E    1B DD                     INIT   SR    R13,R13               ZERO REG 13
001720    91 40 E 196                      TM    406(R14),X'40'        CHECK FOR FORCED PROBLEM STATE
001724    47 80 F 72A                      BC    NONE,NITWIT           BR. IF NOT
001728    18 DF                            LR    R13,R15               SET UP FOR PROBLEM STATE
00172A    58 C0 F 0E0               NITWIT L     R12,UNIT1             LOAD REG 12 WITH UNIT TABLE ENTRY
00172E    54 C0 F 7A4                      N     R12,MOD50             SAVE ONLY THE READER ADDR.
001732    50 C0 F 798                      ST    R12,RDR               SAVE IT
001736    D7 0B F A9C F A9C                XC    CCSS(12),CCSS         ZERO THE COUNT AREA
00173C    D2 02 F AAC F AAF                MVC   NCARD(3),ONES
001742    D7 01 F 7F8 F 7F8                XC    MSSW(2),MSSW          ZERO TWO SWITCH BYTES.
001748    1B 66                            SR    R6,R6                 ZERO REG 6.
00174A    43 6E 0 1B9                      IC    R6,DMIOL(R14)         PUT LENGTH OF DMIO TABLE INTO 6.
00174E    4A 6E 0 1BC                      AH    R6,DMPTR(R14)         ADD OFFSET ADDRESS TO LENGTH.
001752    1A 6E                            AR    R6,R14                ADD BASE REG VALUE.
001754    06 60                            BCTR  R6,0                  SUBTRACT 2 TO GET
001756    06 60                            BCTR  R6,0                    TO LOADER ADDR.
001758    49 C6 0 000                      CH    R12,0(R6)             SEE IF TEST DEVICE IS LOADER.
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00175C    47 60 F 764                      BC    UNEQ,BLOOP            BR IF NOT.
001760    96 80 F 7F9                      OI    LDSW,X'80'            TURN ON LOADER SW.
001764    91 80 F 0E8               BLOOP  TM    ISW,X'80'             CHECK FOR HANG UP
001768    47 10 F 77C                      BC    ALL,HANGUP            BR. IF DETECTED
00176C    92 40 F 7A8                      MVI   BUFFER,C' '           CLEAR DATA AREA.
001770    D2 4E F 7A9 F 7A8                MVC   BUFFER+1(79),BUFFER   CLEAR DATA AREA.
001776    41 A0 F A88                      LA    R10,NOOP              PUT ADDR OF NOOP INTO REG 10.
00177A    07 F4                            BCR   UNC,R4                RETURN VIA REG 4
00177C    D2 00 F 003 F 708         HANGUP MVC   SECNO+3(1),RTSV       RESTORE RT NO.
001782    0A D0                            SVC   X'D0'                 PRINT
001784    64                               DC    X'64'                 -PREVIOUS HANGUP DETECTED-
001785    1A                               DC    X'1A'
001786    F7FB                             DC    AL2(HUNG-SECNO+REG)
001788    96 01 F 0E8                      OI    ISW,X'01'             TURN ON ERROR SWITCH.
00178C    45 50 F 29A                      BAL   R5,IDOSNS             BR. TO OUTPUT AVAILABLE INFO
001790    92 00 F 0E8                      MVI   ISW,X'00'             RESET HANGUP SWITCH
001794    47 F0 F 764                      BC    UNC,BLOOP
001798                                     CNOP  0,4
                                    ************************************************************************
                                    *      AUXILIARY WORK AREA.
                                    ************************************************************************
001798    00000000                  RDR    DC    F'0'
00179C    00000051                  ATE1   DC    F'81'
0017A0    00000000                  RETURN DC    F'0'
0017A4    00003FFF                  MOD50  DC    X'00003FFF'
0017A8                              BUFFER DS    80C
0017F8    00                        MSSW   DC    X'00'
0017F9    00                        LDSW   DC    X'00'
0017FA    00                        BYSW   DC    X'00'
0017FB    40D7D9C5E5C9D6E4E2        HUNG   DC    C' PREVIOUS HANG U'
001804    40C8C1D5C740E4
00180B    D740C4C5E3C5C3E3C5               DC    C'P DETECTED'
001814    C4

                                    ************************************************************************
                                    *      INITIALIZATION MESSAGES
                                    ************************************************************************
001816    91 40 F AB8               OPMSG  TM    SS,X'40'              SEE IF 360 STK SEL DONE.
00181A    47 10 F 858                      BC    ALL,TOPS              BR IF YES.
00181E    92 04 F 84C               M1F1   MVI   M1F,X'04'             PUT PRINT HEAD FLG ON IN MSG.
001822    92 A0 F 860                      MVI   TOP+2,X'A0'           SUPPRESS HEADER IN MSG.
001826    91 80 F 7F9                      TM    LDSW,X'80'            SEE IF TESTING LOAD DEVICE
00182A    47 80 F 84A                      BC    NONE,BILM             BR IF NO
00182E    0A D0                            SVC   X'D0'                 PRINT -REMOVE CDS FROM STKR
001830    2429                             DC    X'2429'                  OF LOADER DEVICE.
001832    FB29                             DC    AL2(RTD1-SECNO+REG)
001834    0A D0                            SVC   X'D0'                 PRINT -REMOVE REMAINING TEST
001836    A03C                             DC    X'A03C'               DECKS FROM LOADER HOPPER.
001838    FB52                             DC    AL2(RTD2-SECNO+REG)
00183A    0A D0                            SVC   X'D0'                 PRINT -RUN CDS OUT OF READER AND
00183C    A040                             DC    X'A040'               PUT THEM IN FRONT OF REMAINING
00183E    FB8E                             DC    AL2(RTD3-SECNO+REG)      TEST DECKS.
001840    0A D0                            SVC   X'D0'                 PRINT -SAVE REMAINING TEST DECKS
001842    A045                             DC    X'A045'               UNTIL A MSG REQUESTS THEM.
001844    FBCE                             DC    AL2(RTD4-SECNO+REG)
001846    92 80 F 84C                      MVI   M1F,X'80'             PUT SUPPRESS HDING FLG ON IN MSG
00184A    0A D0                     BILM   SVC   X'D0'                 PRINT PUT VALID CDS IN RDR
00184C    043D                      M1F    DC    X'043D'
00184E    FAEC                             DC    AL2(DONPRO-SECNO+REG)
001850    91 80 F 7F9                      TM    LDSW,X'80'            SEE IF ON LOADER DEVICE.
001854    47 10 F 868                      BC    ALL,HLT1              BR IF YES.
001858    D2 05 F C7A F C80         TOPS   MVC   CLSTK+28(6),STK       MOVE WORD STKRS TO MSG.
00185E    0A D0                     TOP    SVC   X'D0'                 TELL OPERATOR TO CLEAR ALL STKRS.
001860    A022                             DC    X'A022'
001862    FC5E                             DC    AL2(CLSTK-SECNO+REG)
001864    92 24 F 860                      MVI   TOP+2,X'24'           ALLOW HEADER IN MSG.
001868    0A DA                     HLT1   SVC   X'DA'                 -HALT-
00186A    9D 00 C 000                      TIO   0(R12)                TEST I-O TO BRING IN NOT RDY TO RDY.
00186E    0A D0                            SVC   X'D0'                 PRINT A BLANK
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001870    8001                      DC    X'8001'
001872    FAEC                      DC    AL2(DONPRO-SECNO+REG)
001874    07 F4                     BCR   UNC,R4                  RETURN TO MAIN ROUTINE.
001876                              CNOP  0,4
001876    07 00                   BCR     0,0
                        ********************************************************************
                        * ROUTINE 01 - THE 360 STACKER SELECT TEST.
                        *              THIS ROUTINE ISSUES 360 READ, FEED, AND STACKER SELECT
                        *              COMMANDS.  THE STACKER SELECT PATTERN IS AS FOLLOWS,
                        *              R1, R2, R1, RP3, DONE 10 TIMES IN A NORMAL PROGRAM
                        *              EXECUTION.  THIS SHOULD PLACE 20 CARDS IN R1, 10 CARDS
                        *              IN R2, AND 10 CARDS IN RP3 IF THE STACKING PERFORMED
                        *              PROPERLY.  SENSE SWITCH CONTROL OR THE LOOP ROUTINE
                        *              OPTION ENABLES STACKING AS MANY CARDS AS DESIRED.
                        ********************************************************************
001878    01          ROUT01 DC    X'01'                     ROUTINE NUMBER
001879    0008D4             DC    AL3(ROUT02-SECNO)         ADDRESS OF NEXT ROUTINE
00187C    92 00 F AB8        MVI   SS,X'00'                  ZERO THE STK SEL SW.
001880    D2 03 F A8A F ABF  MVC   SSOP(4),NOSS              MOVE INITIAL PATTERN TO WORK AREA.
001886    45 40 F 71E        BAL   R4,INIT                   BR TO INITIALIZE
00188A    45 40 F 816        BAL   R4,OPMSG                  BR TO OPENING MSG.
00188E    96 40 F AB8        OI    SS,X'40'                  TURN ON 360 STK SEL SW.
001892    41 00 0 028  LP01  LA    R0,40                     PUT 40 INTO REG 0. -TOTAL CDS-
001896    41 10 0 001        LA    R1,1                      PUT 1 INTO REG 1   -COUNT-
00189A    41 20 0 008        LA    R2,8                      PUT 8 INTO REG 2   -CCW INDEX-
00189E    58 C0 F 798        L     R12,RDR                   PUT RDR ADDR INTO REG 12.
0018A2    41 40 F 8AA        LA    R4,SIO                    PICK UP THE RETURN ADDR.
0018A6    50 40 F 7A0        ST    R4,RETURN                 SAVE IT.
0018AA    41 A2 F A48  SIO   LA    R10,RDFD-8(R2)            PICK UP ADDR OF READ FEED STK SEL.
0018AE    41 3A 0 008        LA    R3,8(R10)                 PICK UP EXP CSW COMMAND ADDR
0018B2    40 30 F ADE        STH   R3,EXP5+2                 PUT IT IN EXP CSW
0018B6    45 B0 F OFE        BAL   R11,ISIO                  BR TO ISSUE START I-O
0018BA    3E00               DC    X'3E00'                   CTRL SWITCHES
0018BC    0010               DC    X'0010'                   T E S T   N U M B E R
0018BE    F000               DC    X'F000'                   EXP COND. CODE AND SENSE
0018C0    FADC               DC    AL2(EXP5-SECNO+REG)       EXP CSW ADDR
0018C2    45 40 F 982        BAL   R4,MRTN                    BR TO MAIN RTN.
0018C6    91 08 F 004        TM    SNSW,X'08'                SEE IF RTN LOOP SW ON.
0018CA    47 10 F 892        BC    ALL,LP01                  BR IF YES.
0018CE    45 40 F A16        BAL   R4,COC                    BR TO CONVERT THE CD COUNT
0018D2    0A D6              SVC   X'D6'                     -ROUTINE EXIT-
0018D4                       CNOP  0,4
                        ********************************************************************
                        * ROUTINE 02 - THE 1400 COMPATIBILITY STACKER SELECT TEST.
                        *              THIS ROUTINE ISSUES A 1400 READ NO FEED AND FOLLOWS NEXT
                        *              WITH A FEED TO ONE OF THE STACKERS. THE STACKER SELECT
                        *              PATTERN IS AS FOLLOWS, R1, R2, R1, RP3, DONE 10 TIMES
                        *              IN A NORMAL PROGRAM EXECUTION. THIS SHOULD PLACE 20
                        *              CARDS IN R1, 10 CARDS IN R2, AND 10 CARDS IN RP3 IF THE
                        *              STACKING PERFORMED PROPERLY.
                        *              THIS TEST IS BYPASSED IF THE CORRECT PRINTOUT SENSE
                        *              SWITCH -SSW 7- IS ON, DUE TO TIMING SENSITIVITY.
                        ********************************************************************
0018D4    02          ROUT02 DC    X'02'                     ROUTINE NUMBER
0018D5    00FFFF             DC    X'00FFFF'                 LAST ROUTINE
0018D8    91 08 F 0E1        TM    UNIT1+1,X'08'             SEE IF 1400 COMPATIBLE 2540
0018DC    47 10 F 918        BC    ALL,EX14                  BR IF YES.
0018E0    0A D0        RBY   SVC   X'D0'                     PRINT -RTN BYPASSED-
0018E2    040D               DC    X'040D'
0018E4    FC51               DC    AL2(BYPASS-SECNO+REG)
0018E6    91 40 F AB8        TM    SS,X'40'                  SEE IF 360 STK SEL EXECUTED.
0018EA    47 10 F 8F0        BC    ALL,FINM                  BR IF YES.
0018EE    0A D6        EX    SVC   X'D6'                     -ROUTINE EXIT-
0018F0    91 80 F 7F9  FINM  TM    LDSW,X'80'                SEE IF ON LOADER.
0018F4    47 80 F 8EE        BC    NONE,EX                   BR IF NOT.
0018F8    D2 05 F C7A F C86  MVC   CLSTK+28(6),REDR          MOVE WORD READER TO MSG.
0018FE    0A D0              SVC   X'D0'                     PRINT -CLEAR READER OF CDS-
001900    2422               DC    X'2422'
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001902    FC5E               DC    AL2(CLSTK-SECNO+REG)
001904    0A D0              SVC   X'D0'                     PRINT -PUT THE TEST DECKS IN RDR.
001906    A03E               DC    X'A03E'
001908    FC13               DC    AL2(PTDB-SECNO+REG)
00190A    0A DA              SVC   X'DA'                     -HALT-
00190C    9D 00 C 000        TIO   0(R12)                    TEST I-O
001910    0A D0              SVC   X'D0'                     SPACE OUTPUT DEVICE 1.
001912    8001               DC    X'8001'
001914    FC13               DC    AL2(PTDB-SECNO+REG)
001916    0A D6              SVC   X'D6'                     -ROUTINE EXIT-
001918    45 40 F 816  EX14  BAL   R4,OPMSG                  BR TO OPENING MSG.
00191C    45 40 F 71E        BAL   R4,INIT                   BR TO INITIALIZE.
001920    96 80 F AB8        OI    SS,X'80'                  TURN ON THE 1400 STK SEL SWITCH.
001924    D2 03 F ABA F ABF  MVC   SSOP(4),NOSS              MOVE INITIAL PATTERN TO WORK AREA.
00192A    41 00 0 028  LP14  LA    R0,40                     PUT 40 INTO REG 0. -TOTAL CDS-
00192E    41 10 0 001        LA    R1,1                      PUT 1 INTO REG 1. -COUNT-
001932    41 20 0 008        LA    R2,8                      PUT 8 INTO REG 2. -CCW INDEX-
001936    58 C0 F 798        L     R12,RDR                   PICK UP READER ADDR.
00193A    41 40 F 942        LA    R4,SIO14                  PICK UP THE RETURN ADDR.
00193E    50 40 F 7A0        ST    R4,RETURN                 SAVE IT.
001942    41 A0 F A68  SIO14 LA    R10,RD14                  PICK UP ADDR OF 1400 RD NO FD CMD.
001946    91 01 F 004        TM    SNSW,X'01'                TEST CORRECT PRINTOUT SSW 7.
00194A    47 10 F 8E0        BC    ALL,RBY                   BR IF ON.
00194E    45 B0 F OFE        BAL   R11,ISIO                  BR TO ISSUE START I-O.
001952    2A00               DC    X'2A00'                   CTRL SWITCHES.
001954    0020               DC    X'0020'                   T E S T   N U M B E R
001956    F000               DC    X'F000'                   EXP COND. CODE AND SENSE.
001958    FAC4               DC    AL2(EXP1-SECNO+REG)       EXP CSW ADDRESS.
00195A    41 A2 F A68        LA    R10,FD14-8(R2)            PICK UP ADDR OF 1400 STK SEL CMD.
00195E    45 B0 F OFE        BAL   R11,ISIO                  BR TO ISSUE START I-O.
001962    2E00               DC    X'2E00'                   CTRL SWITCHES.
001964    0030               DC    X'0030'                   T E S T   N U M B E R
001966    F100               DC    X'F100'                   EXP COND. CODE AND SENSE.
001968    FACC               DC    AL2(EXP2-SECNO+REG)       EXP CSW ADDRESS.
00196A    45 40 F 982        BAL   R4,MRTN                   BR TO MAIN ROUTINE.
00196E    91 08 F 004        TM    SNSW,X'08'                SEE IF RTN LOOP SW ON.
001972    47 10 F 92A        BC    ALL,LP14                  BR IF YES.
001976    45 40 F A16        BAL   R4,COC
00197A    92 00 F 7FA        MVI   BYSW,X'00'                ZERO THE MSG BYPASS SW.
00197E    47 F0 F 8F0        BC    UNC,FINM                  BR TO CHK END.
                        ********************************************************************
                        *      UPDATE STACKER CARD COUNT
                        ********************************************************************
001982    50 40 F A98  MRTN  ST    R4,ENDRT                  SAVE END RETURN ADDR.
001986    88 20 0 001        SRL   R2,1                      DIVIDE REG 2 BY 2.
00198A    58 32 F A98        L     R3,CCSS-4(R2)             PUT COUNT INTO REG 3
00198E    41 33 0 001        LA    R3,1(R3)                  ADD 1 TO THE COUNT
001992    50 32 F A98        ST    R3,CCSS-4(R2)             STORE IT BACK
001996    89 20 0 001        SLL   R2,1                      RESTORE REG 1
00199A    91 10 F 005        TM    SNSW+1,X'10'              SEE IF LOOP ON STACKER R1 DESIRED.
00199E    47 10 F 9FE        BC    ALL,SET1                  BR IF YES.
0019A2    91 08 F 005        TM    SNSW+1,X'08'              SEE IF LOOP ON STACKER R2 DESIRED.
0019A6    47 10 F A06        BC    ALL,SET2                  BR IF YES.
0019AA    91 04 F 005        TM    SNSW+1,X'04'              SEE IF LOOP ON STACKER RP3 DESORED.
0019AE    47 10 F A0E        BC    ALL,SET3                  BR IF YES.
0019B2    46 00 F 9BC        BCT   R0,CNTCCW                 BR TO SET STK SELECT.
0019B6    58 40 F A98        L     R4,ENDRT                  RESTORE END RETURN ADDR.
0019BA    07 F4              BCR   UNC,R4                    RETURN TO ROUTINE.
                        ********************************************************************
                        *      SET UP STACKER SELECT CCW HERE
                        ********************************************************************
0019BC    91 03 F ABA  CNTCCW TM    SSOP,X'03'                SEE IF STACKER 3 DESIRED.
0019C0    47 10 F 9EE        BC    ALL,FIX3                  BR IF YES.
0019C4    91 02 F ABA        TM    SSOP,X'02'                SEE IF STKR 2 DESIRED.
0019C8    47 10 F 9F6        BC    ALL,FIX2                  BR IF YES.
0019CC    41 20 0 008        LA    R2,8                      PUT STKR 1 CCW POINTER INTO REG 2.
0019D0    D2 00 F ABE F ABA  SHDAT MVC   SSOP+4(1),SSOP      MOVE 1ST CHAR TO LAST.
0019D6    D2 03 F ABA F ABB  MVC   SSOP(4),SSOP+1           SHIFT THE PATTERN OVER 1.
```

```
0019DC   88 20 0 003            SRL   R2,3              DIVIDE REG 2 BY 8
0019E0   43 12 F AAB            IC    R1,NCARD-1(R2)    INSERT NEW COUNT INTO REG 1
0019E4   89 20 0 003            SLL   R2,3              MULTIPLY REG 2 BY 8
0019E8   58 40 F 7A0      RTLP  L     R4,RETURN         PICK UP THE RETURN ADDR.
0019EC   07 F4                  BCR   UNC,R4            BR TO ROUTINE.
0019EE   41 20 0 018      FIX3  LA    R2,24             PUT STKR 3 CCW POINTER INTO REG 2.
0019F2   47 F0 F 9D0            BC    UNC,SHDAT         BR TO SHIFT DATA.
0019F6   41 20 0 010      FIX2  LA    R2,16             PUT STKR 2 CCW POINTER INTO REG 2.
0019FA   47 F0 F 9D0            BC    UNC,SHDAT         BR TO SHIFT DATA.
0019FE   41 20 0 008      SET1  LA    R2,8              PUT STKR 1 CCW POINTER INTO REG 2.
001A02   47 F0 F 9E8            BC    UNC,RTLP          BR TO RETURN.
001A06   41 20 0 010      SET2  LA    R2,16             PUT STKR 2 CCW POINTER INTO REG 2.
001A0A   47 F0 F 9E8            BC    UNC,RTLP          BR TO RETURN.
001A0E   41 20 0 018      SET3  LA    R2,24             PUT STKR 3 CCW POINTER INTO REG 2.
001A12   47 F0 F 9E8            BC    UNC,RTLP          BR TO RETURN.
                        ********************************************************************
                        *       CONVERT THE CARD COUNT HERE.
                        ********************************************************************
001A16   41 30 0 003      COC   LA    R3,3              PUT 3 INTO REG 3.
001A1A   41 50 F 6D4            LA    R5,RIP            PUT ADDRESS OF MSG AREA INTO REG 8.
001A1E   1B 66                  SR    R6,R6             ZERO REG 6.
001A20   58 76 F A9C      CONC  L     R7,CCSS(R6)       PUT COUNT INTO REG 7.
001A24   4E 70 F 5C0            CVD   R7,DBWD           CONVERT COUNT TO DECIMAL.
001A28   F3 37 5 000 F 5C0      UNPK  0(4,R5),DBWD(8)   UNPACK 4 BYTES INTO PRINT AREA.
001A2E   96 F0 5 003            OI    3(R5),X'F0'       OR AN F INTO THE SIGN POSITION.
001A32   41 55 0 010            LA    R5,16(R5)         ADD 16 TO REG 5.
001A36   41 66 0 004            LA    R6,4(R6)          ADD 4 TO COUNT POINTER.
001A3A   46 30 F A20            BCT   R3,CONC           BR TO CONVERT NXT COUNT.
001A3E   0A D0                  SVC   X'D0'             PRINT NUMBER OF CARDS IN STKRS.
001A40   2439                   DC    X'2439'
001A42   F6CA                   DC    AL2(SHDAVE-SECNO+REG)
001A44   0A D0                  SVC   X'D0'             PRINT A BLANK.
001A46   8001                   DC    X'8001'
001A48   F6CA                   DC    AL2(SHDAVE-SECNO+REG)
001A4A   07 F4                  BCR   UNC,R4            RETURN TO MAIN ROUTINE.
                        ********************************************************************
                        *       CCW AREA
                        ********************************************************************
001A50   02 0017A8 2000 0001 RDFD   CCW   X'02',BUFFER,X'20',1
001A58   42 0017A8 2000 0001        CCW   X'42',BUFFER,X'20',1
001A60   82 0017A8 2000 0001        CCW   X'82',BUFFER,X'20',1
001A68   D2 0017A8 2000 0001 RD14   CCW   X'D2',BUFFER,X'20',1
001A70   33 0017A8 2000 0001 FD14   CCW   X'33',BUFFER,X'20',1
001A78   73 0017A8 2000 0001        CCW   X'73',BUFFER,X'20',1
001A80   B3 0017A8 2000 0001        CCW   X'B3',BUFFER,X'20',1
001A88   03 0017A8 2000 0001 NODP   CCW   X'03',BUFFER,X'20',1
001A90   00000000            DCT1  DC    F'0'
001A94   00000000            ISLAVE DC   F'0'
001A98   00000000            ENDRT DC    F'0'
001A9C   00300000000000000000 CCSS  DC    XL12'00'
001AA5   000000               
001AA8   0000000F            OF    DC    X'0000000F'
001AAC   000000              NCARD DC    XL3'00'
001AAF   010101              ONES  DC    X'010101'
001AB2   0F0F0F              REMOVE DC   X'0F0F0F'
001AB5   000000              ZERO  DC    X'000000'
001AB8   00                  SS    DC    X'00'
001AB9   00                  PC    DC    X'00'
001ABA   F2F1F3F140          SSOP  DC    C'2131 '
001ABF   F2F1F3F1            NOSS  DC    C'2131'
                        ********************************************************************
                        *       EXP CSW AREA
                        ********************************************************************
001AC4   00001A70            EXP1  DC    A(RD14+8)
001AC8   0C000000                  DC    X'0C000000'
001ACC   00000000            EXP2  DC    XL4'00'
001AD0   08000000                  DC    X'08000000'
001AD4   00000000                  DC    XL4'00'
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001AD8   04000000                  DC    X'04000000'
001ADC   00001A58            EXP5  DC    A(RDFD+8)
001AE0   08000000                  DC    X'08000000'
001AE4   00000000                  DC    XL4'00'
001AE8   04000000                  DC    X'04000000'
                        ********************************************************************
                        *       MESSAGES
                        ********************************************************************
001AEC   40D7D3C1C3C540      DONPRO DC    C' PLACE '
001AF3   C1D7D7D9D6E740F1F0        DC    C'APPROX 100 VALID'
001AFC   F040E5C1D3C9C4
001B03   40E2C3D9C1D740C3C4        DC    C' SCRAP CDS IN RD'
001B0C   E240C9D540D9C4
001B13   D9484OC8D7D96BD4C1        DC    C'R. HPR,MAKE RDY,'
001B1C   D2C540D9C4E86B
001B23   C5D6C640D6D5              DC    C'EOF ON'
001B29   40D9C5D4D6E5C540C3 RTD1   DC    C' REMOVE CDS FROM'
001B32   C4E240C6D9D6D4
001B39   40E2E3C1C3D2C5D940        DC    C' STACKER OF LOAD'
001B42   D6C640D3D6C1C4
001B49   C5D940C4C5E5C9C3C5        DC    C'ER DEVICE'
001B52   40D9C5D4D6E5C540E3 RTD2   DC    C' REMOVE THE REMA'
001B5B   C8C540D9C5D4C1
001B62   C9D5C9D5C740E3C5E2        DC    C'INING TEST DECKS'
001B6B   E340C4C5C3D2E2
001B72   6BC9C640C1D5E86B40        DC    C',IF ANY, FROM TH'
001B7B   C6D9D6D440E3C8
001B82   C540D3D6C1C4C5D940        DC    C'E LOADER HPR'
001B8B   C8D7D9
001B8E   40C4D640D5D6D7D9D6 RTD3   DC    C' DO NOPRO AND PL'
001B97   40C1D5C440D7D3
001B9E   C1C3C540C3C4E240D9        DC    C'ACE CDS RUN OUT '
001BA7   E4D540D6E4E340
001BAE   C9D540C6D9D6D5E340        DC    C'IN FRONT OF REMA'
001BB7   D6C640D9C5D4C1
001BBE   C9D5C9D5C740E3C5E2        DC    C'INING TEST DECKS'
001BC7   E340C4C5C3D2E2
001BCE   40E2C1E5C540D9C5D4 RTD4   DC    C' SAVE REMAINING '
001BD7   C1C9D5C9D5C740
001BDE   E3C5E2E340C4C5C3D2        DC    C'TEST DECKS UNTIL'
001BE7   E240E4D5E3C9D3
001BEE   40C140D4E2C740D9C5        DC    C' A MSG REQUESTS '
001BF7   D8E4C5E2E3E240
001BFE   E3C8C5D440E3D640C2        DC    C'THEM TO BE PUT I'
001C07   C540D7E4E340C9
001C0E   D540C8D7D9                DC    C'N HPR'
001C13   40D7E4E340D9C5D4C1 PTDB   DC    C' PUT REMAINING T'
001C1C   C9D5C9D5C740E3
001C23   C5E2E340C4C5C3D2E2       DC    C'EST DECKS INTO R'
001C2C   40C9D5E3D640D9
001C33   C4D940C8D7D940C1D5       DC    C'DR HPR AND MAKE '
001C3C   C440D4C1D2C540
001C43   D9C4D940D9C4E86BC5       DC    C'RDR RDY,EOF ON'
001C4C   D6C640D6D5
001C51   40D9E3D540C2E8D7C1 BYPASS DC    C' RTN BYPASSED'
001C5A   E2E2C5C4
001C5E   40D9C5D4D6E5C540C1 CLSTK  DC    C' REMOVE ALL CDS '
001C67   D3D340C3C4E240
001C6E   C9C640C1D5E86B            DC    C'IF ANY,'
001C75   C6D9D6D440E2E3D2D9        DC    C'FROM STKRS.'
001C7E   E24B
001C80   E2E3D2D9E24B      STK     DC    C'STKRS.'
001C86   D9C5C1C4C5D9      REDR    DC    C'READER'
                        ********************************************************************
                        *       EQUATES
                        ********************************************************************
                  000000    NEVER   EQU   0
                  000007    NCCO    EQU   7
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00000F      UNC     EQU   15
000008      NONE    EQU   8
000004      SOME    EQU   4
000001      ALL     EQU   1
000005      ANY     EQU   5
000008      CC0     EQU   8
000004      CC1     EQU   4
000002      CC2     EQU   2
000001      CC3     EQU   1
00000A      CC02    EQU   10
000006      CC12    EQU   6
000008      EQ      EQU   8
000004      LO      EQU   4
000002      HI      EQU   2
000006      UNEQ    EQU   6
00000C      EQLO    EQU   12
00000A      EQHI    EQU   10
000080      LOGOUT  EQU   X'80'
000181      SYSMOD  EQU   X'181'
00F000      REG     EQU   X'F000'
00005A      WHAT    EQU   90
000000      R0      EQU   0
000001      R1      EQU   1
000002      R2      EQU   2
000003      R3      EQU   3
000004      R4      EQU   4
000005      R5      EQU   5
000006      R6      EQU   6
000007      R7      EQU   7
000008      R8      EQU   8
000009      R9      EQU   9
00000A      R10     EQU   10
00000B      R11     EQU   11
00000C      R12     EQU   12
00000D      R13     EQU   13
00000E      R14     EQU   14
00000F      R15     EQU   15
000198      WT      EQU   408
000040      HCSW    EQU   64
000048      HCAW    EQU   72
0001A0      DMSSW   EQU   X'01A0'
0001B9      DMIOL   EQU   X'01B9'
0001BC      DMPTR   EQU   X'01BC'
            END     ROUT01
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POST ASSEMBLY DATA.

REFERENCES TO DEFINED SYMBOLS.

```
1      8     EQ    1288,  1326,  1352
2   18EE     EX    18F4
1      2     HI
1      4     LO
4   1AA8     OF
1   1AB9     PC
1      0     R0    1114,  152E,  1892,  192A,  19B2
1      1     R1    1896,  192E,  19E0
1      2     R2    189A,  18AA,  1932,  195A,  1986,  198A,  1992
                   1996,  19CC,  19DC,  19E0,  19E4,  19EE,  19F6
                   19FE,  1A06,  1A0E
1      3     R3    18AE,  18B2,  198A,  198E,  198E,  1992,  1A16
                   1A3A
1      4     R4    177A,  1874,  1886,  188A,  18A2,  18A6,  18C2
                   18CE,  1918,  191C,  193A,  193E,  196A,  1976
                   1982,  19B6,  19BA,  19E8,  19EC,  1A4A
1      5     R5    151C,  178C,  1A1A,  1A28,  1A2E,  1A32,  1A32
1      6     R6    1748,  1748,  174A,  174E,  1752,  1754,  1756
                   1758,  1A1E,  1A1E,  1A20,  1A36,  1A36
1      7     R7    129E,  156A,  1A20,  1A24
1      8     R8    129A,  12F6,  12FA,  1318,  1318,  131C,  1372
                   1376,  1428,  142C,  1430,  1430,  1434,  1552
1      9     R9    1114,  116E,  1172,  117E,  11D6,  11DA,  11E6
                   123C,  13CE,  13FC,  143E,  1456,  146E,  1486
                   152E,  154A,  154E,  1566
1   1AB8     SS    126A,  1816,  187C,  188E,  18E6,  1920
1    198     WT    116E,  11D6,  154A
1      1     ALL   1132,  11CE,  1206,  125E,  126E,  1286,  12C8
                   12D4,  133A,  135A,  1392,  1488,  151C,  1768
                   181A,  1854,  18CA,  18DC,  18EA,  194A,  1972
                   199E,  19A6,  19AE,  19C0,  19C8
1      5     ANY   1514
4   1048     CAW
1      8     CC0   117A,  1194
1      4     CC1   1198,  1562
1      2     CC2   119C
1      1     CC3
4   1A16     COC   18CE,  1976
8   1040     CSW
2   100A     ICM
4   116E     IHI   1152,  1162
2   10E8     ISW   1182,  1182,  1188,  118A,  11C6,  11D2,  11DE
                   11EE,  11FE,  1202,  1210,  1240,  124E,  125A
                   1262,  127A,  128A,  12A2,  12AA,  12AE,  12BC
                   12C4,  12D0,  12EE,  1310,  132A,  1336,  1442
                   1472,  1490,  14F0,  14F8,  1518,  1574,  1764
                   1788,  1790
4   152A     IUP   1522
2   184C     M1F   181E,  1846
16  16BA     MDR   1538,  1544
1      A     R10   111E,  13AC,  13C8,  13D2,  13DA,  13DA,  150C
                   1776,  18AA,  18AE,  1942,  195A
1      B     R11   110E,  112E,  11CA,  1252,  1272,  12B2,  12DC
                   12E6,  12F6,  1308,  135E,  1376,  1378,  138A
                   138A,  138E,  13FE,  141A,  1428,  145A,  148A
                   151E,  1526,  1526,  152A,  152A,  1532,  18B6
                   194E,  195E
1      C     R12   1146,  1156,  1166,  1176,  1190,  11F6,  153C
                   1556,  155E,  172A,  172E,  1732,  1758,  186A
                   189E,  190C,  1936
1      D     R13   111E,  1122,  1122,  11B4,  150C,  1552,  156C
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			171E,	171E,	1728				
1	E	R14	1128,	1128,	116E,	11D6,	14BC,	14C4,	154A
			1720,	174A,	174E,	1752			
1	F	R15	120A,	1218,	1248,	1728			
2	18E0	RBY	194A						
4	1798	RDR	1732,	189E,	1936				
1	F000	REG	122A,	1370,	1388,	13A2,	13BC,	13FA,	1408
			140E,	14A4,	14B2,	14EE,	1504,	150A,	1538
			1544,	1786,	1832,	1838,	183E,	1844,	184E
			1862,	1872,	18C0,	18E4,	1902,	1908,	1914
			1958,	1968,	1A42,	1A48			
16	16D4	RIP	1A1A						
2	1534	RRM	1352,	135A,	14B8				
4	18AA	SIO	18A2						
6	1C80	STK	1858						
2	185E	TOP	1822,	1864					
1	F	UNC	10FA,	114A,	116A,	11A4,	11AC,	11BE,	11F2
			1214,	1244,	1266,	12C0,	12CC,	12D8,	13DE
			13FC,	14FC,	1532,	1546,	156A,	1578,	177A
			1794,	1874,	197E,	19BA,	19EC,	19F2,	19FA
			1A02,	1A0A,	1A12,	1A4A			
4	179C	ATE1							
2	184A	BILM	182A						
1	17FA	BYSW	197A						
1	A	CC02							
1	6	CC12							
12	1A9C	CCSS	1736,	1736,	198A,	1992,	1A20		
4	1A20	CONC	1A3A						
4	111E	CONP	1546						
8	15C0	DBWD	1A24,	1A28					
4	1A90	DCT1							
1	A	EQHI							
1	C	EQLO							
4	1918	EX14	18DC						
4	1AC4	EXP1	1958						
4	1ACC	EXP2	1968						
4	1ADC	EXP5	18B2,	18C0					
8	1A70	FD14	195A						
4	18F0	FINM	18EA,	197E					
4	19F6	FIX2	19C8						
4	19EE	FIX3	19C0						
4	1176	GREG	117E						
1	48	HCAW	111E,	150C,	1552				
1	40	HCSW	1122,	1122,	11B4,	120A,	1218,	1248,	156C
2	1868	HLT1	1854						
16	17FB	HUNG	1786						
3	1643	IACT	1236,	144A,	147A				
6	12DC	IBSN	126E,	127E,	128E,	1296,	12A6,	12B8,	12C0
12	1617	ICAW	13AC,	13B4,	13B6,	13BC			
3	1626	ICCW	13BE						
1	13F9	ICNT	1232,	13C4,	1416				
3	1623	ICSW	122C,	1410					
4	1472	IDID	145E						
3	1646	IEXP	1422,	1462					
2	171E	INIT	1886,	191C					
4	11C6	INOW	1132,	11A4,	11AC,	11BE			
4	1252	INT3	1214						
4	1180	IONE	1198						
6	148A	IPAS	1476						
4	126A	ISEN	11CE,	11F2,	1256,	125E			
4	10FE	ISIO	1886,	194E,	195E				
6	1248	ISV2	1206						
4	1566	ITIC	1570						
4	10EA	ITIO							
4	11A8	ITWO	119C						
6	1218	IUIO	11FA						
6	1182	JOHN	113A,	117A					
1	17F9	LDSW	1760,	1826,	1850,	18F0			

4	1892	LP01	18CA						
4	192A	LP14	1972						
4	181E	M1F1							
4	1982	MRTN	18C2,	196A					
1	1706	MSK1	11E2						
1	1707	MSK2	11EA						
1	17F8	MSSW	1742,	1742					
1	7	NCC0	115A,	155A					
1	100D	NIOU							
1	8	NONE	113A,	1142,	1152,	1162,	1256,	1276,	127E
			128E,	1296,	12A6,	12EA,	12F2,	130C,	1314
			1342,	13D6,	141E,	1446,	145E,	1476,	1494
			14F4,	1522,	1570,	1724,	182A,	18F4	
8	1A88	NOOP	1776						
4	1ABF	NOSS	1880,	1924					
3	1AAF	ONES	173C						
16	1C13	PTDB	1908,	1914					
8	1A68	RD14	1942,	1AC3					
8	1A50	RDFD	18AA,	1ADC					
6	1C86	REDR	18F8						
16	1B29	RTD1	1832						
16	1B52	RTD2	1838						
16	1B8E	RTD3	183E						
16	1BCE	RTD4	1844						
4	19E8	RTLP	1A02,	1A0A,	1A12				
1	1708	RTSV	1118,	177C					
1	100C	SDMF							
4	19FE	SET1	199E						
4	1A06	SET2	19A6						
4	1A0E	SET3	19AE						
4	1004	SNSW	1136,	113E,	114E,	115E,	133E,	1510,	18C6
			1946,	196E,	199A,	19A2,	19AA		
1	4	SOME							
3	105D	SRET							
5	1ABA	SSOP	1880,	1924,	19BC,	19C4,	19D0,	19D0,	19D6
			19D6						
6	1858	TOPS	181A						
1	10E1	U1OP							
1	10E5	U2OP							
1	6	UNEQ	11FA,	12E2,	1304,	13A8,	14C0,	175C	
1	5A	WHAT							
1	15C8	WORK	1218,	13C8,	13E6,	13E8,	13EA,	13F0,	1438
			1438,	1450,	1468,	1468,	1480,	14C4,	14CE
			14D0,	14D2,	14D8,	14DE,	14E4		
3	1AB5	ZERO							
4	1764	BLOOP	175C,	1794					
16	1C5E	CLSTK	1858,	1862,	18F8,	1902			
1	1B9	DMIOL	174A						
1	1BC	DMPTR	174E						
1	1A0	DMSSW							
4	1A98	ENDRT	1982,	1986					
1	100E	FLAG1							
1	100F	FLAG2							
2	156A	IBACK	155A,	1578					
16	1629	IBLAH	122C,	1236,	13BE,	13EA,	13F0,	13FA,	1410
			1422,	144A,	1462,	147A			
2	13E2	ICOUT	123C,	13CE,	143E,	1456,	146E,	1486	
8	15B0	ICSW1	11B4,	120A,	1282,	12FE,	12FE,	1356,	1450
8	15B8	ICSW2	1248,	1292,	1320,	1320,	1480		
4	14F0	ICUIO	14C0						
4	1442	IDIDI	141E						
4	1156	IHANG	116A						
16	1607	ILINK	1378,	1380,	1382,	1388,	150A		
4	156C	ILOKE	1562						
4	1146	ILOOP	10EE,	1102					
4	132A	INDER	12C8,	12D4,	12E2,	12F2,	1304,	1314	
5	1010	INPSW							
3	1703	IOADR	139A						

6	1410	IOCSW	1392
16	165F	IOLOG	14D2, 14D8, 14DE, 14E4, 14EE
16	1684	IOPT1	10F2, 1106, 1504
4	14BC	IPASS	1494
4	1588	ISAVE	1114, 152E
4	1190	ISSUE	10EA, 10FE, 13A4, 1703
4	154A	ISTRT	129E
4	113E	ITRY1	114A, 115A, 1514
4	114E	ITRY2	1142
16	1709	IUNEX	1224, 122A
4	11D6	IWAIT	1266, 14FC
4	11C2	IZERO	1194
4	17A4	MOD50	172E
3	1AAC	NCARD	173C, 19E0
1	0	NEVER	
4	1816	OPMSG	188A, 1918
4	1000	SECNO	1118, 1222, 1224, 122A, 1368, 136A, 1370
			1380, 1382, 1388, 139A, 139C, 13A2, 13B4
			13B6, 13BC, 13E6, 13E8, 13FA, 1408, 140E
			149C, 149E, 14A4, 14AA, 14AC, 14B2, 14CE
			14D0, 14EE, 1504, 150A, 1538, 1544, 177C
			1786, 1832, 1838, 183E, 1844, 184E, 1862
			1872, 1879, 18C0, 18E4, 1902, 1908, 1914
			1958, 1968, 1A42, 1A48
6	19D0	SHDAT	19F2, 19FA
4	1942	SIO14	193A
1	10E0	UNIT1	172A, 18D8
1	10E4	UNIT2	
1	17A8	BUFFER	176C, 1770, 1770, 1A50, 1A58, 1A60, 1A68
			1A70, 1A78, 1A80, 1A88
13	1C51	BYPASS	18E4
4	19BC	CNTCCW	19B2
7	1AEC	DONPRO	184E, 1872
5	1058	EXNPSW	
8	1018	EXOPSW	
6	177C	HANGUP	1768
11	1654	IACSNS	12B2, 134E, 14AA, 14AC, 14B2, 14B4, 1580
10	15EE	IACTCC	118C, 11A0, 11A8, 11B0, 11C2, 12DC, 140E
6	13FE	ICCOUT	13A8, 13D6
6	12FE	ICCSW1	12FA
6	1320	ICCSW2	131C
6	1438	ICHNG1	142C
6	1468	ICHNG2	1434
6	13C8	ICWOUT	13DE
4	129A	IDOSNS	1276, 1286, 178C
4	132E	IDUNCK	12CC, 12D8, 1326
10	15E4	IEXPCC	13FE, 1408
11	1649	IEXSNS	148A, 149C, 149E, 14A4
6	110E	IEYEOH	10FA
1	136E	IFLAG1	132E, 1346
1	1502	IFLAG2	1332, 134A
4	151E	ILEAVE	1342
6	14C4	ILOGED	1244
4	145A	IMORST	1446
4	12C4	INOEX1	12EA
4	12D0	INOEX2	130C
15	15F8	IOADDR	10F6, 110A, 139C, 13A2
4	1078	IONPSW	
8	1038	IOOPSW	11F6, 1222
2	1500	IOPOUT	14F4
4	134E	IOUTIT	133A
4	11F6	IRETRN	107C
8	1580	ISENSE	129A
4	1A94	ISLAVE	
4	155E	ITIOLP	1566
9	167B	ITSTNO	110E, 135E, 1368, 136A, 1370
1	80	LOGOUT	1128, 1128, 14C4
8	1070	MCNPSW	

8	1030	MCOPSW	
4	172A	NITWIT	1724
8	1068	PGNPSW	
8	1028	PGOPSW	
4	15E0	RANDOM	
3	1AB2	REMOVE	
4	17A0	RETURN	18A6, 193E, 19E8
1	1878	ROUT01	1015, 1C8C
1	18D4	ROUT02	1879
10	16CA	SHDAVE	1A42, 1A48
8	1060	SVNPSW	
8	1020	SVOPSW	
1	181	SYSMOD	14BC
2	10E2	U1ADDR	
2	10E6	U2ADDR	
1	1000	XF8190	

NO ERROR DETECTED IN ABOVE ASSEMBLY

```
PERIODS CORRESPOND TO BLANK COLUMNS.

COLS.  1 THROUGH 20    COLS.  21 THROUGH 40    COLS.  41 THROUGH 60    COLS.  61 THROUGH 80

BESD......AA..AAXF81    90..AAAA.ADD........    ................840    575.130498..81900001
9         YQ  Y9            YYQY Y8Y
          99  9             9999 99

BTXT.AAA..A8..AA8JAA    AAAAAAAAABOAADAAAAQH    AAAAAAAAAAAAAAAAAAAA    AAAAAAAAAAAA81900002
9   YQY  Y9  Y9 8YY     YYYYYYYYY9+Y99YYYY9R    YYYYYYYYYYYYYYYYYYYY    YYYYYYYYYYYY
    999  9   9  999     99999999  9  9999 0     99999999999999999999    999999999999

BTXT.AA8..A8..AAAAAA    AAAAAAAAAAAAAAAAAAAA    AAAAAAAAADAAAAAAAAAA    AAAAAAAAAAAA81900003
9   YQ9  Y9  Y9YYYY     YYYYYYYYYYYYYYYYYYYY    YYYYYYYYY9YYYYYYYYYY    YYYYYYYYYYYY
    99   9   9 9999     99999999999999999999    999999999 9999999999    999999999999

BTXT.AAO..AA..AAAAAA    AAAAADAAAAJ6........    ....................    ............81900004
9   YQ+  YQ  Y9YYYY     YYYY99YYYY9
    99-  99  9 9999     9999  9999

BTXT.AAS..A8..AAAAAA    BAAAAABE1ABE1FBT6EBT    6DG01FBD1ABD1FBS6EBS    6DKA6AABAA5H81900005
9   YQ8  Y9  Y90YYY     0YYYYY-Q Q-Q Z-  Q-      9Z  8-Q Q-Q Z-  Q-      9 9 YQ9Q8 0
    99   9   9  9 9      99999                     9                          0  9

BTXT.AJQ..A8..AAKA7H    0C+NAHPG0.0.PCSASAAA    AAGA1FA00DGA1BAA0DGA    1FDA0AG016A.81900006
9   Y99  Y9  Y9 Y 9      9 YYZ 9- -   88Y8Y-Y   QYZQ  -+ 9ZY 0-Y 9ZY     8QY+YZ  8-
    9    9   9  9          9          9         09 9                       9 9   9

BTXT.AJ+..A8..AA0DGA    1WEA0AG016A.0DGA1WDA    0AG01FHFAHHAACEA0AGA    1BFA1FPA0Y0Y81900007
9   Y9   Y9  Y9 9ZY      8QY+YZ+ 8-  9ZY 8QY    +YZ  RRQ9-0QY9QY+YZY     0ZQ R 9
    9    9   9             9 9 - 9          9    9           9 9 9          0

BTXT.AJH..A8..AAFA0Y    BX53DA0AGA1BG.1AGJ1Q    B353G01FB253G01FB153    KG5A0.F.0YG081900008
9   Y90  Y9  Y9-Y       -    QY+YZY  Z  QZY 0   -   Z   -   Z   -        9 Q- -   Z
    9    9   9                9 9        0 9                               0

BTXT.AJ0..A8..AA1FB0    53D70YA.AAGA2+FA0YHF    AHHAACFA0YAA7FFA1WAA    7GD70YG02+A081900009
9   Y9+  Y9  Y9  -        -8  - QYZQ --Q  RQ    9-0QY9-Y  YY 9ZQ  YY     9-8  Z  -8+
    9    9   9                  09 9   9          9     9         9

BTXT.AJ8..A8..AA02G-    2QD70YA.0YGA2HKG5A0.    F.0YG02BKG5H0.BEABA2    GKB0MN7AKB6S81900010
9   Y9   Y9  Y9 8Z       9-8  -    ZQ Z 9 Q     -   Z  R 9     8QY9Y8   988-Z9 8 9 8
    9    9   9  9                    9    0                   999 99     99    9   9

BTXT.AKA..A8..AA6TBK    39KB6.6CEA3SFB0YG04D    KG5H0.FJ0YAAAAGA2+AH    0YGA2+FH0YG081900011
9   Y9Q  Y9  Y9 9-8        9   ZZQ  -9  Z        9 0  -Y  -QQYZY --9      ZQ --9  Z
    9 Z  9   9     9                              -   9   909               9

BTXT.AKQ..A8..AA10AA    BHGA2DABAAGA2BA.0YGA    2DAB5DGA2BAJ0YGA2DAB    5DGA2DAA5AE081900012
9   Y9Z  Y9  Y9  -Y     Q0ZQ Q-9QYZY Q-   ZY     Q-9 0ZQ Q-Y  ZY Q-9     QZY QZY YZ+
    9    9   9          Z- 9 9  09               9  - 9   9      9       0   9     -

BTXT.AKJ..A8..AA5BAA    0ZGA2DFD0YD70ZNA6JAE    GA2DFA0YG02DA.0YGA3S    G03WAJ0YGA3S81900013
9   Y9Y  Y9  Y9 8-Y       ZY Q-9  -8    Y 8Q9   ZY Q-9  Z  Q-   ZQ 8    Z  8-Y  ZQ 8
    9    9   9                9          9 0      9      9      9 9        9 9   9 9

BTXT.AKQ..A8..AAG03W    NA53ADG-3SAHAAGA2DA.    0YGA3SHCAF.A3BNG5A5A    G-3SADAAGA2081900014
9   Y9   Y9  Y9Z  8      Y  Q9Z  8-9QYZY  -       ZY 8ZYY9 Y 9 9 Q Q    Z  8-9QYZY -
    9    9   9    9      9  0    9  09              9  9         0 0       9  09

BTXT.ALA..A8..AAAJ0Y    GA3SAHAH.A3UNG5H5HGA    3WFA0YBM3WB05BAA0YGA    3FAA0DGA50BU81900015
9   Y9Q  Y9  Y9-Y       ZY 8Z0Y9 Y 9 9 0 0ZY     8-9  -Z 8-+ 9-9  ZQ     8-9 9ZY 8-9
    9 9  9   9  9          9 9          - -      9                 9            9

BTXT.ALH..A8..AA3WBA    5BE.6JGA54AA5DGA54KA    6AABBEABFAFAB0MA63AA    ADLH+A6DBEAC81900016
9   Y9Z  Y9  Y9 8-Y      9-  8ZY 9-9 0ZQ 9 9     YQ98QY99Y9Y8-Z8 8ZY    Y980 Q 88QY9
    9    9   9                          - 9       0 999      9 9        9 9- 0 9999
```



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BTXT.ALA..A8..AAFEFD    B0JA6GACADAAAAGA4ABE    ACGCEEB0JG58ED1AG-3F    +J6MBEACFNFM81900017
9   Y9Y  Y9  Y99898     8-YQ 9ZQY9-YQYZQ Q8Q    Y9999Q8-Y8  -Q QZ  Q     Y 88QY99898
    9    9   9  9 9     9  9   09    09 9 999   9    Z9  9          Z       9999  9 9

BTXT.ALH..A8..AAB0JC    6PKB6S6WB039KG5HJAEA    3SA0JDGA3FAKAHG03HBE    AHEHEHKG6W5H81900018
9   Y90  Y9  Y98-Y8      9 9 8 9-9   9  YYZQ      -+Y9ZY QZYY9Z   8Q    Y99 9  9 8
    9 -  9   9 9  9            9          9             Z  9      99    9      9

BTXT.AL0..A8..AAKG67    50B0JK6/G9KA5ZADB0JB    5UB0JB50KB6S6TBK39AH    AAGA4BKB6.6F81900019
9   Y9   Y9  Y9 9 9      -8-Y8 89  Y  Q98-Y8      8-Y8 Y 9 8 9-8  -9    QYZY Z 9   Z
    9    9   9             9  9 9   9  0 9  9     9  9 9   9   9         09

BTXT.AMY..A8..AAHCAF    .A44AHAH.A4UKG5H5HEA    3SA.0YGA4KKB6.6CKG5H    5AEA3SADAAGA81900020
9   Y99  Y9  Y9ZYY9      Y 8Z0Y9 Y 8 9    ZQ      -   ZY 8 9   Z 9       QZQ  -9QYZY
    9    9   9  9          9 9                                           0       09

BTXT.AM-..A8..AA4BKB    6.6FKG5H5HEA3SAJ0YGA    4BKB6.6CKG5H5HEA3SKA    6FAEAD0YGA4D81900021
9   Y9   Y9  Y9 R 9        Z 9    ZQ  -Y  ZY     Y 9   Z 9   0ZQ   Y     8Q9-9  ZY Q
    9    9   9  0                      9                       -   9      0      0

BTXT.AMH..A8..AABEAA    FFFFB0JC6ABEAAFJFJB0    JC6DE46JGA54EAJAG-40    KC5HSABEADEH81900022
9   Y9-  Y9  Y98QY9     98988-Y8  88QY998988-   Y8 R-  8ZQ 9-QZ0Z        8  8Y8QY89
    9    9   9 999        9 9  999      9       9        9  Z            9   9999

BTXT.AM0..A8..AAEHKA    6M5HKE6P5BKE6W5KKE6E    5BB0JM6PAB0YGA5ADE0Y    G010B0066DB081900023
9   Y9-  Y9  Y99  9      Z    9 Z Y 9 8   9 R    Q8-Y8 8-9  ZY Y-Q      Z    8-+9 08-
    9    9   9                    9         0    99  9          9 Z         9     9

BTXT.ANH..A8..AAJA6G    +NAHA00DG+16AA0YGNAH    AAGA5SACABACAFHA5HGC    B0UA6BBBEA0A81900024
9   Y99  Y9  Y9Y9 9      YYZ-+ 9Z   8-Y  99-9   QYZY 8ZQY9ZQY9-8 09Q    8-9Q Q8QQY+Y
    9    9   9             9        9           09   9 09  09  9   Z    9  9 099 9 9

BTXT.AN...A8..AAB0AA    6BG010HFAHHAAB+EAHDA    0AG05+EA0AG.5UFA50G7    AD0DGA50FA0Z81900025
9   Y9   Y9  Y98-Y9      QZ  8RQ9-0QY9 YYZQY    +YZ+ -QY+YZ  8ZQ 89     -9-ZZY Z-Y
    9    9   9 9         0   9        9  9  9    9 -   9 9

BTXT.ANH..A8..AAG05+    AAAADA0JAAAAAAAAAAAA    AAAAAAAAAAAAAAAAAAAA    AAAAAAAAAAAA81900026
9   Y9R  Y9  Y9Z  -     YYYY9Y98YYY9YYYYYYYY    YYYYYYYYYYYYYYYYYYYY    YYYYYYYYYYYY
    9 0  9   9          9999 9  999 99999999    99999999999999999999    999999999999

BTXT.ANA..AQ..AAAAAA    AAAAAAAAAAAAAAAAAAAA    ....................    ............81900027
9   Y9Q  Y9  Y9YYYY     YYYYYYYYYYYYYYYYYYYY
    9 0  9   9 9999     99999999999999999999

BTXT.ANS..AY..AAAAAA    .CC..X.EXP.CC..X.ACT    .ADR.XXXXXX.XIOA....    ............81900028
9   Y98  Y9  Y9YYYY                                             Y
    9    9   9 9999                                             9

BTXT.AOG..AJ..AA.ADR    .XXXXXX.LINKA.......    ....................    ............81900029
9   Y99  Y9  Y9                       Y
    9    9   9                        9

BTXT.AOP..A8..AA.CAW    .XXXXXX.CSWCCW.CSW.X    XXXXXXX.XXXXXXXX.EXP    ACTEXP.SNS.X81900030
9   Y99  Y9  Y9
    9    9   9

BTXT.AOG..A8..AAX.EX    P.SNS.XX.ACT.LOG.XX.    XXXXXX.XXXXXX.XXXXXX    .TST.XXXX.SE81900031
9   Y98  Y9  Y9
    9    9   9

BTXT.AOG..A8..AAT.SS    .0.ON.FOR.LOOP.ON.XI    OT.SS.1.ON.FOR.TIO.S    IO.LOOP.MAKE81900032
9   Y90  Y9  Y9                                  8
    9    9   9

BTXT.AOG..A8..AA.DEV    ICE.RDY.SHD.HAVE....    ..CDS.IN.R1T......CD    S.IN.R2T....81900033
9   Y9Q  Y9  Y9                                            8                  8
    9 0  9   9
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BTXT.AO7..A8..AA..CD     S.IN.RP3AJAFAA.UIO.F      ROM.DEVICE.XXXXLEA.J     FGA7SQGHOOSD81900034
9    Y9   Y9  Y9                 Y9QQ9Y                             8Q- Z     -ZY 89QR+ 8R
     9    9   9                  9  Z 9                             99           9 9

BTXT.APX..A8..AA07M+     07HPCBDBDKBBMBPPA787      8LOCWAIBWADKWF-F-AFA     AG-7MFA79AA081900035
9    Y98  Y9  Y9+ 0      + - 8QQQQ 9QYQY 9          8ZZ890889Q889 9 8 Y     YZ  Z-Y  -Y
     9 9  9   9              9Z Z   Z Z            9    -    09      9     9

BTXT.APP..A8..AAYGA7     4B.7QKF7R7QAJBHG4KAO      C7HBOMK7CFAOYE+2BBAO     YG07MAAAAAAA81900036
9    Y9Z  Y9  Y9 ZQ      8-  0 8 0 0ZYQO9  Y       9 98-Z8 Q-9  Z  Q-Y       Z  ZYYYYYYY
     9    9   9   9                   Z    9         9  9 Z          9          9999999

BTXT.APG..AA..AAAAAA     AAA7G...............      ....................     ............81900037
9    Y9Q  Y8  Y9RYYY     YYY8Q
     9    99  9  999     9999Z

BTXT.AP8..A8..AAAAA.     PREVIOUS.HANG.UP.DET      ECTEDAA.BHGA8HBD8DBJ     8-AA79GA8BB081900038
9    Y9   Y9  Y9YYY                                    Y- Q0ZQ R-9 8-Y        -Y  ZY 88-
     9    9   9 999                                    9  Z- 9                        9

BTXT.AQA..A8..AAU/C/     BOJ4CBBOJ.CFBOJECFBA      8DBOD5BMAA79GA8QKED2     DABOJSDOBU8-81900039
9    Y9Q  Y9  Y998Q8     8-Y8QR8-Y QY8-YZQY-Y       88-98QY-Y  ZQ Z 9Q8     QY8-Y9Q8-9
     9 Z  9   9  9Z9     9  9Z 9   Z 9   Z9         9  9Z9     9     Z     Z 9    Z

BTXT.AQQ..A8..AABBEA     OABOAABMG4GAAAHMBABH      KCBBBGE.7OE.8OF.BHAA     AYAAAAAJAHH081900040
9    Y9Z  Y9  Y98QQY     +Y8-Y9QY9 9Y9Y9 -YQO       9QQQQZ  8Z  9- QOZY     Y9ZQY9ZYY9R+
     9    9   9 99 9      99   Z9   9 9  9Z-        ZOZO    9      Z- 9     9  99  99

BTXT.AQJ..A8..AA7HA.     8K+.7JAKBHA2AH.ABFEA      OF6AAAOABDE.9BAHODGA     8BE.BOBOBAGG81900041
9    Y9Y  Y9  Y9 -Z       Y   YZOQZZ8Y9 QQQZQ       Q8YYQ YQQZ  O-9 9ZQ      -Z Q98 9YQQ
     9    9   9                  Z  99  ZZ9 0       Z9999 9Z9          9        Z 9  9ZZ

BTXT.AQQ..A8..AAAHOJ     GA9QBODEDAA.BHGA8OBO      AA79GA8OKED2DFBOUSDO     BOJ6DLBBEAOA81900042
9    Y9   Y9  Y9-9 Z     ZQ 98-98QR- QOZQ  8       -Y  ZY Y 9Q8Q08-99Q8     8-Y8Q98QQY+Y
     9    9   9           9  9  9Z   Z- 9  9                9  Z Z 9   Z     9  9Z 99 9 9

BTXT.AJA..A8..AABOAA     DLBOE.8OE.7OFABHKCBB      BGAAAYAAAAAJAHHO7HA.     9B+.7JAJBQAA81900043
9    Y8Q  Y9  Y98-Y9     Q98 Z  9Z  8-YQO 9QQ      QQZYY9ZQY9ZYY9R+ -Z       Z   YZYQZ-9
     999  9   9 9        Z 9         9  Z-  ZO     ZO 99  99  99                   Z

BTXT.AJH..A8..AAODGA     8SEAOFSAAJOABDAKBQEA      OFWAAA1ABDE.9BAHODGA     9SE.BOBA7BG081900044
9    Y8Z  Y9  Y9 9ZQ      8ZQ Q8YYY YQ ZOQZZQ       Q8YYQ YQYZ  O-9 9ZQ      8Z Q9-Y QZ
     99   9   9    9         0 Z9999 9Z   Z  0      Z999Z 9Z9          9     9  Z  9 Z

BTXT.AJA..A8..AA8O+.     BHHJAAH2BHA3AA+2BHIJ      AAAAOEGA9FAHOEGABFAD     OEGABFFA9DH.81900045
9    Y8Y  Y9  Y9         Q-OYY9R9Q-Z9Y9 9Q-OY      Y9-Q 9ZQ Q-9 9ZQQ9-9      9ZQQ8ZY QR
     99   9   9          Z  99    Z    9   Z 9     9  9   9 Z      9Z          9Z9 9 0

BTXT.AJH..A8..AABHG4     ACBBGA9OABBBGA96AJAH      KABFBBKCBBBCHJACCKBL     IJACH.7JG4AJ81900046
9    Y80  Y9  Y9Q-9      -9QQZQ Y-9QQZQ  ZYY9       YQQQQ 9QQQQOYY9Z9QY     OYY9R  Y9 ZY
     99-  9   9 Z          ZO 9 9  ZO 9   99        9ZOZO  ZOZO 99   Z      99          9

BTXT.AJO..A8..AAAQGO     9OAJAAGO9OAJAHGO9YAJ      AAGO9YAJAQGO9YAAACA+     6MLOHFBDF05081900047
9    Y8   Y9  Y9Y9Z       -ZYYQZ  -ZYY9Z   ZY      YQZ   ZYY9Z   ZQY9Z        8ZRRQQ8+ +
     99   9   9 9           999      99     9      99     99      Z9          9  OZ  -

BTXT.AKY..A8..AA37+A     5OFO+CAEAAAOADFABJBO      U16BBOAA6BG4AAAABAPQ     JAAABAPQJAAA81900048
9    Y89  Y9  Y9 9 Y      +-   9ZRYQZZY9ZQQY8-     98 Y8-Y9 Y9 YYYY9Y9O     YYY9ZY9OYYY9
     99   9   9    9               99  9  ZZ99      9 99    9  9999 9       999  9  999

BTXT.AK-..A8..AABAPQ     JAAAKAPQJAAA3APQJAAA      CAPQJAAACAPQJAAACAPQ     JAAAAAAAAAAA81900049
9    Y8   Y9  Y9OY9O     YYY9 Y9OYYY99Y9OYYY9      RY9OYYY9OY9OYYY99Y9O     YYY9YYYYYYYY
     99   9   9  9       999  9  999  9  999       O9  999 -9  999  9       999 99999999

BTXT.AKH..A8..AAAAAA     AAAAAAAAAAAAAAAGAAAA      AAGGGAAAAA2131.2131A     AAKODAAAAAAA81900050
9    Y8-  Y9  Y9YYYY     YYYYYYYYYYYYYYY8YYY9      99888YYYYY          Y     YY8+8YYYYYYY
     99   9   9 9999     9999999999999999999         99999999          9     999-99999999
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BTXT.AKO..A8..AAHAAA     AAAADAAAAAKHHAAAAAAA      DAAA.PLACE.APPROX.10     O.VALID.SCRA81900051
9    Y8-  Y9  Y99YYY     YYYY9YYYYY8R9YYYYYYY      9YYY
     99   9   9  999     9999 999999  9999999       999

BTXT.ALH..A8..AAP.CD     S.IN.RDRC.HPRTMAKE.R      DYTEOF.ON.REMOVE.CDS     .FROM.STACKE81900052
9    Y89  Y9  Y9                8     8             8
     99   9   9

BTXT.AL...A8..AAR.OF     .LOADER.DEVICE.REMOV      E.THE.REMAINING.TEST     .DECKSTIF.AN81900053
9    Y8   Y9  Y9                                                                     8
     99   9   9

BTXT.ALH..A8..AAYT.F     ROM.THE.LOADER.HPR.D      O.NOPRO.AND.PLACE.CD     S.RUN.OUT.IN81900054
9    Y8R  Y9  Y9 8
     990  9   9

BTXT.ALA..A8..AA.FRO     NT.OF.REMAINING.TEST      .DECKS.SAVE.REMAININ     G.TEST.DECKS81900055
9    Y8Q  Y9  Y9
     990  9   9

BTXT.ALY..A8..AA.UNT     IL.A.MSG.REQUESTS.TH      EM.TO.BE.PUT.IN.HPR.     PUT.REMAININ81900056
9    Y8   Y9  Y9
     99   9   9

BTXT.AMJ..A8..AAG.TE     ST.DECKS.INTO.RDR.HP      R.AND.MAKE.RDR.RDYTE     OF.ON.RTN.BY81900057
9    Y8Y  Y9  Y9                                                  8
     999  9   9

BTXT.AMH..A4..AAPASS     ED.REMOVE.ALL.CDS.IF      .ANYTFROM.STKRSCSTKR     SCREADER....81900058
9    Y8R  Y9  Y9                                        8           8        8
     99   9   9

BRLD......A8....AAAA     AAANEAA4AANAAAPCAAKA      AAKJAAK/AAK/AAKAAAK1     AAKAAAKIDAKD81900059
9         Y9    Y9Y9     8YQ98YQ88Y9O8Y998Y8R      8Y888Y8 8Y888Y8R8Y88     8Y8O8Y8O8Y8
          9     9 9      999 999 99  99  999       999 999 999 9990999      999 999 999

BRLD......AH....AAAA     DAKD................      ....................     ............81900060
9         Y9    Y9Y9     8Y8Q
          9     9 9      9999

BEND.AQH......AA....     ....................      ....................     ............81900061
9    Y9R        Y9
     9 0        9

BLDT................     ....................      ....................     ............81900062
9
```

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0 0 0

F820 2540 PUNCH FUNCTION TEST

TABLE OF CONTENTS

1. PURPOSE

1.1 INTENT

F820 -- PUNCH FUNCTION 1 TESTS ABILITY TO ...

1. ADDRESS THE DEVICE UNDER TEST.
2. ISSUE SENSE START I-O.
3. PROPERLY SET ALL CONDITION CODES.
4. CLEAR INTERRUPTS WITH TEST I-O.
5. PROPERLY STORE CSW.
6. RESPOND TO DIAGNOSTIC COMMANDS.
7. RESPOND TO ALL VALID COMMANDS TO THE PUNCH.

F821 -- PUNCH FUNCTION 2 TESTS ABILITY TO ...

1. PROPERLY RESPOND TO ALL INVALID COMMANDS ISSUED TO THE PUNCH.
2. SET AND SUPPRESS INCORRECT LENGTH RECORD INDICATOR.
3. BREAK COMMAND CHAINING WITH INCORRECT LENGTH RECORD OR COMMAND REJECT.
4. RESET SENSE BITS WITH WRITE COMMANDS.
5. DISTINGUISH BETWEEN COMMAND AND DATA CHAINING AND EXECUTE BOTH PROPERLY.
6. PROPERLY STACKER SELECT ANY OF 3 STACKER POCKETS IN 360 OR 1400 PUNCH COMPATIBILITY MODE.

F822 -- PUNCH FUNCTION 3 TESTS THE ABILITY TO...

1. PUNCH ALL VALID EBDIC CHARACTERS AND INDICATE THE COLUMN LOCATION OF ANY ERRORS.

ALSO ALLOWS ...

2. READING THE DATA CARDS PUNCHED IN THE PUNCH ROUTINE. THIS IS UNDER CONTROL OF SECTION SENSE SWITCH 9.

F820 2540 PUNCH FUNCTION TEST

2. PREREQUISITES

2.1 PROGRAM REQUIREMENTS

THIS PROGRAM REQUIRES A DIAGNOSTIC MONITOR.

DM MUST HAVE A FOUR BYTE UDT ENTRY, ONLY THE FIRST TWO BYTES ARE SHOWN BELOW. THE NEXT TWO BYTES MUST CONTAIN THE CHANNEL AND UNIT ADDRESS.

UNIT TYPE		OPTIONAL FEATURE DIGIT 1				OPTIONAL FEATURE DIGIT 2			
UNIT	ZZ	BIT 0 HEX 8	BIT 1 HEX 4	BIT 2 HEX 2	BIT 3 HEX 1	BIT 4 HEX 8	BIT 5 HEX 4	BIT 6 HEX 2	BIT 7 HEX 1
2540 PUNCH	82		CARD IMAGE	PUNCH FEED READ	51 COL FEAT.	1400 FEAT.			2 CHNL SW ON 2821

NOTE. THIS PROGRAM ALLOWS READING CARDS PUNCHED BY THIS PROGRAM AND REQUIRES A 2540 READER UNIT TYPE 81 4 BYTE UDT ENTRY TO PROVIDE THE READER ADDRESS, OTHERWISE THE PROGRAM WILL NOT BE EXECUTED BY THE DIAGNOSTIC MONITOR.

NOTE. WHEN MORE THAN ONE READER/PUNCH IS PRESENT, DM UDT ENTRIES FOR THE COMBINATIONS MUST NOT BE MIXED. FOR EXAMPLE, ENTER READER 1 / PUNCH 1, THEN READER 2 / PUNCH 2.

2.2 EQUIPMENT REQUIREMENTS

PROGRAM LOADING DEVICE
HARD COPY OUTPUT DEVICE
CPU
4 K STORAGE PLUS THAT REQUIRED BY MONITOR
CHANNEL
2540 -PUNCH- UNIT TESTED

3. USE PROCEDURE

3.1 PROGRAM LOADING

STANDARD AS PROVIDED BY MONITOR

3.2 PROGRAM OPERATE

```
************************** NOTE ******************************
*  IF 2 CHANNEL SWITCH FEATURE IS INSTALLED, DISABLE THE     *
*  UNUSED INTERFACE TO PREVENT NOT READY TO READY STATUS     *
*  FROM BEING PRESENTED TO THE OTHER CHANNEL.                *
**************************************************************
```

IF EQUIPMENT CHECK TROUBLE IS EXPERIENCED WHILE RUNNING F820 OR F821, IT IS SUGGESTED THAT F822 BE RUN TO ANALYZE THE TROUBLE.

A PSW RESTART EXECUTED WHILE THE PROGRAM IS OPERATING NORMALLY MAY CAUSE A MISLEADING HANG UP MESSAGE. THE HANG UP MESSAGE IS ONLY VALID WHEN A PSW RESTART IS INITIATED DURING A SYSTEM HANG UP CONDITION.

IF MORE THAN ONE 2540 IS DEFINED IN THE DM UDT, ALL ROUTINES IN EACH SECTION WILL BE EXECUTED ON THE FIRST 2540 ALLOCATED BY DM BEFORE ANY TESTING OCCURS ON THE NEXT DEVICE.

3.2.1 RIPPLE PUNCH TEST F822 RTN 01

39 CARDS ARE PUNCHED BY ROUTINE 01 OF SECTION F822. THE FIRST TWELVE CARDS ARE PUNCHED AS FOLLOWS-
CARD 1 - 80 COLUMNS OF 12 PUNCHES.
CARD 2 - 80 COLUMNS OF 11 PUNCHES.
CARD 3 - 80 COLUMNS OF 0 PUNCHES.
CARD 4 - 80 COLUMNS OF 1 PUNCHES.
ETC...
CARD 12 - 80 COLUMNS OF 9 PUNCHES.

THE NEXT 27 CARDS ARE PUNCHED WITH A RIPPLE PATTERN OF ALL EBCDIC CHARACTERS.

ROUTINE 02 OF THIS SECTION IS AN OVERLAY WHICH CONSISTS OF A PROGRAM THAT WILL ENABLE THE OPERATOR TO VERIFY THE CARDS PUNCHED IN ROUTINE 01. THIS IS OPTIONAL UNDER CONTROL OF SECTION SENSE SWITCH 9. A MESSAGE IS ISSUED BY THE PROGRAM INFORMING THE OPERATOR THAT THE OPTION EXISTS.

3.2.2 SECTION SENSE SWITCHES

THE SENSE SWITCHES SHOWN BELOW ARE IN THE SENSE SWITCH BYTES OF THEIR RESPECTIVE SECTION PREFACES. THE CHARACTER X REPRESENTS THE RELOCATION FACTOR CONTAINED IN REGISTER 15 DURING RUN TIME. THE SWITCH BITS ARE ZERO WHEN OFF, AND ONE WHEN ON.

SENSE SW. NO.	FUNCTION	ROUTINE	BYTE AND BIT
0	ON--LOOP ON CURRENT I-O COMMAND OFF-PROCEED NORMALLY	ROUTINE ALL	X004 0
1	ON--LOOP ON CURRENT SIO-TIO COMMAND OFF-PROCEED NORMALLY *SEE FURTHER USAGE BELOW WITH SS 11 12 OR 13	ROUTINE ALL	X004 1
5	ON--EXECUTE MANUAL INTERVENTION RTNS IN F820 RTNS 13, 14, AND 15. OR EXECUTE STACKER SELECT RTNS IN F821, RTNS 12 AND 13. OFF-BYPASS ABOVE ROUTINES	F820 F821	X004 5
8	ON--PERFORM MANUAL -OFF LINE- RTN IF SS 5 ON. OFF--BYPASS OFF LINE ROUTINE	F820 RTN 14	X005 0
9	ON--ALLOWS CARDS PUNCHED IN ROUTINE 01 TO BE READ AND COMPARED FOR VERIFICATION. OFF-PROCEEDS NORMALLY	F822 RTN 02	X005 1
11	ON--LOOP STACKER SELECT POCKET 1 OFF-DO NOT LOOP STACKER SELECT POCKET 1 *IF SS1 + SS11 ON-TIGHT SIO TIO LOOP STKR 1	F821 IRTN 12-13	X005 3
12	ON--LOOP STACKER SELECT POCKET 2 OFF-DO NOT LOOP STACKER SELECT POCKET 2 *IF SS1 + SS12 ON-TIGHT SIO TIO LOOP STKR 2	F821 IRTN 12-13	X005 4
13	ON--LOOP STACKER SELECT POCKET 3 OFF-DO NOT LOOP STACKER SELECT POCKET 3 *IF SS1 + SS13 ON-TIGHT SIO TIO LOOP STKR 3	F821 IRTN 12-13	X005 5

3.3 HALTS

3.3.1 NORMAL HALTS

F820

IF SENSE SWITCH 5 IS ON, A HALT WILL OCCUR AFTER AN OPERATOR INSTRUCTION, TO MAKE THE PUNCH NOT READY.

IF SENSE SWITCHES 5 AND 8 ARE BOTH ON, A HALT WILL OCCUR AFTER AN OPERATOR INSTRUCTION TO MAKE THE PUNCH NOT OPERATIONAL.

IF SENSE SWITCH 5 IS ON, A HALT WILL OCCUR AFTER AN OPERATOR INSTRUCTION, TO MAKE THE PUNCH OPERATIONAL AND READY.

F820 2540 PUNCH FUNCTION TEST

F821

IF THE STACKER SELECT ROUTINES -12 AND 13- ARE EXECUTED, A HALT WILL OCCUR AT THE START AND COMPLETION OF EACH TEST. THE FIRST HALT ENABLES PREPARING THE PUNCH FOR THE STACKER SELECT TEST AFTER A MESSAGE IS ISSUED TO THE OPERATOR. AT THE COMPLETION OF EACH TEST A MESSAGE IS ISSUED INSTRUCTING THE OPERATOR TO CHECK FOR A STACKER SELECT FAILURE.

F822

A HALT OCCURS AFTER AN OPERATOR INSTRUCTION THAT SAYS - DO NOPRO, EMPTY THE PUNCH STACKERS AND MAKE THE PUNCH READY.

A HALT OCCURS AFTER THE OPERATOR IS INFORMED THAT THE CARDS PUNCHED BY ROUTINE 01 WILL BE VERIFIED IF SECTION SENSE SWITCH 9 IS SET ON.

A HALT OCCURS IF SECTION SENSE SWITCH 9 IS ON, TO ALLOW THE OPERATOR TO REMOVE THE PUNCHED CARDS FROM STACKER P1 AND PUT THEM IN THE READER HOPPER.

A HALT OCCURS IF THE READER BEING USED IS THE LOADER TO ALLOW PROPER HANDLING OF THE TEST DECKS.

3.3.2 ERROR HALTS

HALTS ON ERROR PRINTOUTS ARE STANDARD AS PROVIDED BY MONITOR.

4. PRINTOUTS

4.1 OPERATOR INSTRUCTIONS

NOTE...WHEN INSTRUCTED TO PLACE BLANK CARDS IN HOPPER, PUT IN A MINIMUM OF 300 CARDS.

F820 -RTN BYPASSED-
AND
F821 THE ABOVE MESSAGE WILL OCCUR WHEN A ROUTINE IS BYPASSED.

-PLACE BLANK CARDS IN PUNCH HOPPER MAKE THE PUNCH OPERATIONAL AND READY-

THE ABOVE MESSAGE OCCURS FOR ALL ROUTINES NOT EXPECTING INTERVENTION.

F820 -MAKE THE PUNCH NOT READY-

-MAKE THE PUNCH OPERATIONAL AND READY-

THE ABOVE MESSAGES OCCUR IF SENSE SWITCH 5 IS ON.

-MAKE THE PUNCH NOT OPERATIONAL--OFF LINE-

THE ABOVE MESSAGE IS ISSUED WHEN SECTION SENSE SWITCHES 5 AND 8 ARE ON. PUT THE READER OFF LINE WITH THE C.E. TEST BOX, OR BY TURNING OFF THE 2821 METER SWITCH. THE METER SWITCH SHOULD NOT BE USED IF THE DM1 OUTPUT DEVICE IS ALSO ATTACHED TO THE 2821 ICU.

F820 2540 PUNCH FUNCTION TEST

F821 -SNS SW 11 12 OR 13 ON TO LOOP STKR SEL 1 2 OR 3-WITH ERR STOPS-
-SNS SW 1 WITH ANY OF ABOVE FOR SIO TIO LOOP-NOERR CHECKING-

THE ABOVE MESSAGES GIVE SPECIAL SECTION SENSE SWITCH OPTIONS.

- DO NOPRO, REMOVE ALL CDS FROM PCH STKRS-

THIS MESSAGE IS ISSUED IF SECTION SENSE SWITCH 5 IS ON IN PREPARATION FOR THE STACKER SELECT TESTS. NOPRO MEANS NON-PROCESS RUNOUT.

5 12

- SEE IF CDS PCHED WITH 1 IN P1, 2 IN P2, 3 IN RP3-

THIS MESSAGE IS ISSUED AT THE COMPLETION OF THE 360 AND 1400 COMPATIBILITY STACKER SELECT TESTS, TO ENABLE THE OPERATOR TO DETERMINE IF ANY OF THE CARDS STACKED WENT INTO THE WRONG STACKER. EACH CARD SHOULD HAVE THE 1ST 8 COLUMNS PUNCHED WITH THE NUMBER OF THE STACKER IT SHOULD BE IN.

F822 - DO NOPRO, EMPTY PCH STKRS-

THIS MESSAGE IS ISSUED AT INITIAL EXECUTION OF THE SECTION TO ENABLE THE OPERATOR TO INITIALIZE THIS ROUTINE. THE PURPOSE OF THIS OPERATION IS ONLY FOR SETTING UP ROUTINE 02, WHICH GIVES AN OPTION OF READING THE CARDS LOCATED IN P1 AT COMPLETION OF ROUTINE 01.

- IF DESIRED TO VERIFY THE CDS IN P1, SET SSW 9 ON-

THIS MESSAGE IS ISSUED WHEN ROUTINE 02 STARTS EXECUTING. IF THE SENSE SWITCH IS TURNED ON, FURTHER INSTRUCTIONS ARE GIVEN. IF THE SENSE SWITCH IS LEFT OFF, THE END OF THE TEST OCCURS.

- REMOVE CDS FROM P1 OF PCH AND PUT IN RDR HPR AND MAKE RDR RDY, EOF ON-

THIS MESSAGE IS ISSUED IF THE OPERATOR HAS INDICATED HIS DESIRE TO VERIFY THE CARDS PUNCHED IN THE PUNCH RIPPLE ROUTINE.

- 2 DIAG CHK READS ATTEMPTED - BOTH FAILED-

THIS MESSAGE IS ISSUED FROM ROUTINE 02 WHEN AN ABNORMAL CONDITION EXISTS ON THE DEVICE WHILE OPERATING IN THE I-O HANDLER. STATUS AND OTHER INFORMATION ARE ALSO PRESENTED WITH THIS MESSAGE.

- DIAG CMD XX FAILED-

THE ABOVE MESSAGE IS ISSUED IF EITHER A DIAGNOSTIC CHECK READ -XX OVERLAYED WITH C6- OR A DIAGNOSTIC READ -XX OVERLAYED WITH C2- COMMAND FAILS WHILE BEING ISSUED IN THE I-O HANDLING ROUTINE TO COLLECT INFORMATION ABOUT THE WRITE OPERATION ISSUED BY ROUTINE 01. STATUS AND OTHER INFORMATION WILL ALSO BE INDICATED AND SHOULD BE USED TO DETERMINE THE CAUSE OF THE PROBLEM.

4.2 STATUS MESSAGES

4.2.1 SAMPLE CORRECT PRINTOUT

```
LINE     MESSAGE

 01    - SDO  F820R 08    00135C 00D-
 02    - TST 0370-
 03    - ADR 001BA4 LINK-
 04    - ADR 001182 SIO-
 05    - CAW 001B88-
 06    - CCW 41001831 80000020-
       - CCW 00001831 00000064-
 07    - CC 0 EXP-
 08    - CC 0 ACT-
 09    - CSW 000018C8 08000001 EXP-
 10    - CSW 000018C8 08000001 ACT-
 11    - CSW 00000000 04000000 EXP-
 12    - CSW 00000000 04000000 ACT-
 13    - SNS 00 EXP-
 14    - SNS 00 ACT-
 15    - LOG 00 000000 000000 000000-
 16    - SET SS 0 ON FOR LOOP ON PRESTKR CD OR
       - SS 1 ON FOR LOOP ON STACKED CD-
```

4.2.2 ANALYSIS OF SAMPLE PRINTOUT

LINE **EXPLANATION**

01 THIS IS THE HEADER LINE PRINTED BY DM. IF AN ASTERISK PRECEDES THE -SDO- AN ERROR HAS CAUSED THE MESSAGE PRINTOUT. IF NO ASTERISK IS PRINTED, THE MESSAGE IS A RESULT OF EITHER HAVING THE CORRECT PRINTOUT SWITCH ON OR AN OPERATOR MESSAGE IS TO FOLLOW. ALL LINES THAT FOLLOW THE -SDO- ARE PART OF THAT SAME MESSAGE. THE START OF A NEW MESSAGE IS INDICATED BY ANOTHER -SDO- PRINTOUT. THE -F820R- IS THE SECTION ID NUMBER WHERE -R- REPRESENTS THE REVISION LEVEL OF THE PROGRAM. THE -08- IS THE PROGRAM ROUTINE NUMBER WHILE THE -00D- IS THE ADDRESS OF THE DEVICE UNDER TEST.

02 THIS IS THE TEST NUMBER ASSOCIATED WITH THE MESSAGE. AT THE BEGINNING OF THE PROGRAM LISTING, THERE IS A LIST OF TEST NUMBERS. WITH THE TEST NUMBER IS A SHORT EXPLANATION OF WHAT WAS BEING DONE, AND WHAT SHOULD OCCUR.

03 THIS LINE SHOWS THE ADDRESS FROM WHICH THE I-O HANDLER SUB-ROUTINE WAS ENTERED. ALL I-O COMMANDS ARE ISSUED FROM THIS SUB-ROUTINE, SO IT IS ENTERED MANY TIMES FROM MANY PLACES. TO INSURE THE SPECIFIC I-O OPERATION YOU WANT TO LOOK AT WILL BE THE NEXT ONE PERFORMED, YOU SHOULD RESTART THE PROGRAM WITH A SYSTEM RESET, PSW RESTART, AND ADDRESS STOP AT THE GIVEN ADDRESS.

04 THIS LINE SHOWS THE ADDRESS OF THE START I-O, TEST I-O, OR HALT I-O THAT WAS ISSUED IN THE I-O HANDLER SUB-ROUTINE.

05 THIS LINE SHOWS THE ADDRESS OF THE CCW TO BE ISSUED BY A START I-O COMMAND. IF CCWS ARE CHAINED, THE ADDRESS GIVEN REFERS TO THE FIRST CCW IN THE CHAIN.

06 THIS LINE DISPLAYS THE FIRST CCW. THE FIRST BYTE CONTAINS THE COMMAND CODE. THE NEXT 3 BYTES CONTAIN AN ADDRESS IN STORAGE, WHICH WILL BE USED IF DATA TRANSFER IS PERFORMED. THE NEXT BYTE CONTAINS FLAGS USED BY THE CHANNEL. THE LAST 3 BYTES ARE THE COUNT FIELD. IF CHAINING IS INDICATED IN BYTE 4, ADDITIONAL CCWS WILL BE SHOWN BELOW THIS LINE.

07 THIS LINE SHOWS THE CONDITION CODE EXPECTED, BY THE PROGRAM, IN RESPONSE TO ISSUING THE I-O COMMAND.

08 THIS LINE SHOWS THE ACTUAL CONDITION CODE SET IN RESPONSE TO THE I-O COMMAND.

09 THIS LINE DISPLAYS THE FIRST CSW EXPECTED BY THE PROGRAM. A BIT BY BIT DESCRIPTION OF THE DEVICE STATUS BYTE PORTION OF THE CSW, APPEARS IN THE PROGRAM LISTING, FOLLOWING THE TEST NUMBER DESCRIPTIONS.

10 THIS LINE DISPLAYS THE ACTUAL CSW RECEIVED BY THE PROGRAM.
NOTE...FOR EVERY EXPECTED -EXP- CSW PRINTED OUT THERE SHOULD BE A CORRESPONDING ACTUAL -ACT- CSW PRINTED OUT ON THE NEXT LINE. THE ABSENCE OF A -ACT- CSW PRINTOUT INDICATES A MACHINE FAILURE. A MACHINE FAILURE IS ALSO INDICATED IF THERE ARE -ACT- CSW PRINTOUTS WHEN THERE ARE NONE EXPECTED.

11 THIS LINE WILL APPEAR IF THE PROGRAM EXPECTS MORE THAN ONE CSW.

12 THIS LINE WILL APPEAR IF THE PROGRAM RECEIVED A SECOND CSW.

13 THIS LINE SHOWS THE SENSE BYTE EXPECTED BY THE PROGRAM. A BIT BY BIT DESCRIPTION OF THE 2540 SENSE BYTE APPEARS IN THE PROGRAM LISTING, AFTER THE TEST NUMBER DESCRIPTIONS.

14 THIS LINE SHOWS THE ACTUAL SENSE BYTE RECEIVED BY THE PROGRAM.

15 THIS LINE DISPLAYS THE CPU AND CHANNEL LOGOUT AREA ON MODEL 30 SYSTEMS. IT WILL NOT APPEAR ON ANY OTHER SYSTEM.

16 THIS LINE SHOWS THE SECTION SENSE SWITCH LOOP OPTIONS. IF AN ERROR HAD OCCURRED, AND DM SENSE SWITCH 25 WAS ON, A HALT WOULD NOW OCCUR, TO ALLOW SETTING OF THE SECTION SENSE SWITCHES. TO INSURE THAT YOU WILL LOOP ON THE COMMAND THAT FAILED, YOU SHOULD REQUEST A HALT ON ERROR. SET THE PROPER SENSE SWITCH ON, AND PRESS THE EXTERNAL INTERRUPT KEY TO LOOP.

4.2.3 SAMPLE OF CARD PUNCH ERROR PRINT OUT OF SECTION F822.

THE FOLLOWING MESSAGE IS GIVEN IN SECTION F822 ROUTINE 1, WHEN A PUNCH ERROR IS DETECTED. THIS DATA IS PRINTED IMMEDIATELY BEFORE LINE 16 OF A MESSAGE TYPE OF THE SAME FORMAT AS DESCRIBED IN 4.2.1 OF THIS DESCRIPTION.

```
LINE     MESSAGE
 01    - PUNCH ERR-
 02    - CARD IN PRESTKR STA

 03    -     EXPECTED SHD              BUF
 04    - COL PUNCHES  RD  RD XU XL PAR ADR TRAN

 05    - 07      689  3E  3E  0  1  0   0   0
 06    - 10     T019  41  41  0  1  0   0   0
 07    - 22      T58  4D  4D  0  1  0   0   0
 08    - 55      068  6E  6E  0  1  0   0   0
```

4.2.4 ANALYSIS OF CARD PUNCH ERROR PRINTOUT OF SECTION F822.

LINE 01 — THIS MESSAGE INDICATES THAT A PUNCH ERROR OCCURRED. IT MAY BE DUE TO DIAGNOSTIC READ DATA OR DIAGNOSTIC CHECK READ INFORMATION.

LINE 02 — THIS MESSAGE TELLS WHERE THE CARD IN ERROR IS LOCATED.

LINE 03 — THIS IS THE FIRST PART OF THE HEADER WHICH IS USED TO EXPLAIN THE DATA OF LINES 05 THRU 08. THIS HEADER IS READ VERTICALLY WITH RESPECT TO LINE 04.

LINE 04 — THIS IS THE SECOND LINE OF THE DATA HEADER. AN EXPLANATION OF THE HEADER ABBREVIATIONS OF LINES 03 AND 04 IS AS FOLLOWS-

COL — THIS TELLS WHAT CARD COLUMN HAD AN ERROR.

EXPECTED PUNCHES — THIS TELLS WHAT THE EXPECTED CARD PUNCHES WERE FOR THE DATA IN THE SHD RD COLUMN.

SHD RD — THIS IS THE EXPECTED HEX DATA.

RD — THIS IS THE HEX BYTE WHICH WAS READ FROM THE PUNCH FOR THE INDICATED COLUMN.

XU — THIS IS A BIT IN THE DIAGNOSTIC CHECK RD BYTE FOR THE INDICATED COLUMN THAT WILL BE A 1 OR A 0. IF 1, IT INDICATES THAT THE X UPPER CHECK PLANE WAS LEFT ON.

XL — THIS IS THE X LOWER CHECK BIT. IF IN ERROR IT WILL BE A 1, IF NOT IT WILL BE 0.

PAR — THIS IS A BIT INDICATING A BUFFER PARITY CHECK WHEN 1.

BUF ADR — THIS IS A BIT INDICATING A PUNCH BUFFER ADDRESS CHECK WHEN 1.

TRAN — THIS IS A BIT INDICATING A PUNCH TRANSLATE CHECK WHEN 1.

- PREVIOUS HANGUP DETECTED-

THE ABOVE MESSAGE WILL APPEAR IF A SYSTEM RESET PSW RESTART IS PERFORMED AFTER A HANG UP CONDITION ON AN I-O COMMAND. FOLLOWING THIS LINE WILL BE A PRINTOUT SIMILAR TO THE ABOVE SAMPLE MESSAGE.

5. COMMENTS

5.1 LOOPING

IN SOME CASES, YOU MAY DESIRE TO LOOP ON AN ENTIRE ROUTINE RATHER THAN USE THE SECTION SENSE SWITCH LOOPS PROVIDED. ONE METHOD OF DOING THIS IS TO MANUALLY ENTER THE NUMBER OF THE ROUTINE IN X04C. WHERE X STANDS FOR YOUR RELOCATION ADDRESS. THEN PERFORM A SYSTEM RESET-PSW RESTART, AND THE PROGRAM WILL LOOP ON THE ROUTINE. SENSE SWITCHES MAY BE SET BY MANUALLY ENTERING THE DESIRED BITS.

6. APPENDIX

6.1 2540 COMMAND CODES.

FUNCTION	COMMAND CODE BITS 0 1 2 3	4 5 6 7	HEX CODE
NO OP	0 0 0 0	0 0 1 1	03
TEST I/O	0 0 0 0	0 0 0 0	00
SENSE	X X X X	0 1 0 0	04
RD FD SEL R1	0 0 - X	X X 1 0	02
RD FD SEL R2	0 1 - X	X X 1 0	42
RD FD SEL RP3	1 0 - X	X X 1 0	82
RD NO FD NO SEL	1 1 - X	X X 1 0	C2
FD SEL R1	0 0 1 X	X X 1 1	23
FD SEL R2	0 1 1 X	X X 1 1	63
FD SEL RP3	1 0 1 X	X X 1 1	A3
WR FD SEL P1	0 0 - -	0 X 0 1	01
WR FD SEL P2	0 1 - -	0 X 0 1	41
WR FD SEL RP3	1 0 - -	0 X 0 1	81
WR FD SEL P1 1400 MODE	0 0 - 1	0 X 0 1	11
WR FD SEL P2 1400 MODE	0 1 - 1	0 X 0 1	51
WR FD SEL RP3 1400 MODE	1 0 - 1	0 X 0 1	91

WHERE X IS USED FOR OPTIONAL FEATURES OR DIAGNOSTICS, AND - INDICATES WHERE MODIFIER BITS MAY BE COMBINED.

* WHERE ALL MODIFIER AND OPTIONAL BITS ARE IN THE 0 STATE

6.2 2540 SENSE BYTE INFORMATION.

ONE SENSE BYTE FOR THE 2540

BIT	MEANING	
0	COMMAND REJECT	--------I
1	INTERVENTION REQUIRED	I
2	BUS OUT CHECK	I
3	EQUIPMENT CHECK	I---UNIT CHECK IN STATUS.
4	DATA CHECK	I
5	NOT USED	I
6	UNUSUAL COMMAND SEQUENCE	I
7	NOT USED	--------I

6.3 2540 DIAGNOSTIC INFORMATION

BIT	MEANING	BIT	MEANING
0	NONE	4	X LOWER PLANE
1	NONE	5	PARITY CHECK
2	NONE	6	TRANSLATE CHECK
3	X UPPER PLANE CHECK	7	ADDRESS REGISTER CHECK

LAST PAGE

```
        8203   TITLE
        *
        ***********************************************************************
        * MODIFICATIONS
        *
        * REVISION LEVEL 3 - THIS REVISION DIFFERS FROM VERSION 2 AS FOLLOWS..
        *     1.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE -TEST NUMBERS-.
        *     2.  THE PROGRAM NOW INCLUDES STANDARD ERROR MESSAGE PRINTOUTS.
        *     3.  THE PROGRAM NOW TESTS THE RESPONSE TO ALL VALID COMMANDS
        *         INCLUDING 1400 COMPAT, PFR, AND COLUMN BINARY INDEPENDENT
        *         OF WHAT FEATURES ARE INSTALLED.
        *     4.  THE PROGRAM TESTS THE RESPONSE TO DIAGNOSTIC COMMANDS.
        *     5.  THE PROGRAM TESTS FOR PROPER CHANNEL AND DEVICE STATUS.
        *                                                                     *
        * E.C. PREREQUISITES                                                  *
        *     MACHINE . . . NONE                                              *
        *     PROGRAM . . . NONE                                              *
        *                                                                     *
        * USE DESCRIPTION F820* AT EC 130498, DATED 15 JUN 67  OR LATER.      *
        *                                                                     *
        ***********************************************************************
        * REVISION LEVEL 2 - THIS REVISION DIFFERS FROM VERSION 1 AS FOLLOWS..
        *     1.  THE SENSE SWITCH LOOP OPTIONS IN THE PROGRAM DESCRIPTION HAVE
        *         BEEN CORRECTED TO ALLOW PROPER ACTION.
        ***********************************************************************
        ***********************************************************************
        XF8203 START 4096
001000         USING *,15
        *
        *
        ***********************************************************************
        *                       TEST NUMBER DESCRIPTION
        ***********************************************************************
        ***********************************************************************
        * TEST       DESCRIPTION
        *
        *
        *
        *                         **************
        *                           ROUTINE 01
        *                         **************
        *
        * 0010 - OPERATION ATTEMPTED
        *        A TEST I-O IS ISSUED TO A READY TEST DEVICE.
        *
        *        EXPECTED RESPONSE
        *
        *        EXPECT COND. CODE 0 (COMMAND ACCEPTED)
        *
        *        POSSIBLE FAILURE CAUSES
        *
        *        1. CONDITION CODE 2 INDICATES THE CHANNEL APPEARS TO BE BUSY.
        *        2. CONDITION CODE 3 INDICATES THERE IS NO DEVICE FOR THE
        *           ADDRESS USED.  THE DM UDT ENTRY COULD BE IN ERROR, THE
        *           DEVICE MAY BE OFF LINE, OR IF THE 2821 TWO CHANNEL SWITCH
        *           FEATURE IS INSTALLED, THE PARTITIONING SWITCH FOR THIS
        *           INTERFACE MAY BE DISABLED.
        *        3. IF CONDITION CODE 1 IS SET, THE CSW MUST BE INSPECTED TO
        *           DETERMINE THE CAUSE.  UNIT CHECK MIGHT BE DUE TO NOT READY
        *           DEVICE.  CHANNEL OR DEVICE END INDICATES THAT AN INTERRUPT
        *           WAS PENDING IN THE CHANNEL.  DEVICE OR CONTROL UNIT BUSY
        *           COULD INDICATE DEVICE OR CONTROL UNIT IS RESERVED TO THE
        *           OTHER INTERFACE, IF THE 2 CHANNEL SWITCH FEATURE IS PRESENT
        *
```



```
*
*
*                         **************
*                           ROUTINE 02
*                         **************
*
* 0020 - OPERATION ATTEMPTED
*
*        A SENSE START I-O IS ISSUED TO READY DEVICE.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 (COMMAND ACCEPTED)
*
*        POSSIBLE FAILURE CAUSES
*
*        1. CONDITION CODE 2 COULD BE DUE TO A PENDING CHANNEL END, OR
*           A BUSY CHANNEL.
*        2. IF CONDITION CODE 1 WAS SET, THE CSW MUST BE INSPECTED TO
*           DETERMINE THE CAUSE.  DEVICE END WITH DEVICE BUSY INDICATES
*           A DEVICE END WAS PENDING IN THE DEVICE.
*
*
* 0030 - OPERATION ATTEMPTED
*
*        A TEST I-O TO PENDING CHANNEL AND DEVICE END FROM PREVIOUS
*        SENSE IS ISSUED.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 1 AND CHANNEL END DEVICE END BOTH IN THE CSW
*        FROM THE PREVIOUS SENSE I/O COMMAND.
*
*        POSSIBLE FAILURE CAUSES
*
*        1. CONDITION CODE 2 INDICATES THE CHANNEL IS BUSY.
*        2. FAILURE TO RECEIVE CHANNEL AND DEVICE END COULD INDICATE
*           THE DEVICE FAILED TO PRESENT ENDING STATUS.
*
*
* 0040 - OPERATION ATTEMPTED
*
*        ANOTHER TIO IS GIVEN.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0.  DEVICE SHOULD BE CLEAR OF PENDING
*        INTERRUPTS.
*
*        POSSIBLE FAILURE CAUSES
*
*        1. CONDITION CODE 1 WITH UNIT CHECK IN THE CSW COULD INDICATE
*           A NOT READY DEVICE.  CHANNEL OR DEVICE END INDICATES THE
*           PREVIOUS TIO FAILED TO CLEAR THEM.
*
*                         **************
*                           ROUTINE 03
*                         **************
*
* 0050 - OPERATION ATTEMPTED
*
*        A SENSE START I-O IS ISSUED AND THE SYSTEM ENABLED FOR I-O
*        INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        EXPECT CHANNEL END DEVICE END TOGETHER.
```

```
*
*       POSSIBLE FAILURE CAUSES
*
*       1. FAILURE TO RECEIVE CHANNEL AND DEVICE END INDICATES THAT
*          ENABLING THE CHANNEL FOR I-O INTERRUPTS FAILED TO BRING IN
*          THE DEVICE STATUS.
*
* 0060 - OPERATION ATTEMPTED
*
*       TEST I-O IS ISSUED.
*
*       EXPECTED RESPONSE
*
*       EXPECT COND. CODE 0.  DEVICE SHOULD BE CLEAR OF PENDING
*       INTERRUPTS.
*
*                    **************
*                      ROUTINE 04
*                    **************
*
* 0070 - OPERATION ATTEMPTED
*
*       A NOP SIO IS ISSUED TO READY DEVICE.
*
*       EXPECTED RESPONSE
*
*       EXPECT COND. CODE 1 WITH CHANNEL END DEVICE END STORED IN
*       THE CSW.  NO INTERRUPT SHOULD OCCUR.
*
*                    **************
*                      ROUTINE 05
*                    **************
*
*************************************************************************
*     ROUTINE 05 IS BYPASSED WHEN CORRECT PRINTOUTS ARE BEING OUTPUT
*     BECAUSE THE TEST IS DEPENDENT UPON DEVICE BUSY WITHOUT STACKED
*     INTERRUPTS.
*************************************************************************
*
* 0080 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT -41- IS ISSUED.  THE SYSTEM IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  INTERRUPT DUE
*       TO CHANNEL END SHOULD OCCUR.
*
* 0090 - OPERATION ATTEMPTED
*
*       A TEST I-O IS ISSUED TO A DEVICE WITH CHANNEL END CLEARED, BUT
*       DEVICE END HAS NOT OCCURRED YET.  THE SYSTEM IS THEN ENABLED
*       TO CLEAR THE DEVICE END WHEN IT OCCURS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 1 SHOULD BE SET ON THE TEST I-O.  THE DEVICE BUSY
*       BIT SHOULD BE ON IN THE CSW.  INTERRUPT DUE TO DEVICE END
*       SHOULD NOW OCCUR.
*
* 0100 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT -41- IS ISSUED.  THE SYSTEM IS
*       ENABLED FOR 1 INTERRUPT.
*
```



```
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  INTERRUPT DUE
*       TO CHANNEL END SHOULD OCCUR.
*
* 0110 - OPERATION ATTEMPTED
*
*       A START I-O IS ISSUED TO A DEVICE WITH CHANNEL END CLEARED,
*       BUT DEVICE END HAS NOT OCCURRED YET.  THE SYSTEM IS THEN
*       ENABLED TO CLEAR THE DEVICE END WHEN IT OCCURS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 1 SHOULD BE SET ON THE START I-O.  THE DEVICE BUSY
*       BIT SHOULD BE ON IN THE CSW.  INTERRUPT DUE TO DEVICE END
*       SHOULD NOW OCCUR.
*
* 0120 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT -41- IS ISSUED.  THE SYSTEM IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  INTERRUPT
*       DUE TO CHANNEL END SHOULD OCCUR.
*
* 0130 - OPERATION ATTEMPTED
*
*       A HALT I-O IS ISSUED TO A DEVICE WITH CHANNEL END CLEARED, BUT
*       DEVICE END HAS NOT OCCURRED YET.  THE SYSTEM IS THEN ENABLED
*       TO CLEAR DEVICE END WHEN IT OCCURS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 1 SHOULD BE SET ON THE HALT I-O.  A CSW WITH NO
*       BITS ON SHOULD BE STORED.  INTERRUPT DUE TO DEVICE END SHOULD
*       NOW OCCUR.
*
*                    **************
*                      ROUTINE 06
*                    **************
*
* 0140 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT -41- IS ISSUED.  THE SYSTEM IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  INTERRUPT DUE
*       TO CHANNEL END SHOULD OCCUR.
*
* 0150 - OPERATION ATTEMPTED
*
*       AN INVALID COMMAND -F5- IS ISSUED TO A DEVICE WITH A PENDING
*       DEVICE END.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 1 SHOULD BE SET ON THE START I-O.  CSW STORED
*       SHOULD CONTAIN DEVICE END AND DEVICE BUSY.  NO SENSE BITS
*       SHOULD BE ON.
*
*                    **************
```

```
*                    ROUTINE 07
*                    **********
*
*
* 0160 - OPERATION ATTEMPTED
*        A PUNCH FEED STACKER SELECT -PUNCHING ALL BLANKS- IS ISSUED
*        NO INTERRUPTS ARE CLEARED.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND A CARD SHOULD
*        FEED INTO STACKER 2.
*
* 0170 - OPERATION ATTEMPTED
*
*        ANOTHER PUNCH FEED AND STACKER SELECT IS ISSUED TO THE
*        PENDING CHANNEL END.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 2 BECAUSE THE CHANNEL END OF THE PREVIOUS
*        PUNCH COMMAND WAS NOT CLEARED.
*
* 0180 - OPERATION ATTEMPTED
*
*        A HALT I-O IS ISSUED TO A PENDING CHANNEL END.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0
*
* 0190 - OPERATION ATTEMPTED
*
*        A TEST I-O IS ISSUED TO A PENDING CHANNEL END.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 1 AND CHANNEL END FROM PREVIOUS PUNCH
*        COMMAND TO BE IN THE CSW.
*
* 0200 - OPERATION ATTEMPTED
*
*        A HALT I-O IS ISSUED TO A PENDING DEVICE END.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 1 SHOULD BE SET AND A CSW WITH NO BITS ON STORED.
*
* 0210 - OPERATION ATTEMPTED
*
*        A PUNCH FEED STACKER SELECT START I-O IS ISSUED TO A PENDING
*        DEVICE END.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 1.  CSW SHOULD CONTAIN DEVICE BUSY WITH DEVICE END.
*
* 0220 - OPERATION ATTEMPTED
*
*        A HALT I-O IS ISSUED TO A READY DEVICE.
*
*        EXPECTED RESPONSE
*
```



```
*        COND. CODE 1 SHOULD BE SET AND A CSW WITH NO BITS ON STORED.
*
* 0230 - OPERATION ATTEMPTED
*
*        A TEST I-O IS ISSUED.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0.  DEVICE SHOULD HAVE NO PENDING STATUS.
*
*                    **********
*                    ROUTINE 08
*                    **********
*
* 0240 - OPERATION ATTEMPTED
*        ISSUE A PUNCH FEED STACKER SELECT COMMAND -41-.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 CHANNEL END AND THEN DEVICE END.
*
* 0250 - OPERATION ATTEMPTED
*        ISSUE A DIAGNOSTIC READ COMMAND -C2-.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 WITH CHANNEL END DEVICE END TOGETHER.
*
* 0260 - OPERATION ATTEMPTED
*        ISSUE A DIAGNOSTIC CHECK READ COMMAND -C6-.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 WITH CHANNEL END DEVICE END TOGETHER.
*
*                    **********
*                    ROUTINE 09
*                    **********
*
* 0265 - OPERATION ATTEMPTED
*
*        A DIAGNOSTIC READ COMMAND IS ISSUED FIRST IN ROUTINE 09 TO
*        INITIALIZE THE DEVICE FOR THE REMAINING TESTS IN THIS ROUTINE
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 TO BE SET ON THE START I-O WITH CHANNEL
*        AND DEVICE END RETURNED IN ONE CSW.
*
* 0270 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0280 - OPERATION ATTEMPTED
*
```

```
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
*
* 0290 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0300 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
*
* 0310 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0320 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
*
* 0330 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0340 - OPERATION ATTEMPTED
```



```
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
*
* 0350 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0360 - OPERATION ATTEMPTED
*
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
*
* 0370 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0380 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
*
* 0390 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
```

```
*
* 0400 - OPERATION ATTEMPTED
*
*        A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0410 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0420 - OPERATION ATTEMPTED
*
*        A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0430 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0440 - OPERATION ATTEMPTED
*
*        A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0450 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
```



```
*
*
* 0460 - OPERATION ATTEMPTED
*
*        A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0470 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0480 - OPERATION ATTEMPTED
*
*        A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0490 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0500 - OPERATION ATTEMPTED
*
*        A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0510 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
```

```
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0520 - OPERATION ATTEMPTED
*
*        A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0530 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0540 - OPERATION ATTEMPTED
*
*        A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0550 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0560 - OPERATION ATTEMPTED
*
*        A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0570 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
```



```
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0580 - OPERATION ATTEMPTED
*
*        A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*        ENABLED FOR 1 INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0590 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0595 - OPERATION ATTEMPTED
*
*        A DIAGNOSTIC CHECK READ COMMAND IS ISSUED WITH 1 BYTE
*        REQUESTED.  THIS IS DONE TO SATISFY THE REQUIREMENT THAT
*        A READ MUST FOLLOW A PFR WRITE COMMAND.  IF THIS WAS NOT DONE,
*        COMMAND REJECT WOULD OCCUR FOR ALL FOLLOWING WRITE COMMANDS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  CHANNEL AND
*        DEVICE END SHOULD OCCUR IN ONE CSW.
*
*                        **************
*                          ROUTINE 10
*                        **************
*
* 0600 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0610 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*
* 0620 - OPERATION ATTEMPTED
*
*        A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*        IS ENABLED TWICE FOR INTERRUPTS.
```

```
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0630 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0640 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0650 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*                    **************
*                      ROUTINE 11
*                    **************
*
* 0660 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0670 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0680 - OPERATION ATTEMPTED
```



```
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0690 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0700 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0710 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0720 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0730 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0740 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
```

```
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0750 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0760 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
* 0770 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND IS ISSUED AND 1 BLANK IS SENT.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
*
*                    **************
*                      ROUTINE 12
*                    **************
*
* 0780 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
* 0790 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
```



```
*
*
* 0800 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
*
* 0810 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
*
* 0820 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
* 0830 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
* 0840 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*       TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*       INTERRUPT SHOULD OCCUR.
*
* 0850 - OPERATION ATTEMPTED
*
*       A READ COMMAND IS ISSUED AND 1 BYTE IS READ.  THE CHANNEL IS
*       ENABLED FOR 1 INTERRUPT.
*
*       EXPECTED RESPONSE
*
```

```
*        COND. CODE 0 SHOULD BE SET ON THE START I-O, AND AFTER
*        TRANSFERING 1 BYTE OF DATA, A CHANNEL AND DEVICE END
*        INTERRUPT SHOULD OCCUR.
*
*
* 0860 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0870 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0880 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0890 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0900 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0910 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
```



```
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0920 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0930 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0940 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0950 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0960 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
```

```
*
* 0970 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0980 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 0990 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 1000 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*
* 1010 - OPERATION ATTEMPTED
*
*        A SENSE COMMAND IS ISSUED.  THE CHANNEL IS ENABLED FOR ONE
*        INTERRUPT.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O, AND AFTER TRANSFERING
*        ONE BYTE OF DATA, A CHANNEL AND DEVICE END INTERRUPT SHOULD
*        OCCUR
*
*                    **************
*                      ROUTINE 13
*                    **************
*
*********************************************************************
*   NOTE--THIS ROUTINE IS BYPASSED UNLESS SECTION SENSE SWITCH 5 IS ON.
*********************************************************************
```



```
*
* 1020 - OPERATION ATTEMPTED
*
*        A NOP SIO IS ISSUED TO A NOT READY DEVICE.
*
*        EXPECTED RESPONSE
*
*        EXPECT UNIT CHECK ALONE AND COND. CODE OF 1.  A SENSE IS
*        ISSUED AND INTERVENTION REQUIRED SHOULD BE IN THE SENSE BYTE.
*
*
* 1030 - OPERATION ATTEMPTED
*
*        A TEST I-O IS ISSUED TO A NOT READY DEVICE.
*
*        EXPECTED RESPONSE
*
*        EXPECT UNIT CHECK ALONE AND COND. CODE OF 1.  A SENSE IS
*        ISSUED AND INTERVENTION REQUIRED SHOULD BE IN THE SENSE BYTE.
*
*
* 1040 - OPERATION ATTEMPTED
*
*        ISSUE A HALT I-O TO NOT READY DEVICE.
*
*        EXPECTED RESPONSE
*
*        COND. CODE 1 SHOULD BE SET AND A CSW WITH NO BITS ON STORED.
*
*                    **************
*                      ROUTINE 14
*                    **************
*
*********************************************************************
*   NOTE-THIS ROUTINE BYPASSED UNLESS SECTION SNS SW 5 AND 8 BOTH ON.
*********************************************************************
*
* 1050 - OPERATION ATTEMPTED
*
*        A NOP SIO IS ISSUED TO A NOT AVAILABLE DEVICE. (OFF LINE)
*
*        EXPECTED RESPONSE
*
*        COND. CODE 3 SHOULD BE SET (NOT OPERATIONAL)
*
*
* 1060 - OPERATION ATTEMPTED
*
*        A TEST I-O IS ISSUED TO A NOT AVAILABLE DEVICE. (OFF LINE)
*
*        EXPECTED RESPONSE
*
*        COND. CODE 3 SHOULD BE SET (NOT OPERATIONAL)
*
*
* 1070 - OPERATION ATTEMPTED
*
*        A HALT I-O IS ISSUED TO A NOT AVAILABLE DEVICE. (OFF LINE)
*
*        EXPECTED RESPONSE
*
*        COND. CODE 3 SHOULD BE SET (NOT OPERATIONAL).
*
*
*                    **************
*                      ROUTINE 15
*                    **************
```

```
                         *
                         ************************************************************************
                         *  NOTE--THIS ROUTINE IS BYPASSED UNLESS SECTION SENSE SW 5 IS ON.     *
                         ************************************************************************
                         *
                         * 1080 - OPERATION ATTEMPTED
                         *
                         *        A TEST I-O TO A DEVICE THAT JUST WENT FROM NOT READY TO READY.
                         *
                         *        EXPECTED RESPONSE
                         *
                         *        EXPECT DEVICE END ALONE, WITH A COND. CODE 1.
                         *
                         *
                         *
                         ************************************************************************
                         ********************                                ********************
                         * SECTION PREFACE ********************************** SECTION PREFACE *
                         ********************                                ********************
001000   F8203000        SECNO  DC    XL4'F8203000'       PROGRAM,SECTION AND REVISION NOS.  *
001004   00000000        SNSW   DC    XL4'00'             SECTION SENSE SWITCHES             *
001008   0000                   DC    XL2'00'                                                *
00100A   0000            ICM    DC    XL2'00'             INTERRUPTION CONDITION MASK        *
00100C   00              SDMF   DC    XL1'00'             SECTION DM FLAGS                   *
00100D   01              NIOU   DC    XL1'01'             NUMBER OF UNIT TABLE ENTRYS        *
00100E   C0              FLAG1  DC    X'C0'               EXCLUSIVE CPU                      *
00100F   00              FLAG2  DC    X'00'               I/O INT ARE ERR, EXT INT TO PROG   *
001010   0104000000      INPSW  DC    X'0104000000'       DISABLED, SPVSR STATE, NO PGM MASK *
001015   001760                 DC    AL3(ROUT01)         ADR OF 1ST ROUTINE PREFIX          *
001018   0000000000000000 EXOPSW DC    XL8'0'              SECTION OLD EXTERNAL PSW           *
001020   0000000000000000 SVOPSW DC    XL8'00'             CLEAR ALL OLD PSWS                 *
001028   0000000000000000 PGOPSW DC    XL8'00'             PROGRAM OLD PSW                    *
001030   0000000000000000 MCOPSW DC    XL8'00'             MACHINE CHECK OLD PSW              *
001038   0000000000000000 IOOPSW DC    XL8'00'             I/O OLD PSW                        *
001040   0000000000000000 CSW    DC    XL8'00'             CHANNEL STATUS WORD                *
001048   00000000        CAW    DC    XL4'00'             CAW                                *
00104C   00000000000000000000          DC    XL12'00'            RESERVED FOR DM USE        *
001055   000000
001058   0004000000      EXNPSW DC    X'00040000000'      EXTERNAL NEW PSW                   *
00105D   000000          SRET   DC    XL3'0'              ADR OF EXT INTRPT ROUTINE          *
001060   0000000000000000 SVNPSW DC    XL8'00'             SUPERVISOR NEW PSW                 *
001068   0000000000000000 PGNPSW DC    XL8'00'             PROGRAM NEW PSW                    *
001070   0000000000000000 MCNPSW DC    XL8'00'             MACHINE CHECK NEW PSW              *
001078   01040000        IONPSW DC    XL4'01040000'       I/O NEW PSW                        *
00107C   00001214                DC    AL4(IRETRN)         ADDRESS OF I/O INTRPT ROUTINE      *
001080                           DS    96C                 96 BYTE REG DUMP AREA FOR DM USE   *
0010E0   82              UNIT1  DC    X'82'               UNIT TYPE - 2540 PUNCH
0010E1   00              U1OP   DC    X'00'               OPTIONAL FEATURES BYTE             *
0010E2   8000            U1ADDR DC    X'8000'             FLAGS AND CHAN/UNIT ADDRESS        *
                         ************************************************************************
                         ************************************************************************
                         *                  2540 PUNCH OPTIONAL FEATURES ASSIGNMENT             *
                         ************************************************************************
                         *
                         * UNITITYPE I OPTIONAL FEATURE DIGIT 1   I  OPTIONAL FEATURE DIGIT 2
                         ******I*****I*****************************I**************************
                         *     I     IBIT 0  BIT 1  BIT 2  BIT 3  I BIT 4  BIT 5  BIT 6  BIT 7
                         *     I     IHEX 8  HEX 4  HEX 2  HEX 1  I HEX 8  HEX 4  HEX 2  HEX 1
                         *2540 I 82  I       CARD   PUNCH  51 COL I 1400                2 CHAN
                         *PUNCHI     I       IMAGE  FEED   FEAT.  I COMPAT              SW. ON
                         *     I     I              READ          I FEAT.               2821
                         ******I*****I*****************************I**************************
                         *
                         ************************************************************************
                         ************************************************************************
                         *                  2540 PUNCH DIAGNOSTIC CHECK READ BYTE               *
                         ************************************************************************
```



```
                         *      BIT MEANING
                         *       0    NOT USED
                         *       1    NOT USED
                         *       2    NOT USED
                         *       3    X UPPER CHECK PLANE
                         *       4    X LOWER CHECK PLANE
                         *       5    BUFFER PARITY CHECK
                         *       6    PUNCH TRANSLATE CHECK
                         *       7    PUNCH BUFFER ADDRESS CHECK
                         ************************************************************************
                         ************************************************************************
                         *                        2540 PUNCH SENSE BYTE                         *
                         ************************************************************************
                         *      BIT   MEANING
                         *       0    COMMAND REJECT - INVALID COMMAND ISSUED TO THE PUNCH
                         *       1    INTERVENTION REQUIRED
                         *       2    BUS OUT CHECK - PARITY ERROR
                         *       3    EQUIPMENT CHECK - TRANSLATE CHECK, ADDRESS CHECK,
                         *            DATA REGISTER PARITY ERROR, OR A HOLE COUNT ERROR.
                         *       4    DATA CHECK
                         *       5    OVERRUN - NOT USED
                         *       6    UNUSUAL COMMAND SEQUENCE
                         *       7    NOT USED
                         ************************************************************************
                         ************************************************************************
                         *                        2540 PUNCH STATUS BYTE                        *
                         ************************************************************************
                         *      BIT   MEANING
                         *       0    ATTENTION - NOT USED FOR THE 2540 PUNCH
                         *       1    STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
                         *       2    CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
                         *       3    DEVICE BUSY
                         *       4    CHANNEL END
                         *       5    DEVICE END
                         *       6    UNIT CHECK
                         *       7    UNIT EXCEPTION - NOT USED FOR THE 2540 PUNCH
                         ************************************************************************
                         ************************************************************************
                         *                        PARAMETERS USED TO ENTER                      *
                         *                        THE I-O HANDLER ROUTINE                       *
                         ************************************************************************
                         *      BAL   R11,ISIO              LINK TO I-O HANDLER
                         *      DC    XL2'0000'             CONTROL SWITCHES
                         *      DC    X'0014'               TEST NO. IN DEC EXPRESSED IN HEX
                         *      DC    X'F0'                 EXPECTED COND. CODE
                         *      DC    X'00'                 EXPECTED SENSE DATA
                         *      DC    AL2(ADR-BASE+REG)     ADDR. OF EXPECTED CSW IF NEEDED
                         ************************************************************************
                         ************************************************************************
                         *                        I-O HANDLER CONTROL SWITCHES                  *
                         *                        2 BYTE PARAMETER FOLLOWING BAL                *
                         ************************************************************************
                         * SWITCH     DESCRIPTION
                         *   0  ----  OFF - ISSUE AN I-O COMMAND
                         *            ON  - DO NOT ISSUE AN I-O COMMAND
                         *   1  ----  OFF - ENABLE
                         *            ON  - DO NOT ENABLE
                         *   2  ----  OFF - EXPECT NO INTERRUPT
                         *            ON  - EXPECT AN INTERRUPT
                         *   3  ----  OFF - DO NOT EXPECT 2 INTERRUPTS
                         *            ON  - EXPECT 2 INTERRUPTS
                         *   4  ----  OFF - EXPECT NO CSWS
                         *            ON  - EXPECT A CSW
                         *   5  ----  OFF - DO NOT EXPECT 2 CSWS
                         *            ON  - EXPECT 2 CSWS
                         *   6  ----  OFF - ALWAYS TRY TO ISSUE SENSE
                         *            ON  - SENSE ON UNIT CHECK ONLY
                         *
```

```
                    ***********************************************************************
                    ***********************************************************************
                    *                      SWITCHES USED BY I-O HANDLER
                    ***********************************************************************
                    * SWITCH     DESCRIPTION
                    *    0 ----  OFF - NO HANGUP ON INTERFACE
                    *            ON  - HANGUP OCCURRED
                    *    1 ----  OFF - NO CSWS STORED
                    *            ON  - ONE CSW STORED
                    *    2 ----  OFF - SECOND CSW NOT RECEIVED
                    *            ON  - SECOND CSW RECEIVED
                    *    3 ----  OFF - DID NOT ENABLE
                    *            ON  - ENABLED ONCE
                    *    4 ----  OFF - DID NOT ENABLE TWICE
                    *            ON  - ENABLED TWICE
                    *    5 ----  OFF - NO SENSE DATA RECEIVED
                    *            ON  - SENSE DATA RECEIVED
                    *    6 ----  OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
                    *            ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
                    *    7 ----  OFF - NO ERROR DETECTED
                    *            ON  - AN ERROR WAS DETECTED
                    ***********************************************************************
                    *                  REGISTERS USED IN I-O HANDLER
                    ***********************************************************************
                    *       REG          COMMENTS
                    *        5    USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
                    *             PREVIOUS HANGUP ON INTERFACE DETECTED.
                    *
                    *        8    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
                    *
                    *        9    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
                    *
                    *       10    MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
                    *
                    *       11    MUST BE USED AS LINK REG TO THIS ROUTINE
                    *
                    *       12    MUST CONTAIN DEVICE ADDRESS
                    *
                    ***********************************************************************
0010E4  0000        ISW     DC    XL2'0'
                    ***********************************************************************
                    ***********************************************************************
                    *                   * I-O HANDLER SUB-ROUTINE *
                    ***********************************************************************
0010E6  92 9E F 1AE          IHIO    MVI   ISSUE,X'9E'             SET UP FOR HALT I-O
0010EA  92 C8 F 639                  MVI   IOPT1+25,X'C8'          MOVE -H- TO OPTION MSG.
0010EE  92 C8 F 5A0                  MVI   IOADDR+12,X'C8'
0010F2  92 9E F 164                  MVI   ILOOP,X'9E'
0010F6  47 F0 F 11E                  BC    UNC,IEYEOH              BR. UNCONDITIONAL
0010FA  92 9D F 1AE          ITIO    MVI   ISSUE,X'9D'             SET UP FOR TEST I-O
0010FE  92 9D F 164                  MVI   ILOOP,X'9D'
001102  92 E3 F 639                  MVI   IOPT1+25,X'E3'          MOVE -T- TO OPTION MSG.
001106  92 E3 F 5A0                  MVI   IOADDR+12,X'E3'
00110A  47 F0 F 11E                  BC    UNC,IEYEOH              BR. UNCONDITIONAL
00110E  92 9C F 1AE          ISIO    MVI   ISSUE,X'9C'             SET UP FOR START I-O
001112  92 9C F 164                  MVI   ILOOP,X'9C'
001116  92 E2 F 639                  MVI   IOPT1+25,X'E2'          MOVE -S- TO OPTION MSG.
00111A  92 E2 F 5A0                  MVI   IOADDR+12,X'E2'
00111E  D2 01 F 61C B 002    IEYEOH  MVC   ITSTNO+5(2),2(R11)      SAVE TEST NUMBER
001124  90 AB F 688                  STM   R10,R11,ISLAVE          SAVE REG 10 AND REG 11
001128  90 89 F 560                  STM   R8,R9,ISAVE             SAVE REGS 8 AND 9
00112C  D2 00 F 675 F 003            MVC   RTSV(1),SECNO+3         SAVE RT NO. FOR HANGUP.
001132  50 AD 0 048          GOMAN   ST    R10,HCAW(R13)           STORE COMMAND ADDRESS
001136  92 40 F 6D8                  MVI   PCHAR,C' '               CLEAR WORK AREA.
00113A  D2 4E F 6D9 F 6D8            MVC   PCHAR+1(79),PCHAR       CLEAR WORK AREA.
001140  D7 07 D 040 D 040            XC    HCSW(8,R13),HCSW(R13)
001146  D7 08 E 080 E 080            XC    LOGOUT(12,R14),LOGOUT(R14)
00114C  91 80 B 000                  TM    0(R11),X'80'            CHECK CONTROL SWITCH FOR NO I-O
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001150  47 10 F 1E4                  BC    ALL,INOW                BR. IF ON
001154  91 C0 F 004                  TM    SNSW,X'C0'
001158  47 80 F 1A0                  BC    NONE,JOHN
                    ***********************************************************************
                    *                       SENSE SWITCH LOOPS
                    ***********************************************************************
00115C  91 80 F 004          ITRY1   TM    SNSW,X'80'              CHECK SECTION SENSE SWITCH 0
001160  47 80 F 16C                  BC    NONE,ITRY2              BR. IF OFF
001164  9C 00 C 000          ILOOP   SIO   0(R12)                  SIO, TIO, OR HIO
001168  47 F0 F 15C                  BC    UNC,ITRY1               BR. UNCONDITIONAL
00116C  91 40 F 004          ITRY2   TM    SNSW,X'40'              CHECK SECTION SENSE SWITCH 1
001170  47 80 F 18C                  BC    NONE,IHI                BR. IF OFF
001174  9D 00 C 000          IHANG   TIO   0(R12)                  TEST I-O
001178  47 70 F 15C                  BC    NCC0,ITRY1              BR. IF NOT COND. CODE 0
00117C  91 40 F 004                  TM    SNSW,X'40'              CHECK SECTION SENSE SWITCH 1
001180  47 80 F 18C                  BC    NONE,IHI                BR. IF OFF
001184  9C 00 C 000                  SIO   0(R12)                  START I-O
001188  47 F0 F 174                  BC    UNC,IHANG               BR. UNCONDITIONAL
00118C  58 1E 0 198          IHI     L     R1,WT(14)
001190  88 10 0 003                  SRL   R1,3
001194  9D 00 C 000          GREG    TIO   0(R12)
001198  47 80 F 1A0                  BC    CC0,JOHN
00119C  46 10 F 194                  BCT   R1,GREG
0011A0  D7 01 F 0E4 F 0E4    JOHN    XC    ISW(2),ISW
0011A6  96 80 F 0E4                  OI    ISW,X'80'
0011AA  92 E7 F 58F                  MVI   IACTCC+5,C'X'           MOVE IN A -X-
0011AE  9C 00 C 000          ISSUE   SIO   0(R12)                  I-O COMMAND- SIO, TIO, OR HIO
0011B2  47 80 F 1E0                  BC    CC0,IZERO               BR. IF COND. CODE 0
0011B6  47 40 F 1CE                  BC    CC1,IONE                BR. IF COND. CODE 1
0011BA  47 20 F 1C6                  BC    CC2,ITWO                BR. IF COND. CODE 2
0011BE  92 F3 F 58F                  MVI   IACTCC+5,X'F3'          INDICATE COND. CODE 3
0011C2  47 F0 F 1E4                  BC    UNC,INOW                BR. UNCONDITIONAL
0011C6  92 F2 F 58F          ITWO    MVI   IACTCC+5,X'F2'          INDICATE COND. CODE 2
0011CA  47 F0 F 1E4                  BC    UNC,INOW                BR. UNCONDITIONAL
0011CE  92 F1 F 58F          IONE    MVI   IACTCC+5,X'F1'          INDICATE COND. CODE 1
0011D2  D2 07 F 656 D 040            MVC   ICSW1(8),HCSW(R13)      SAVE CSW
0011D8  96 40 F 0E4                  OI    ISW,X'40'               INDICATE 1 CSW
0011DC  47 F0 F 1E4                  BC    UNC,INOW                BR. UNCONDITIONAL
0011E0  92 F0 F 58F          IZERO   MVI   IACTCC+5,X'F0'          INDICATE COND. CODE 0
0011E4  94 7F F 0E4          INOW    NI    ISW,X'7F'               TURN OFF HANG UP SWITCH
0011E8  91 40 B 000                  TM    0(R11),X'40'            CHECK CONTROL SWITCH FOR NO ENABLE
0011EC  47 10 F 288                  BC    ALL,ISEN                BR. IF ON
0011F0  96 10 F 0E4                  OI    ISW,X'10'               INDICATE ENABLED ONCE
0011F4  58 9E 0 198          IWAIT   L     R9,WT(R14)              LOAD DM WAIT FACTOR
0011F8  88 90 0 003                  SRL   R9,3                    ADJUST
0011FC  96 80 F 0E4                  OI    ISW,X'80'               TURN ON HANG UP SW
001200  80 00 F 673                  SSM   MSK1                    ENABLE
001204  46 90 F 204                  BCT   R9,*                    WAIT
001208  80 00 F 674                  SSM   MSK2                    DISABLE
00120C  94 7F F 0E4                  NI    ISW,X'7F'               TURN OFF HANG SW
001210  47 F0 F 288                  BC    UNC,ISEN                BR. UNCONDITIONAL
                    ***********************************************************************
                    *                  ALL I-O INTERRUPTS RETURN HERE
                    ***********************************************************************
001214  49 C0 F 03A          IRETRN  CH    R12,IOOPSW+2            COMPARE FOR CURRENT I-O ADDRESS
001218  47 60 F 236                  BC    UNEQ,IUIO               BR. IF UNEQUAL
00121C  94 7F F 0E4                  NI    ISW,X'7F'               RESET HANG UP SW
001220  91 40 F 0E4                  TM    ISW,X'40'
001224  47 10 F 266                  BC    ALL,ISV2                BR. IF 1 CSW ALREADY STORED
001228  D2 07 F 656 F 040            MVC   ICSW1(8),HCSW(R15)      SAVE CSW 1
00122E  96 40 F 0E4                  OI    ISW,X'40'               INDICATE 1 CSW STORED
001232  47 F0 F 270                  BC    UNC,INT3                BR. UNCONDITIONAL
001236  D2 07 F 568 F 040    IUIO    MVC   WORK(8),HCSW(R15)
00123C  0A DD                        SVC   X'DD'                   CONVERT ADDRESS
00123E  0003                         DC    AL2(3)
001240  0039                         DC    AL2(IOOPSW+1-SECNO)
001242  067B                         DC    AL2(IUNEX+5-SECNO)
001244  0A D0                        SVC   X'D0'                   PRINT UNEXPECTED INTERRUPT DEVICE
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001246    64                              DC    X'64'              ADDRESS
001247    0B                              DC    X'0B'
001248    F676                            DC    AL2(IUNEX-SECNO+REG)
00124A    D2 02 F 5C6 F 5BF               MVC   IBLAH+1(3),ICSW    MOVE -CSW- TO MESSAGE
001250    92 1A F 413                     MVI   ICNT,X'1A'         ADJUST COUNT
001254    D2 02 F 5DC F 5DF               MVC   IBLAH+23(3),IACT   MOVE -ACT- TO MESSAGE
00125A    45 90 F 3FC                     BAL   R9,ICOUT           BR. TO OUTPUT CSW
00125E    96 02 F 0E4                     OI    ISW,X'02'          INDICATE UIO
001262    47 F0 F 4EE                     BC    UNC,ILOGED         BR. UNCONDITIONAL
001266    D2 07 F 65E F 040       ISV2    MVC   ICSW2(8),HCSW(R15) SAVE CSW 2
00126C    96 20 F 0E4                     OI    ISW,X'20'          INDICATE 2 CSWS STORED
001270    91 10 B 000             INT3    TM    0(R11),X'10'       CHECK CTRL SW FOR 2 INTR EXPECTED
001274    47 80 F 288                     BC    NONE,ISEN          BR. IF NOT
001278    91 08 F 0E4                     TM    ISW,X'08'
00127C    47 10 F 288                     BC    ALL,ISEN           BR. IF ALREADY ENABLED TWICE
001280    96 08 F 0E4                     OI    ISW,X'08'          INDICATE ENABLED TWICE
001284    47 F0 F 1F4                     BC    UNC,IWAIT
001288    91 02 B 000             ISEN    TM    0(R11),X'02'       CHECK CONTROL SWITCH FOR SNS ON UC
00128C    47 80 F 2B0                     BC    NONE,IDOSNS        BR. IF OFF TO ISSUE SENSE
001290    91 40 F 0E4                     TM    ISW,X'40'
001294    47 80 F 306                     BC    NONE,IBSN          BR. IF NO CSW STORED TO BYPASS SENSE
001298    91 02 F 65A                     TM    ICSW1+4,X'02'      CHECK FOR UNIT CHECK
00129C    47 10 F 2B0                     BC    ALL,IDOSNS         IF YES BR. TO ISSUE SENSE
0012A0    91 20 F 0E4                     TM    ISW,X'20'          CHECK FOR SECOND CSW
0012A4    47 80 F 306                     BC    NONE,IBSN          BR. IF NOT TO BYPASS SENSE
0012A8    91 02 F 662                     TM    ICSW2+4,X'02'      CHECK FOR UNIT CHECK
0012AC    47 80 F 306                     BC    NONE,IBSN          BR. IF NOT TO BYPASS SENSE
0012B0    58 9E 0 198             IDOSNS  L     R9,WT(R14)         LOAD DM WAIT FACTOR
0012B4    88 90 0 002                     SRL   R9,2               CUT IT DOWN TO 2.5 SECS.
0012B8    41 80 F 668                     LA    R8,ISENSE          LOAD SENSE COMMAND ADDRESS
0012BC    50 8D 0 048                     ST    R8,HCAW(R13)       STORE IN CAW
0012C0    9C 00 C 000                     SIO   0(R12)             ISSUE SENSE
0012C4    47 70 F 354                     BC    NCC0,INDER         BR. IF NOT ACCEPTED
0012C8    9D 00 C 000             ITIOLP  TIO   0(R12)             TEST I-O
0012CC    47 40 F 2F0                     BC    CC1,ILOKE          BR. IF CSW STORED
0012D0    46 90 F 2C8             ITIC    BCT   R9,ITIOLP
0012D4    47 F0 F 306                     BC    UNC,IBSN           BR. UNCONDITIONAL
0012D8    91 40 F 0E4             INDEX1  TM    ISW,X'40'
0012DC    47 10 F 354                     BC    ALL,INDER          BR. IF CSW STORED
0012E0    47 F0 F 358                     BC    UNC,IDUNCK         BR. UNCONDITIONAL
0012E4    91 20 F 0E4             INDEX2  TM    ISW,X'20'
0012E8    47 10 F 354                     BC    ALL,INDER          BR. IF CSW 2 STORED
0012EC    47 F0 F 358                     BC    UNC,IDUNCK         BR. UNCONDITIONAL
0012F0    95 0C D 044             ILOKE   CLI   HCSW+4(R13),X'0C'  CHECK FOR CE DE ONLY
0012F4    47 70 F 2D0                     BC    NCC0,ITIC          BR. IF NOT
0012F8    96 04 F 0E4                     OI    ISW,X'04'          INDICATE SENSE DATA RECIEVED
0012FC    D5 00 F 5F5 B 005               CLC   IACSNS+5(1),5(R11) COMPARE FOR EXPECTED SENSE
001302    47 60 F 354                     BC    UNEQ,INDER         BR. IF UNEQUAL
001306    D5 00 F 58F B 004       IBSN    CLC   IACTCC+5(1),4(R11) COMPARE FOR EXPECTED COND. CODE
00130C    47 60 F 354                     BC    UNEQ,INDER         BR. IF UNEQUAL
001310    91 08 B 000                     TM    0(R11),X'08'
001314    47 80 F 2D8                     BC    NONE,INOEX1        BR. IF NO CSW EXPECTED
001318    91 40 F 0E4                     TM    ISW,X'40'
00131C    47 80 F 354                     BC    NONE,INDER         BR. IF NO CSW RECIEVED
001320    48 8B 0 006                     LH    R8,6(R11)          LOAD CSW ADDR
001324    40 80 F 32C                     STH   R8,ICCSW1+4        STORE IN COMPARE INSTR.
001328    D5 07 F 656 F 656       ICCSW1  CLC   ICSW1(8),ICSW1     COMPARE FOR EXPECTED CSW
00132E    47 60 F 354                     BC    UNEQ,INDER         BR. IF UNEQUAL
001332    91 04 B 000                     TM    0(R11),X'04'
001336    47 80 F 2E4                     BC    NONE,INOEX2        BR. IF NO CSW 2 EXPECTED
00133A    91 20 F 0E4                     TM    ISW,X'20'
00133E    47 80 F 354                     BC    NONE,INDER         BR. IF NO CSW 2 RECIEVED
001342    41 88 0 008                     LA    R8,8(R8)           UPDATE TO SECOND CSW
001346    40 80 F 34E                     STH   R8,ICCSW2+4
00134A    D5 07 F 65E F 65E       ICCSW2  CLC   ICSW2(8),ICSW2     COMPARE FOR EXPECTED CSW 2
001350    47 80 F 358                     BC    EQ,IDUNCK          BR. IF EQUAL
001354    96 01 F 0E4             INDER   OI    ISW,X'01'          INDICATE AN ERROR
001358    92 64 F 388             IDUNCK  MVI   IFLAG1,X'64'       SET UP FOR ERROR PRINTOUT
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00135C    92 C0 F 52C                     MVI   IFLAG2,X'C0'
001360    91 01 F 0E4                     TM    ISW,X'01'          CHECK FOR A DETECTED ERROR
001364    47 10 F 378                     BC    ALL,IOUTIT         BR. IF ERROR DETECTED
001368    91 01 F 004                     TM    SNSW,X'01'         CHECK SECTION SENSE SWITCH 7
00136C    47 80 F 548                     BC    NONE,ILEAVE        BR. IF OFF
001370    92 24 F 388                     MVI   IFLAG1,X'24'       SET UP FOR CORRECT PRINTOUT
001374    92 80 F 52C                     MVI   IFLAG2,X'80'
001378    D2 01 F 61C B 002       IOUTIT  MVC   ITSTNO+5(2),2(R11) MOVE TEST NUMBER TO PRINT
00137E    0A DD                           SVC   X'DD'              CONVERT TEST NUMBER
001380    0002                            DC    AL2(2)
001382    061C                            DC    AL2(ITSTNO+5-SECNO)
001384    061C                            DC    AL2(ITSTNO+5-SECNO)
001386    0A D0                           SVC   X'D0'              PRINT TEST NUMBER
001388    64                      IFLAG1  DC    X'64'
001389    09                              DC    X'09'
00138A    F617                            DC    AL2(ITSTNO-SECNO+REG)
00138C    41 80 0 004                     LA    R8,4               ADJUST LINK ADDRESS FOR PRINTOUT
001390    1B B8                           SR    R11,R8
001392    50 B0 F 5A8                     ST    R11,ILINK+5
001396    0A DD                           SVC   X'DD'              CONVERT LINK ADDRESS
001398    0003                            DC    AL2(3)
00139A    05A9                            DC    AL2(ILINK+6-SECNO)
00139C    05A8                            DC    AL2(ILINK+5-SECNO)
00139E    0A D0                           SVC   X'D0'              PRINT LINK ADDRESS
0013A0    A0                              DC    X'A0'
0013A1    10                              DC    X'10'
0013A2    F5A3                            DC    AL2(ILINK-SECNO+REG)
0013A4    41 BB 0 004                     LA    R11,4(R11)
0013A8    91 80 B 000                     TM    0(R11),X'80'
0013AC    47 10 F 42A                     BC    ALL,IOCSW          BR. IF NO I-O COMMAND ISSUED
0013B0    0A DD                           SVC   X'DD'              CONVERT I-O ADDRESS
0013B2    0003                            DC    AL2(3)
0013B4    0670                            DC    AL2(IOADR-SECNO)
0013B6    0599                            DC    AL2(IOADDR+5-SECNO)
0013B8    0A D0                           SVC   X'D0'              PRINT I-O ADDRESS
0013BA    A0                              DC    X'A0'
0013BB    0F                              DC    X'0F'
0013BC    F594                            DC    AL2(IOADDR-SECNO+REG)
0013BE    95 9C F 1AE                     CLI   ISSUE,X'9C'        COMPARE FOR SIO COMMAND
0013C2    47 60 F 418                     BC    UNEQ,ICCOUT        BR. IF NOT
0013C6    50 A0 F 5B8                     ST    R10,ICAW+5         STORE CCW ADDR.
0013CA    0A DD                           SVC   X'DD'              CONVERT CAW
0013CC    0003                            DC    AL2(3)
0013CE    05B9                            DC    AL2(ICAW+6-SECNO)
0013D0    05B8                            DC    AL2(ICAW+5-SECNO)
0013D2    0A D0                           SVC   X'D0'              PRINT CAW
0013D4    A0                              DC    X'A0'
0013D5    0B                              DC    X'0B'
0013D6    F5B3                            DC    AL2(ICAW-SECNO+REG)
0013D8    D2 02 F 5C6 F 5C2               MVC   IBLAH+1(3),ICCW    MOVE -CCW- TO MESSAGE
0013DE    92 16 F 413                     MVI   ICNT,X'16'         ADJUST COUNT
0013E2    D2 07 F 568 A 000       ICWOUT  MVC   WORK(8),0(R10)     MOVE CCW TO WORK AREA
0013E8    45 90 F 3FC                     BAL   R9,ICOUT           BR. TO OUTPUT CCW
0013EC    91 C0 A 004                     TM    4(R10),X'C0'       CHECK FOR ANY CHAIN FLAGS
0013F0    47 80 F 418                     BC    NONE,ICCOUT        BR. IF NONE
0013F4    41 AA 0 008                     LA    R10,8(R10)         UPDATE TO NEXT CCW
0013F8    47 F0 F 3E2                     BC    UNC,ICWOUT         BR. UNCONDITIONAL
0013FC    0A DD                   ICOUT   SVC   X'DD'              CONVERT
0013FE    0008                            DC    AL2(8)
001400    0568                            DC    AL2(WORK-SECNO)
001402    0568                            DC    AL2(WORK-SECNO)
001404    D2 07 F 5CA F 568               MVC   IBLAH+5(8),WORK    MOVE TO MESSAGE
00140A    D2 07 F 5D3 F 570               MVC   IBLAH+14(8),WORK+8
001410    0A D0                           SVC   X'D0'              PRINT
001412    A0                              DC    X'A0'
001413    1A                      ICNT    DC    X'1A'
001414    F5C5                            DC    AL2(IBLAH-SECNO+REG)
001416    07 F9                           BCR   UNC,R9             RETURN VIA REG 9
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001418   D2 00 F 585 B 004      ICCOUT MVC   IEXPCC+5(1),4(R11)    MOVE EXP CC TO MESSAGE
00141E   0A DO                         SVC   X'DO'                 PRINT EXPECTED COND. CODE
001420   A0                            DC    X'A0'
001421   0A                            DC    X'0A'
001422   F580                          DC    AL2(IEXPCC-SECNO+REG)
001424   0A DO                         SVC   X'DO'                 PRINT ACTUAL COND. CODE
001426   A0                            DC    X'A0'
001427   0A                            DC    X'0A'
001428   F58A                          DC    AL2(IACTCC-SECNO+REG)
00142A   D2 02 F 5C6 F 5BF      IOCSW  MVC   IBLAH+1(3),ICSW       MOVE -CSW- TO MESSAGE
001430   92 1A F 413                   MVI   ICNT,X'1A'            ADJUST COUNT
001434   91 08 B 000                   TM    0(R11),X'08'
001438   47 80 F 45C                   BC    NONE,IDIDI            BR. IF NO CSW EXPECTED
00143C   D2 02 F 5DC F 5E2             MVC   IBLAH+23(3),IEXP      MOVE -EXP- TO MESSAGE
001442   48 8B 0 006                   LH    R8,6(R11)
001446   40 80 F 456                   STH   R8,ICHNG1+4
00144A   41 88 0 008                   LA    R8,8(R8)
00144E   40 80 F 486                   STH   R8,ICHNG2+4
001452   D2 07 F 568 F 568      ICHNG1 MVC   WORK(8),WORK          MOVE EXPECTED CSW TO WORK AREA
001458   45 90 F 3FC                   BAL   R9,ICOUT              BR. TO OUTPUT EXPECTED CSW
00145C   91 40 F 0E4            IDIDI  TM    ISW,X'40'
001460   47 80 F 474                   BC    NONE,IMORST           BR. IF NO CSW STORED
001464   D2 02 F 5DC F 5DF             MVC   IBLAH+23(3),IACT      MOVE -ACT- TO MESSAGE
00146A   D2 07 F 568 F 656             MVC   WORK(8),ICSW1         MOVE ACTUAL CSW TO WORK AREA
001470   45 90 F 3FC                   BAL   R9,ICOUT              BR. TO OUTPUT ACTUAL CSW
001474   91 04 B 000            IMORST TM    0(R11),X'04'
001478   47 80 F 48C                   BC    NONE,IDID             BR. IF NOT EXPECTING 2 CSWS
00147C   D2 02 F 5DC F 5E2             MVC   IBLAH+23(3),IEXP      MOVE -EXP- TO MESSAGE
001482   D2 07 F 568 F 568      ICHNG2 MVC   WORK(8),WORK          MOVE EXPECTED CSW TO WORK AREA
001488   45 90 F 3FC                   BAL   R9,ICOUT              BR. TO OUTPUT EXPECTED CSW 2
00148C   91 20 F 0E4            IDID   TM    ISW,X'20'
001490   47 80 F 4A4                   BC    NONE,IPAS             BR. IF NO SECOND CSW STORED
001494   D2 02 F 5DC F 5DF             MVC   IBLAH+23(3),IACT      MOVE -ACT- TO MESSAGE
00149A   D2 07 F 568 F 65E             MVC   WORK(8),ICSW2         MOVE CSW TO WORK AREA
0014A0   45 90 F 3FC                   BAL   R9,ICOUT
0014A4   D2 00 F 5EA B 005      IPAS   MVC   IEXSNS+5(1),5(R11)    MOVE EXP SENSE TO MESSAGE
0014AA   91 04 F 0E4                   TM    ISW,X'04'
0014AE   47 80 F 4E6                   BC    NONE,IPASS            BR. IF NO SENSE DATA RECIEVED
0014B2   0A DD                         SVC   X'DD'                 CONVERT EXPECTED SENSE
0014B4   0001                          DC    AL2(1)
0014B6   05EA                          DC    AL2(IEXSNS+5-SECNO)
0014B8   05EA                          DC    AL2(IEXSNS+5-SECNO)
0014BA   0A DO                         SVC   X'DO'                 PRINT EXPECTED SENSE
0014BC   A0                            DC    X'A0'
0014BD   0B                            DC    X'0B'
0014BE   F5E5                          DC    AL2(IEXSNS-SECNO+REG)
0014C0   0A DD                         SVC   X'DD'
0014C2   0001                          DC    AL2(1)
0014C4   05F5                          DC    AL2(IACSNS+5-SECNO)
0014C6   05F5                          DC    AL2(IACSNS+5-SECNO)
0014C8   0A DO                         SVC   X'DO'                 PRINT ACTUAL SENSE DATA
0014CA   A0                            DC    X'A0'
0014CB   0B                            DC    X'0B'
0014CC   F5F0                          DC    AL2(IACSNS-SECNO+REG)
0014CE   95 13 F 003                   CLI   SECNO+3,X'13'         SEE IF IN MANUAL INTERV RTNS.
0014D2   47 A0 F 4E6                   BC    EQHI,IPASS            BR IF YES.
0014D6   95 F4 F 5EA                   CLI   IEXSNS+5,C'4'         SEE IF EXPECTED INTV REQD
0014DA   47 80 F 4E6                   BC    EQ,IPASS              BYPASS INTV REQD MESSAGE
0014DE   95 F4 F 5F5                   CLI   IACSNS+5,C'4'         SEE IF RECEIVED INTV REQD SNS
0014E2   47 80 F 742                   BC    EQ,TELNIM             BR. TO PRINT OUT INTV REQD MESSAGE
0014E6   95 30 E 181            IPASS  CLI   SYSMOD(R14),X'30'     CHECK FOR MODEL 30
0014EA   47 60 F 51A                   BC    UNEQ,ICUIO            BR. IF NOT
0014EE   D2 0B F 568 E 080      ILOGED MVC   WORK(12),LOGOUT(R14)  MOVE LOG OUT TO WORK AREA
0014F4   0A DD                         SVC   X'DD'                 CONVERT
0014F6   000C                          DC    AL2(12)
0014F8   0568                          DC    AL2(WORK-SECNO)
0014FA   0568                          DC    AL2(WORK-SECNO)
0014FC   D2 01 F 600 F 568             MVC   IOLOG+5(2),WORK       MOVE LOG OUT TO MESSAGE
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001502   D2 05 F 603 F 56A              MVC   IOLOG+8(6),WORK+2
001508   D2 05 F 60A F 572              MVC   IOLOG+15(6),WORK+10
00150E   D2 05 F 611 F 57A              MVC   IOLOG+22(6),WORK+18
001514   0A DO                          SVC   X'DO'                 PRINT LOG OUT
001516   A0                             DC    X'A0'
001517   1C                             DC    X'1C'
001518   F5FB                           DC    AL2(IOLOG-SECNO+REG)
00151A   91 02 F 0E4            ICUIO  TM    ISW,X'02'             TEST FOR UNEXPECTED I-O INTERRUPT.
00151E   47 80 F 52A                    BC    NONE,IOPOUT           BR. IF NOT UIO
001522   94 FD F 0E4                    NI    ISW,X'FD'             RESET UIO SWITCH
001526   47 F0 F 1F4                    BC    UNC,IWAIT             BR. UNCONDITIONAL
00152A   0A DO                  IOPOUT SVC   X'DO'                 PRINT LOOP OPTIONS
00152C   C0                     IFLAG2 DC    X'C0'
00152D   36                             DC    X'36'
00152E   F620                           DC    AL2(IOPT1-SECNO+REG)
001530   0A DO                          SVC   X'DO'                 SPACE A LINE
001532   AD                             DC    X'A0'
001533   01                             DC    X'01'
001534   F5A3                           DC    AL2(ILINK-SECNO+REG)
001536   50 AD 0 048                    ST    R10,HCAW(R13)         STORE CAW
00153A   91 C0 F 004                    TM    SNSW,X'C0'            CHECK SECTION SENSE SWITCH 0 AND 1
00153E   47 50 F 15C                    BC    ANY,ITRY1             BR. IF ANY ON
001542   91 80 F 0E4                    TM    ISW,X'80'
001546   07 15                          BCR   ALL,R5                RETURN VIA REG 5 IF HANG UP
001548   91 08 B 000            ILEAVE  TM    0(R11),X'08'
00154C   47 80 F 554                    BC    NONE,IUP              BR. IF NO CSW EXPECTED
001550   41 BB 0 002                    LA    R11,2(R11)            UPDATE LINK ADDRESS FOR RETURN
001554   41 BB 0 006            IUP     LA    R11,6(R11)
001558   98 89 F 560                    LM    R8,R9,ISAVE           RESTORE REGS 8 AND 9
00155C   07 FB                          BCR   UNC,R11               RETURN VIA REG 11
                                *********************************************************************
                                *       I-O HANDLER WORK AREA.
                                *********************************************************************
00155E                                  CNOP  0,8
00155E   07 00                        BCR   0,0
001560    0000000000000000     ISAVE  DC    XL8'0'
001568                         WORK   DS    24C
001580    40C3C34040E740C5E7   IEXPCC DC    C' CC  X EXP'
001589    D7
00158A    40C3C34040E740C1C3   IACTCC DC    C' CC  X ACT'
001593    E3
001594    40C1C4D940E7E7E7E7   IOADDR DC    C' ADR XXXXX XIO'
00159D    E7E740E7C9D6
0015A3    00                           DC    X'00'
0015A4                                 CNOP  0,4
                        0015A3         ORG   *-1
0015A3    40C1C4D940E7E7E7E7   ILINK  DC    C' ADR XXXXX LINK'
0015AC    E7E740D3C9D5D2
0015B3    00                           DC    X'00'
0015B4                                 CNOP  0,4
                        0015B3         ORG   *-1
0015B3    40C3C1E640E7E7E7E7   ICAW   DC    C' CAW XXXXX '
0015BC    E7E740
0015BF    C3E2E6               ICSW   DC    C'CSW'
0015C2    C3C3E6               ICCW   DC    C'CCW'
0015C5    40C3E2E640E7E7E7E7   IBLAH  DC    C' CSW XXXXXXXX XX'
0015CE    E7E7E7E740E7E7
0015D5    E7E7E7E7E7E740C5E7           DC    C'XXXXXX EXP'
0015DE    D7
0015DF    C1C3E3               IACT   DC    C'ACT'
0015E2    C5E7D7               IEXP   DC    C'EXP'
0015E5    40E2D5E240E7E740C5   IEXSNS DC    C' SNS XX EXP'
0015EE    E7D7
0015F0    40E2D5E240E7E740C1   IACSNS DC    C' SNS XX ACT'
0015F9    C3E3
0015FB    40D3D6C740E7E740E7   IOLOG  DC    C' LOG XX XXXXXX X'
001604    E7E7E7E7E740E7
00160B    E7E7E7E7E740E7E7E7           DC    C'XXXXX XXXXXX'
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001614    E7E7E7
001617    40E3E2E340E7E7E7E7   ITSTNO DC    C' TST XXXX'
001620    40E2C5E340E2E240F0   IOPT1  DC    C' SET SS 0 ON FOR'
001629    40D6D540C6D6D9
001630    40D3D6D6D740D6D540           DC    C' LOOP ON XIO, SS'
001639    E7C9D66840E2E2
001640    40F140D6D540C6D6D9           DC    C' 1 ON FOR TIO SI'
001649    40E3C9D640E2C9
001650    D640D3D6D6D7                 DC    C'O LOOP'
001656    0000000000000000     ICSW1  DC    XL8'0'
00165E    0000000000000000     ICSW2  DC    XL8'0'
001668    04 0015F5 0000 0001  ISENSE CCW   X'04',IACSNS+5,X'00',1
001670    0011AE               IOADR  DC    AL3(ISSUE)
001673    FE                   MSK1   DC    X'FE'
001674    01                   MSK2   DC    X'01'
001675    00                   RTSV   DC    X'00'                    SAVE RT NO. FOR HANGUP.
001676    40E4C9D640E7E7E7E7   IUNEX  DC    C' UIO XXXXXX'
00167F    E7E7
001682                                 CNOP  0,8
001682  07 00                      BCR   0,0
001684  07 00                      BCR   0,0
001686  07 00                      BCR   0,0
001688    0000000000000000     ISLAVE DC    XL8'0'                   REGISTER SAVE AREA
                               ********************************************************************************
                               *                          INITIALIZE ROUTINE
                               ********************************************************************************
001690    18 DD                INIT   SR    R13,R13                  ZERO REG 13
001692    91 40 E 196                 TM    406(R14),X'40'           CHECK FOR FORCED PROBLEM STATE
001696    47 80 F 69C                 BC    NONE,NITWIT              BR. IF NOT
00169A    18 DF                       LR    R13,R15                  SET UP FOR PROBLEM STATE
00169C    58 C0 F 0E0          NITWIT L     R12,UNIT1                PUT PCH UNIT TABLE IN 12.
0016A0    54 C0 F 6D4                 N     R12,MOD50                AND OUT ALL BUT ADDRESS.
0016A4    91 80 F 0E4          BLOOP  TM    ISW,X'80'                CHECK FOR HANG UP
0016A8    47 10 F 686                 BC    ALL,HANGUP               BR. IF DETECTED
0016AC    92 03 F F58                 MVI   CCW,X'03'                PUT A NOOP INTO CCW.
0016B0    41 A0 F F58                 LA    R10,CCW
0016B4    07 F4                       BCR   UNC,R4                   RETURN VIA REG 4
0016B6    D2 00 F 003 F 675    HANGUP MVC   SECNO+3(1),RTSV          RESTORE RT NO.
0016BC    0A D0                       SVC   X'D0'                    PRINT
0016BE    64                          DC    X'64'                    -PREVIOUS HANGUP DETECTED-
0016BF    1A                          DC    X'1A'
0016C0    F728                        DC    AL2(HUNG-SECNO+REG)
0016C2    96 01 F 0E4                 OI    ISW,X'01'                SET UP HANG UP SWITCH
0016C6    45 50 F 2B0                 BAL   R5,IDOSNS                BR. TO OUTPUT AVAILABLE INFO
0016CA    92 00 F 0E4                 MVI   ISW,X'00'                RESET HANGUP SWITCH
0016CE    47 F0 F 6A4                 BC    UNC,BLOOP
0016D2                                CNOP  0,4
0016D2  07 00                      BCR   0,0
0016D4    00003FFF             MOD50  DC    X'00003FFF'
0016D8                         PCHAR  DS    80C                      PUNCH WORK AREA
001728    40D7D9C5E5C9D6E4E2   HUNG   DC    C' PREVIOUS HANG U'
001731    40C8C1D5C740E4               DC    C'P DETECTED'
001738    D740C4C5E3C5C3E3C5
001741    C4
                               ********************************************************************************
                               *                       INTERVENTION REQUIRED MESSAGE
                               ********************************************************************************
001742    0A D0                TELHIM SVC   X'D0'                    PRINT A BLANK
001744    80                           DC    X'80'                        ''
001745    01                           DC    X'01'                        ''
001746    FF60                         DC    AL2(BYPASS-SECNO+REG)        ''
001748    0A D0                        SVC   X'D0'                    PRINT OPERATOR INSTRUCTIONS
00174A    A0                           DC    X'A0'                    -PLACE BLANK CARDS
00174B    22                           DC    X'22'                     IN PUNCH HOPPER-
00174C    FFD4                         DC    AL2(PCH4-SECNO+REG)
00174E    0A D0                        SVC   X'D0'                    -MAKE THE PUNCH OPERATIONAL
001750    80                           DC    X'80'                     AND READY-
001751    25                           DC    X'25'
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001752    FFAF                         DC    AL2(PCH3-SECNO+REG)
001754    0A DA                        SVC   X'DA'                    HALT FOR MANUAL INTERVENTION
001756    9D 00 C 000                  TIO   0(R12)                   CLEAR PENDING INTERRUPT
00175A    47 F0 F 132                  BC    UNC,GOMAN
00175E                                 CNOP  0,4
00175E  07 00                      BCR   0,0
                               ********************************************************************************
                               ********************************************************************************
                               * ROUTINE 01- ISSUE A TEST I-O TO AN AVAILABLE AND IDLE DEVICE.
                               *              EXPECT CONDITION CODE 0.
                               ********************************************************************************
001760    01                   ROUT01 DC    X'01'                    ROUTINE NUMBER.
001761    000774                      DC    AL3(ROUT02-SECNO)        ADDRESS OF NEXT ROUTINE.
001764    45 40 F 690                 BAL   R4,INIT                  BR. TO INITIALIZE
001768    45 B0 F 0FA                 BAL   R11,ITIO                 BR. TO ISSUE TIO
00176C    0200                        DC    X'0200'                  CONTROL SWITCHES
00176E    0010                        DC    X'0010'                  T E S T   N U M B E R
001770    F000                        DC    X'F000'                  EXP COND CODE - EXP SENSE
001772    0A D6                       SVC   X'D6'                    ROUTINE EXIT
001774                                CNOP  0,4
                               ********************************************************************************
                               ********************************************************************************
                               * ROUTINE 02- ISSUE A SENSE SIO -04- EXPECT COND. CODE 0 ON THE SIO.
                               *              ISSUE A TIO EXPERT COND. CODE 1 WITH CHANNEL END - DEVICE
                               *              END IN THE CSW.  ISSUE ANOTHER TIO AND EXPECT COND.
                               *              CODE 0.
                               ********************************************************************************
001774    02                   ROUT02 DC    X'02'                    ROUTINE NUMBER.
001775    0007A4                      DC    AL3(ROUT03-SECNO)        ADDRESS OF NEXT ROUTINE
001778    45 40 F 690                 BAL   R4,INIT                  BR. TO INITIALIZE
00177C    92 04 F F58                 MVI   CCW,X'04'                INSURE SENSE CCW
001780    45 B0 F 10E                 BAL   R11,ISIO                 BR. TO ISSUE SENSE
001784    4200                        DC    X'4200'                  CONTROL SWITCHES
001786    0020                        DC    X'0020'                  T E S T   N U M B E R
001788    F000                        DC    X'F000'                  EXP. COND. CODE - EXP. SENSE
00178A    45 B0 F 0FA                 BAL   R11,ITIO                 BR. TO ISSUE TEST I-O
00178E    4A00                        DC    X'4A00'                  CONTROL SWITCHES
001790    0030                        DC    X'0030'                  T E S T   N U M B E R
001792    F100                        DC    X'F100'                  EXP. COND. CODE - EXP. SENSE
001794    FF4C                        DC    AL2(PRDCSW-SECNO+REG)    EXP. ADDRESS OF CSW
001796    45 B0 F 0FA                 BAL   R11,ITIO                 BR. TO ISSUE TEST I-O
00179A    0200                        DC    X'0200'                  CONTROL SWITCHES
00179C    0040                        DC    X'0040'                  T E S T   N U M B E R
00179E    F000                        DC    X'F000'                  EXP. COND. CODE - EXP. SENSE
0017A0    0A D6                       SVC   X'D6'                    ROUTINE EXIT
0017A2                                CNOP  0,4
0017A2  07 00                      BCR   0,0
                               ********************************************************************************
                               ********************************************************************************
                               * ROUTINE 03- ISSUE A SENSE SIO -04-  EXPECT COND. CODE 0 WITH CHANNEL
                               *              END DEVICE END INTERRUPT.  ISSUE TEST I-O EXPECT COND
                               *              CODE 0.
                               ********************************************************************************
0017A4    03                   ROUT03 DC    X'03'                    ROUTINE NUMBER
0017A5    0007C8                      DC    AL3(ROUT04-SECNO)        ADDRESS OF NEXT ROUTINE
0017A8    45 40 F 690                 BAL   R4,INIT                  BR. TO INITIALIZE
0017AC    92 04 F F58                 MVI   CCW,X'04'                INSURE SENSE CCW
0017B0    45 B0 F 10E                 BAL   R11,ISIO                 BR. TO ISSUE SENSE
0017B4    2A00                        DC    X'2A00'                  CONTROL SWITCHES
0017B6    0050                        DC    X'0050'                  T E S T   N U M B E R
0017B8    F000                        DC    X'F000'                  EXP. COND. CODE - EXP. SENSE
0017BA    FF4C                        DC    AL2(PRDCSW-SECNO+REG)    EXP. ADDRESS OF CSW
0017BC    45 B0 F 0FA                 BAL   R11,ITIO                 BR. TO ISSUE TEST I-O
0017C0    0200                        DC    X'0200'                  CONTROL SWITCHES
0017C2    0060                        DC    X'0060'                  T E S T   N U M B E R
0017C4    F000                        DC    X'F000'                  EXP. COND. CODE - EXP. SENSE
0017C6    0A D6                       SVC   X'D6'                    ROUTINE EXIT
0017C8                                CNOP  0,4
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                         ************************************************************************
                         ************************************************************************
                         * ROUTINE 04- ISSUE NOP -03-  EXPECT COND. CODE 1 ON THE START I-O WITH
                         *             CHANNEL END AND DEVICE END STORED IN THE CSW.
                         *             NO INTERRUPT SHOULD OCCUR.
                         ************************************************************************
0017C8   04              ROUT04 DC    X'04'              ROUTINE NUMBER
0017C9   0007E8                 DC    AL3(ROUT05-SECNO)  ADDRESS OF NEXT ROUTINE
0017CC   45 40 F 690            BAL   R4,INIT            BR. TO INITIALIZE
0017D0   92 03 F F58            MVI   CCW,X'03'          INSURE CCW TO PERFORM NO OP.
0017D4   41 A0 F F58            LA    R10,CCW            LOAD NOOP CCW ADDRESS
0017D8   45 B0 F 10E            BAL   R11,ISIO           BR. TO ISSUE START I-O NOOP
0017DC   0A00                   DC    X'0A00'            CONTROL SWITCHES
0017DE   0070                   DC    X'0070'            T E S T   N U M B E R
0017E0   F100                   DC    X'F100'            EXP. COND. CODE - EXP. SENSE
0017E2   FF02                   DC    AL2(NOPCSW-SECNO+REG) EXP. CSW ADDRESS
0017E4   0A D6                  SVC   X'D6'              ROUTINE EXIT
0017E6                          CNOP  0,4
0017E6   07 00                BCR     0,0
                         ************************************************************************
                         ************************************************************************
                         * ROUTINE 05- ISSUE A PUNCH FEED STACKER SELECT POCKET 2 -41-.  ENABLE
                         *             FOR ONE INTERRUPT ONLY.  EXPECT COND. CODE 0 AND CHANNEL
                         *             END IN CSW.
                         *             ISSUE A TEST I-O BEFORE DEVICE END OCCURS.  EXPECT COND.
                         *             CODE 1 WITH DEVICE BUSY ONLY IN THE CSW.  AFTER DEVICE
                         *             BUSY HAS OCCURED EXPECT AN INTERRUPT WITH DEVICE END FROM
                         *             THE INITIAL PUNCH COMMAND.  REPEAT FOR START I-O.  EXPECT
                         *             SAME RESULTS.  REPEAT FOR HALT I-O.  EXPECT COND. CODE 1
                         *             WITH A ZEROED CSW STORED.
                         *
                         *             NOTE-- THIS ROUTINE WILL BE BYPASSED IF SECTION SENSE
                         *                    SWITCH 7 IS ON.
                         ************************************************************************
0017E8   05              ROUT05 DC    X'05'              ROUTINE NUMBER
0017E9   000848                 DC    AL3(ROUT06-SECNO)  ADDRESS OF NEXT ROUTINE
0017EC   91 01 F 004            TM    SNSW,X'01'         TEST SECTION SENSE SWITCH 7
0017F0   47 10 F E4E            BC    ALL,SOLONG         BR. TO BYPASS RTN IF SS 7 IS ON
0017F4   45 40 F 690            BAL   R4,INIT            BR. TO INITIALIZE
0017F8   92 41 F F58            MVI   CCW,X'41'          INSURE PUNCH CCW
0017FC   45 B0 F 10E            BAL   R11,ISIO           BR. TO ISSUE SIO PUNCH
001800   2A00                   DC    X'2A00'            CONTROL SWITCHES
001802   0080                   DC    X'0080'            T E S T   N U M B E R
001804   F000                   DC    X'F000'            EXP. COND CODE - EXP. SENSE
001806   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP. ADDRESS OF CSW
001808   45 B0 F 0FA            BAL   R11,ITIO           BR. TO ISSUE TEST I-O
00180C   3C00                   DC    X'3C00'            CONTROL SWITCHES
00180E   0090                   DC    X'0090'            T E S T   N U M B E R
001810   F100                   DC    X'F100'            EXP. COND. CODE - EXP. SENSE
001812   FF0A                   DC    AL2(DBIZ-SECNO+REG) EXP. CSW ADDRESS
001814   45 B0 F 10E            BAL   R11,ISIO           BR. TO ISSUE SIO PUNCH
001818   2A00                   DC    X'2A00'            CONTROL SWITCHES
00181A   0100                   DC    X'0100'            T E S T   N U M B E R
00181C   F000                   DC    X'F000'            EXP. COND. CODE - EXP. SENSE
00181E   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP. ADDRESS OF CSW
001820   45 B0 F 10E            BAL   R11,ISIO           BR. TO ISSUE START I-O
001824   3C00                   DC    X'3C00'            CONTROL SWITCHES
001826   0110                   DC    X'0110'            T E S T   N U M B E R
001828   F100                   DC    X'F100'            EXP. COND CODE - EXP. SENSE
00182A   FF0A                   DC    AL2(DBIZ-SECNO+REG) EXP. CSW ADDRESS
00182C   45 B0 F 10E            BAL   R11,ISIO           BR. TO ISSUE SIO PUNCH
001830   2A00                   DC    X'2A00'            CONTROL SWITCHES
001832   0120                   DC    X'0120'            T E S T   N U M B E R
001834   F000                   DC    X'F000'            EXP. COND. CODE - EXP. SENSE
001836   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP. ADDRESS OF CSW
001838   45 B0 F 0E6            BAL   R11,IHIO           BR. TO ISSUE HALT I-O
00183C   3C00                   DC    X'3C00'            CONTROL SWITCHES
00183E   0130                   DC    X'0130'            T E S T   N U M B E R
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001840   F100                   DC    X'F100'            EXP. COND. CODE - EXP. SENSE
001842   FF1A                   DC    AL2(CSW0-SECNO+REG) EXP. CSW ADDRESS
001844   0A D6                  SVC   X'D6'              ROUTINE EXIT
001846                          CNOP  0,4
001846   07 00                BCR     0,0
                         ************************************************************************
                         ************************************************************************
                         * ROUTINE 06- ISSUE A PUNCH FEED STACKER SELECT POCKET 2 -41-.  ENABLE
                         *             FOR ONE INTERRUPT ONLY.  EXPECT COND. CODE 0 WITH CHANNEL
                         *             END ONLY IN CSW.
                         *             ISSUE AN INVALID COMMAND BEFORE DEVICE END OCCURS.
                         *             EXPECT COND. CODE 1 WITH DEVICE END AND DEVICE BUSY ONLY
                         *             IN THE CSW.  EXPECT NO SENSE BITS TO BE SET.
                         *             NOTE-- THIS ROUTINE WILL BE BYPASSED IF SECTION SENSE
                         *                    SWITCH 7 IS ON.
                         ************************************************************************
001848   06              ROUT06 DC    X'06'              ROUTINE NUMBER
001849   00088C                  DC    AL3(ROUT07-SECNO)  ADDRESS OF NEXT ROUTINE
00184C   45 40 F 690             BAL   R4,INIT            BR. TO INITIALIZE
001850   91 01 F 004             TM    SNSW,X'01'         TEST SSW 7.
001854   47 10 F E4E             BC    ALL,SOLONG         BR IF ON.
001858   92 41 F F58             MVI   CCW,X'41'          INSURE PUNCH CCW
00185C   45 B0 F 10E             BAL   R11,ISIO           BR. TO ISSUE START I-O
001860   2A00                    DC    X'2A00'            CONTROL SWITCHES
001862   0140                    DC    X'0140'            T E S T   N U M B E R
001864   F000                    DC    X'F000'            EXP. COND. CODE - EXP. SENSE
001866   FF3C                    DC    AL2(PFRCSW-SECNO+REG) EXP. ADDRESS OF CSW
001868   92 F5 F F58             MVI   CCW,X'F5'          SET UP INVALID COMMAND
00186C   58 4E 0 198             L     R4,WT(R14)         SET UP WAIT FACTOR
001870   88 40 0 004             SRL   R4,4               ADJUST WAIT FACTOR
001874   46 40 F 874             BCT   R4,*               WAIT
001878   45 B0 F 10E             BAL   R11,ISIO           BR. TO DO START I-O
00187C   3800                    DC    X'3800'            CONTROL SWITCHES
00187E   0150                    DC    X'0150'            T E S T   N U M B E R
001880   F100                    DC    X'F100'            EXP. COND. CODE - EXP. SENSE
001882   FF2A                    DC    AL2(DBZY-SECNO+REG) EXP. CSW ADDRESS
001884   92 03 F F58             MVI   CCW,X'03'          REPLACE NOOP COMMAND
001888   0A D6                   SVC   X'D6'              ROUTINE EXIT
00188A                           CNOP  0,4
00188A   07 00                 BCR     0,0
                         ************************************************************************
                         ************************************************************************
                         * ROUTINE 07 - A PUNCH AND FEED -41- IS ISSUED.  NO INTERRUPTS ARE
                         *              CLEARED.  THE SAME COMMAND IS ISSUED AGAIN.  EXPECT
                         *              CONDITION CODE 2 DUE TO PENDING CHANNEL END.  ISSUE A
                         *              HALT I-O.  EXPECT CONDITION CODE 0.  ISSUE A TEST I-O
                         *              EXPECT COND. CODE 1, WITH CHANNEL END IN THE CSW.
                         *              ISSUE A HALT I-O.  EXPECT COND. CODE 1 WITH A ZEROED
                         *              CSW STORED.  ISSUE PUNCH AND FEED START I-O AGAIN
                         *              EXPECT COND. CODE 1 WITH DEVICE END AND DEVICE BUSY
                         *              STORED IN THE CSW.  ISSUE HALT I-O.  EXPECT COND. CODE 1
                         *              WITH A ZEROED CSW STORED.  ISSUE TEST I-O.  EXPECT
                         *              COND. CODE 0.
                         ************************************************************************
00188C   07              ROUT07 DC    X'07'              ROUTINE NUMBER
00188D   000900                 DC    AL3(ROUT08-SECNO)  ADDRESS OF NEXT ROUTINE
001890   45 40 F 690             BAL   R4,INIT            BR. TO INITIALIZE
001894   92 41 F F58             MVI   CCW,X'41'          INSURE PUNCH CCW
001898   45 B0 F 10E             BAL   R11,ISIO           BR. TO ISSUE SIO
00189C   4200                    DC    X'4200'            CTRL SWITCHES
00189E   0160                    DC    X'0160'            T E S T   N U M B E R
0018A0   F000                    DC    X'F000'            EXP COND. CODE AND SENSE
0018A2   45 B0 F 10E             BAL   R11,ISIO           BR. TO ISSUE SIO
0018A6   4200                    DC    X'4200'            CTRL SWITCHES
0018A8   0170                    DC    X'0170'            T E S T   N U M B E R
0018AA   F200                    DC    X'F200'            EXP COND. CODE AND SENSE
0018AC   58 9E 0 198             L     R9,WT(R14)         LOAD WAIT FACTOR
001880   88 90 0 004             SRL   R9,4               ADJUST
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0018B4   46 90 F 8B4          BCT   R9,*                LOOP UNTIL COUNT OF ZERO
0018B8   45 B0 F 0E6          BAL   R11,IHIO            BR. TO ISSUE HALT I-O
0018BC   4200                 DC    X'4200'             CTRL SWITCH
0018BE   0180                 DC    X'0180'             T E S T   N U M B E R
0018C0   F000                 DC    X'F000'             EXP COND. CODE AND SENSE
0018C2   45 B0 F 0FA          BAL   R11,ITIO            BR. TO ISSUE TEST I-O
0018C6   4A00                 DC    X'4A00'             CTRL SWITCHES
0018C8   0190                 DC    X'0190'             T E S T   N U M B E R
0018CA   F100                 DC    X'F100'             EXP COND. CODE AND SENSE
0018CC   FF3C                 DC    AL2(PFRCSW-SECNO+REG) EXP. ADDRESS OF CSW
0018CE   45 B0 F 0E6          BAL   R11,IHIO            BR. TO ISSUE HALT I-O
0018D2   4A00                 DC    X'4A00'             CTRL SWITCHES
0018D4   0200                 DC    X'0200'             T E S T   N U M B E R
0018D6   F100                 DC    X'F100'             EXP COND COSE AND SENSE
0018D8   FF1A                 DC    AL2(CSW0-SECNO+REG) EXP CSW ADDRESS
0018DA   45 B0 F 10E          BAL   R11,ISIO            BR. TO ISSUE SIO
0018DE   0800                 DC    X'0800'             CTRL SWITCHES
0018E0   0210                 DC    X'0210'             T E S T   N U M B E R
0018E2   F100                 DC    X'F100'             EXP COND. CODE AND SENSE
0018E4   FF2A                 DC    AL2(DBZY-SECNO+REG) EXP CSW ADDRESS
0018E6   45 B0 F 0E6          BAL   R11,IHIO            BR. TO ISSUE HALT I-O
0018EA   4A00                 DC    X'4A00'             CTRL SWITCHES
0018EC   0220                 DC    X'0220'             T E S T   N U M B E R
0018EE   F100                 DC    X'F100'             EXP COND CODE AND SENSE
0018F0   FF1A                 DC    AL2(CSW0-SECNO+REG) EXP CSW ADDRESS
0018F2   45 B0 F 0FA          BAL   R11,ITIO            BR. TO ISSUE TEST I-O
0018F6   4200                 DC    X'4200'             CTRL SWITCHES
0018F8   0230                 DC    X'0230'             T E S T   N U M B E R
0018FA   F000                 DC    X'F000'             EXP COND CODE AND SENSE
0018FC   0A D6                SVC   X'D6'               ROUTINE EXIT
0018FE                        CNOP  0,4
0018FE   07 00                BCR   0,0
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*********************************************************************************
*********************************************************************************
* ROUTINE 08- ISSUE A PUNCH FEED STACKER SELECT -41- EXPECT COND.
*             CODE 0, WITH CHANNEL END AND DEVICE END IN SEPARATE
*             CSWS.  ISSUE A DIAGNOSTIC READ -C2- EXPECT COND CODE
*             0 WITH CHANNEL AND DEVICE ENDS TOGETHER IN ONE CSW.
*             ISSUE A DIAGNOSTIC CHECK READ -C6- EXPECT SAME RESULTS
*             IN STATUS AS DIAGNOSTIC READ.
*********************************************************************************
001900   08                   ROUT08 DC    X'08'               ROUTINE NUMBER
001901   00093C                      DC    AL3(ROUT09-SECNO)   ADDRESS OF NEXT ROUTINE
001904   45 40 F 690                 BAL   R4,INIT             BR. TO INITIALIZE
001908   92 41 F F58                 MVI   CCW,X'41'           INSURE PUNCH CCW
00190C   45 B0 F 10E                 BAL   R11,ISIO            BR. TO DO START I-O
001910   3E00                        DC    X'3E00'             CONTROL SWITCHES
001912   0240                        DC    X'0240'             T E S T   N U M B E R
001914   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
001916   FF3C                        DC    AL2(PFRCSW-SECNO+REG) EXP. ADDRESS OF CSW
001918   92 C2 F F58                 MVI   CCW,X'C2'           INSURE DIAG READ CCW
00191C   45 B0 F 10E                 BAL   R11,ISIO            BR. TO DO START I-O
001920   2800                        DC    X'2800'             CONTROL SWITCHES
001922   0250                        DC    X'0250'             T E S T   N U M B E R
001924   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
001926   FF4C                        DC    AL2(PRDCSW-SECNO+REG) EXP. ADDRESS OF CSW
001928   92 C6 F F58                 MVI   CCW,X'C6'           INSURE DIAG CHECK READ
00192C   45 B0 F 10E                 BAL   R11,ISIO            BR. TO DO START I-O
001930   2800                        DC    X'2800'             CONTROL SWITCHES
001932   0260                        DC    X'0260'             T E S T   N U M B E R
001934   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
001936   FF4C                        DC    AL2(PRDCSW-SECNO+REG) EXP. ADDRESS OF CSW
001938   0A D6                       SVC   X'D6'               ROUTINE EXIT
00193A                               CNOP  0,4
00193A   07 00                      BCR   0,0
*********************************************************************************
*********************************************************************************
* ROUTINE 09- ISSUE ALL VALID PUNCH FEED READ COMMANDS IF THE FEATURE
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*             IS  N O T  PRESENT ON THE DEVICE.  WHEN PFR FEATURE IS
*             NOT PRESENT AND PFR COMMANDS ARE ISSUED, THE COMMANDS
*             ARE DECODED AS A NORMAL PUNCH FEED STACKER SELECT COMMAND
*             EXPECT COND. CODE 0 ON THE START I-O WITH CHANNEL END
*             AND THEN DEVICE END INTERRUPTS.
*
*             ISSUE ALL VALID PFR READ COMMANDS.  THESE COMMANDS WILL
*             BE DECODED AS A DIAGNOSTIC READ COMMAND.
*             EXPECT COND. CODE 0 WITH CHANNEL END AND DEVICE END
*             TOGETHER.
*             NOTE -- THIS ROUTINE BYPASSED IF PFR FEATURE DEFINED.
*********************************************************************************
00193C   09                   ROUT09 DC    X'09'               ROUTINE NUMBER
00193D   000878                     DC    AL3(ROUT10-SECNO)   ADDRESS OF NEXT ROUTINE
001940   45 40 F 690                 BAL   R4,INIT             BR. TO INITIALIZE
001944   92 C2 F F58                 MVI   CCW,X'C2'           INITIALIZE CCW
001948   45 B0 F 10E                 BAL   R11,ISIO            BR TO ISSUE START I-O
00194C   2A00                        DC    X'2A00'             CTRL SWITCHES.
00194E   0265                        DC    X'0265'             T E S T   N U M B E R
001950   F000                        DC    X'F000'             EXP COND CODE AND SNS.
001952   FF4C                        DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDR.
001954   92 29 F F58                 MVI   CCW,X'29'           INITIALIZE CCW
001958   45 B0 F 10E                 BAL   R11,ISIO            BR. TO ISSUE START I-O
00195C   3E00                        DC    X'3E00'             CTRL SWITCHES
00195E   0270                        DC    X'0270'             T E S T   N U M B E R
001960   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
001962   FF3C                        DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001964   92 C2 F F58                 MVI   CCW,X'C2'           INITIALIZE CCW
001968   45 B0 F 10E                 BAL   R11,ISIO            BR. TO ISSUE START I-O
00196C   2A00                        DC    X'2A00'             CTRL SWITCHES
00196E   0280                        DC    X'0280'             T E S T   N U M B E R
001970   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
001972   FF4C                        DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
001974   92 39 F F58                 MVI   CCW,X'39'           INITIALIZE CCW
001978   45 B0 F 10E                 BAL   R11,ISIO            BR. TO ISSUE START I-O
00197C   3E00                        DC    X'3E00'             CTRL SWITCHES
00197E   0290                        DC    X'0290'             T E S T   N U M B E R
001980   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
001982   FF3C                        DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001984   92 D2 F F58                 MVI   CCW,X'D2'           INITIALIZE CCW
001988   45 B0 F 10E                 BAL   R11,ISIO            BR. TO ISSUE START I-O
00198C   2A00                        DC    X'2A00'             CTRL SWITCHES
00198E   0300                        DC    X'0300'             T E S T   N U M B E R
001990   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
001992   FF4C                        DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
001994   92 69 F F58                 MVI   CCW,X'69'           INITIALIZE CCW
001998   45 B0 F 10E                 BAL   R11,ISIO            BR. TO ISSUE START I-O
00199C   3E00                        DC    X'3E00'             CTRL SWITCHES
00199E   0310                        DC    X'0310'             T E S T   N U M B E R
0019A0   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
0019A2   FF3C                        DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
0019A4   92 E2 F F58                 MVI   CCW,X'E2'           INITIALIZE CCW
0019A8   45 B0 F 10E                 BAL   R11,ISIO            BR. TO ISSUE START I-O
0019AC   2A00                        DC    X'2A00'             CTRL SWITCHES
0019AE   0320                        DC    X'0320'             T E S T   N U M B E R
0019B0   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
0019B2   FF4C                        DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
0019B4   92 79 F F58                 MVI   CCW,X'79'           INITIALIZE CCW
0019B8   45 B0 F 10E                 BAL   R11,ISIO            BR. TO ISSUE START I-O
0019BC   3E00                        DC    X'3E00'             CTRL SWITCHES
0019BE   0330                        DC    X'0330'             T E S T   N U M B E R
0019C0   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
0019C2   FF3C                        DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
0019C4   92 F2 F F58                 MVI   CCW,X'F2'           INITIALIZE CCW
0019C8   45 B0 F 10E                 BAL   R11,ISIO            BR. TO ISSUE START I-O
0019CC   2A00                        DC    X'2A00'             CTRL SWITCHES
0019CE   0340                        DC    X'0340'             T E S T   N U M B E R
0019D0   F000                        DC    X'F000'             EXP. COND. CODE - EXP. SENSE
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0019D2   FF4C
0019D4   92 89 F F58     DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
0019D8   45 B0 F 10E     MVI   CCW,X'89'             INITIALIZE CCW
0019DC   3E00            BAL   R11,ISIO              BR. TO ISSUE START I-O
0019DE   0350            DC    X'3E00'               CTRL SWITCHES
0019E0   F000            DC    X'0350'               T E S T   N U M B E R
0019E2   FF3C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
0019E4   92 CA F F58     DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
0019E8   45 B0 F 10E     MVI   CCW,X'CA'             INITIALIZE CCW
0019EC   2A00            BAL   R11,ISIO              BR. TO ISSUE START I-O
0019EE   0360            DC    X'2A00'               CTRL SWITCHES
0019F0   F000            DC    X'0360'               T E S T   N U M B E R
0019F2   FF4C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
0019F4   92 89 F F58     DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
0019F8   45 B0 F 10E     MVI   CCW,X'89'             INITIALIZE CCW
0019FC   3E00            BAL   R11,ISIO              BR. TO ISSUE START I-O
0019FE   0370            DC    X'3E00'               CTRL SWITCHES
001A00   F000            DC    X'0370'               T E S T   N U M B E R
001A02   FF3C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001A04   92 DA F F58     DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001A08   45 B0 F 10E     MVI   CCW,X'DA'             INITIALIZE CCW
001A0C   2A00            BAL   R11,ISIO              BR. TO ISSUE START I-O
001A0E   0380            DC    X'2A00'               CTRL SWITCHES
001A10   F000            DC    X'0380'               T E S T   N U M B E R
001A12   FF4C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001A14   92 09 F F58     DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
001A18   45 B0 F 10E     MVI   CCW,X'09'             INITIALIZE CCW
001A1C   3E00            BAL   R11,ISIO              BR. TO ISSUE START I-O
001A1E   0390            DC    X'3E00'               CTRL SWITCHES
001A20   F000            DC    X'0390'               T E S T   N U M B E R
001A22   FF3C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001A24   92 EA F F58     DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001A28   45 B0 F 10E     MVI   CCW,X'EA'             INITIALIZE CCW
001A2C   2A00            BAL   R11,ISIO              BR. TO ISSUE START I-O
001A2E   0400            DC    X'2A00'               CTRL SWITCHES
001A30   F000            DC    X'0400'               T E S T   N U M B E R
001A32   FF4C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001A34   92 0D F F58     DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
001A38   45 B0 F 10E     MVI   CCW,X'0D'             INITIALIZE CCW
001A3C   3E00            BAL   R11,ISIO              BR. TO ISSUE START I-O
001A3E   0410            DC    X'3E00'               CTRL SWITCHES
001A40   F000            DC    X'0410'               T E S T   N U M B E R
001A42   FF3C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001A44   92 FA F F58     DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001A48   45 B0 F 10E     MVI   CCW,X'FA'             INITIALIZE CCW
001A4C   2A00            BAL   R11,ISIO              BR. TO ISSUE START I-O
001A4E   0420            DC    X'2A00'               CTRL SWITCHES
001A50   F000            DC    X'0420'               T E S T   N U M B E R
001A52   FF4C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001A54   92 19 F F58     DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
001A58   45 B0 F 10E     MVI   CCW,X'19'             INITIALIZE CCW
001A5C   3E00            BAL   R11,ISIO              BR. TO ISSUE START I-O
001A5E   0430            DC    X'3E00'               CTRL SWITCHES
001A60   F000            DC    X'0430'               T E S T   N U M B E R
001A62   FF3C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001A64   92 C2 F F58     DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001A68   45 B0 F 10E     MVI   CCW,X'C2'             INITIALIZE CCW
001A6C   2A00            BAL   R11,ISIO              BR. TO ISSUE START I-O
001A6E   0440            DC    X'2A00'               CTRL SWITCHES
001A70   F000            DC    X'0440'               T E S T   N U M B E R
001A72   FF4C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001A74   92 1D F F58     DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
001A78   45 B0 F 10E     MVI   CCW,X'1D'             INITIALIZE CCW
001A7C   3E00            BAL   R11,ISIO              BR. TO ISSUE START I-O
001A7E   0450            DC    X'3E00'               CTRL SWITCHES
001A80   F000            DC    X'0450'               T E S T   N U M B E R
001A82   FF3C            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001A84   92 D2 F F58     DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
                         MVI   CCW,X'D2'             INITIALIZE CCW
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001A88   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001A8C   2A00            DC    X'2A00'               CTRL SWITCHES
001A8E   0460            DC    X'0460'               T E S T   N U M B E R
001A90   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001A92   FF4C            DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001A94   92 49 F F58     MVI   CCW,X'49'             INITIALIZE CCW
001A98   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001A9C   3E00            DC    X'3E00'               CTRL SWITCHES
001A9E   0470            DC    X'0470'               T E S T   N U M B E R
001AA0   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001AA2   FF3C            DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001AA4   92 E2 F F58     MVI   CCW,X'E2'             INITIALIZE CCW
001AA8   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001AAC   2A00            DC    X'2A00'               CTRL SWITCHES
001AAE   0480            DC    X'0480'               T E S T   N U M B E R
001AB0   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001AB2   FF4C            DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001AB4   92 4D F F58     MVI   CCW,X'4D'             INITIALIZE CCW
001AB8   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001ABC   3E00            DC    X'3E00'               CTRL SWITCHES
001ABE   0490            DC    X'0490'               T E S T   N U M B E R
001AC0   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001AC2   FF3C            DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001AC4   92 F2 F F58     MVI   CCW,X'F2'             INITIALIZE CCW
001AC8   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001ACC   2A00            DC    X'2A00'               CTRL SWITCHES
001ACE   0500            DC    X'0500'               T E S T   N U M B E R
001AD0   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001AD2   FF4C            DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001AD4   92 59 F F58     MVI   CCW,X'59'             INITIALIZE CCW
001AD8   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001ADC   3E00            DC    X'3E00'               CTRL SWITCHES
001ADE   0510            DC    X'0510'               T E S T   N U M B E R
001AE0   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001AE2   FF3C            DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001AE4   92 CA F F58     MVI   CCW,X'CA'             INITIALIZE CCW
001AE8   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001AEC   2A00            DC    X'2A00'               CTRL SWITCHES
001AEE   0520            DC    X'0520'               T E S T   N U M B E R
001AF0   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001AF2   FF4C            DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001AF4   92 5D F F58     MVI   CCW,X'5D'             INITIALIZE CCW
001AF8   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001AFC   3E00            DC    X'3E00'               CTRL SWITCHES
001AFE   0530            DC    X'0530'               T E S T   N U M B E R
001B00   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001B02   FF3C            DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001B04   92 DA F F58     MVI   CCW,X'DA'             INITIALIZE CCW
001B08   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001B0C   2A00            DC    X'2A00'               CTRL SWITCHES
001B0E   0540            DC    X'0540'               T E S T   N U M B E R
001B10   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001B12   FF4C            DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
001B14   92 8D F F58     MVI   CCW,X'8D'             INITIALIZE CCW
001B18   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001B1C   3E00            DC    X'3E00'               CTRL SWITCHES
001B1E   0550            DC    X'0550'               T E S T   N U M B E R
001B20   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001B22   FF3C            DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001B24   92 EA F F58     MVI   CCW,X'EA'             INITIALIZE CCW
001B28   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001B2C   2A00            DC    X'2A00'               CTRL SWITCHES
001B2E   0560            DC    X'0560'               T E S T   N U M B E R
001B30   F000            DC    X'F000'               EXP. COND. CODE - EXP. SENSE
001B32   FF4C            DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
001B34   92 99 F F58     MVI   CCW,X'99'             INITIALIZE CCW
001B38   45 B0 F 10E     BAL   R11,ISIO              BR. TO ISSUE START I-O
001B3C   3E00            DC    X'3E00'               CTRL SWITCHES
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001B3E   0570                    DC    X'0570'              T E S T   N U M B E R
001B40   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001B42   FF3C                    DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001B44   92 FA F F58             MVI   CCW,X'FA'            INITIALIZE CCW
001B48   45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001B4C   2A00                    DC    X'2A00'              CTRL SWITCHES
001B4E   0580                    DC    X'0580'              T E S T   N U M B E R
001B50   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001B52   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS
001B54   92 9D F F58             MVI   CCW,X'9D'            INITIALIZE CCW
001B58   45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001B5C   3E00                    DC    X'3E00'              CTRL SWITCHES
001B5E   0590                    DC    X'0590'              T E S T   N U M B E R
001B60   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001B62   FF3C                    DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001B64   92 C6 F F58             MVI   CCW,X'C6'            MOVE A CHK RD CMD INTO CCW.
001B68   45 B0 F 10E             BAL   R11,ISIO             BR TO ISSUE START I-O
001B6C   2A00                    DC    X'2A00'              CTRL SWITCHES.
001B6E   0595                    DC    X'0595'              T E S T   N U M B E R
001B70   F000                    DC    X'F000'              EXP COND CODE AND SNS.
001B72   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP CSW ADDRESS.
001B74   0A D6           EXIT10 SVC   X'D6'                 ROUTINE EXIT
001B76                           CNOP  0,4
001B76   07 00                   BCR   0,0
*
*********************************************************************
* ROUTINE 10 ISSUE ALL VALID COLUMN BINARY COMMANDS TO THE PUNCH.
*            IF THE COLUMN BINARY FEATURE IS  N O T  PRESENT ON THE
*            DEVICE, THE COLUMN BINARY COMMANDS WILL DECODE AS A
*            NORMAL PUNCH FEED STACKER SELECT COMMAND.
*            EXPECT COND. CODE 0 ON THE START I-O WITH CHANNEL END AND
*            THEN DEVICE END INTERRUPTS.
*********************************************************************
001B78   10              ROUT10 DC    X'10'                ROUTINE NUMBER
001B79   000BE4                 DC    AL3(ROUT11-SECNO)    ADDRESS OF NEXT ROUTINE
001B7C   45 40 F 690            BAL   R4,INIT              BR. TO INITIALIZE
001B80   92 21 F F58            MVI   CCW,X'21'            INITIALIZE CCW
001B84   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001B88   3E00                   DC    X'3E00'              CTRL SWITCHES
001B8A   0600                   DC    X'0600'              T E S T   N U M B E R
001B8C   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001B8E   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001B90   92 31 F F58            MVI   CCW,X'31'            INITIALIZE CCW
001B94   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001B98   3E00                   DC    X'3E00'              CTRL SWITCHES
001B9A   0610                   DC    X'0610'              T E S T   N U M B E R
001B9C   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001B9E   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001BA0   92 61 F F58            MVI   CCW,X'61'            INITIALIZE CCW
001BA4   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001BA8   3E00                   DC    X'3E00'              CTRL SWITCHES
001BAA   0620                   DC    X'0620'              T E S T   N U M B E R
001BAC   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001BAE   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001BB0   92 71 F F58            MVI   CCW,X'71'            INITIALIZE CCW
001BB4   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001BB8   3E00                   DC    X'3E00'              CTRL SWITCHES
001BBA   0630                   DC    X'0630'              T E S T   N U M B E R
001BBC   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001BBE   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001BC0   92 A1 F F58            MVI   CCW,X'A1'            INITIALIZE CCW
001BC4   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001BC8   3E00                   DC    X'3E00'              CTRL SWITCHES
001BCA   0640                   DC    X'0640'              T E S T   N U M B E R
001BCC   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001BCE   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001BD0   92 B1 F F58            MVI   CCW,X'B1'            INITIALIZE CCW
001BD4   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
```



```
001BD8   3E00                    DC    X'3E00'              CTRL SWITCHES
001BDA   0650                    DC    X'0650'              T E S T   N U M B E R
001BDC   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001BDE   FF3C                    DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001BE0   0A D6                   SVC   X'D6'                ROUTINE EXIT
001BE2                           CNOP  0,4
001BE2   07 00                   BCR   0,0
*
*********************************************************************
* ROUTINE 11 ISSUE ALL VALID 1400 PUNCH COMPATIBILITY COMMANDS TO
*            THE PUNCH.  IF THE 1400 PUNCH COMPATIBILITY IS  N O T
*            INSTALLED THE COMMANDS WILL DECODE AS NORMAL PUNCH FEED
*            STACKER SELECT COMMANDS.
*            EXPECT COND. CODE 0 ON THE START I-O WITH CHANNEL END AND
*            THEN DEVICE END INTERRUPTS.
*            ISSUE ALL VALID NORMAL PUNCH FEED STACKER SELECT COMMANDS
*            TO THE PUNCH.  EXPECT SAME RESULTS AS ABOVE.
*********************************************************************
001BE4   11              ROUT11 DC    X'11'                ROUTINE NUMBER
001BE5   000CAC                 DC    AL3(ROUT12-SECNO)    ADDRESS OF NEXT ROUTINE
001BE8   92 11 F F58            MVI   CCW,X'11'            INITIALIZE CCW
001BEC   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001BF0   3E00                   DC    X'3E00'              CTRL SWITCHES
001BF2   0660                   DC    X'0660'              T E S T   N U M B E R
001BF4   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001BF6   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001BF8   92 15 F F58            MVI   CCW,X'15'            INITIALIZE CCW
001BFC   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001C00   3E00                   DC    X'3E00'              CTRL SWITCHES
001C02   0670                   DC    X'0670'              T E S T   N U M B E R
001C04   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001C06   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001C08   92 51 F F58            MVI   CCW,X'51'            INITIALIZE CCW
001C0C   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001C10   3E00                   DC    X'3E00'              CTRL SWITCHES
001C12   0680                   DC    X'0680'              T E S T   N U M B E R
001C14   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001C16   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001C18   92 55 F F58            MVI   CCW,X'55'            INITIALIZE CCW
001C1C   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001C20   3E00                   DC    X'3E00'              CTRL SWITCHES
001C22   0690                   DC    X'0690'              T E S T   N U M B E R
001C24   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001C26   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001C28   92 91 F F58            MVI   CCW,X'91'            INITIALIZE CCW
001C2C   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001C30   3E00                   DC    X'3E00'              CTRL SWITCHES
001C32   0700                   DC    X'0700'              T E S T   N U M B E R
001C34   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001C36   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001C38   92 95 F F58            MVI   CCW,X'95'            INITIALIZE CCW
001C3C   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001C40   3E00                   DC    X'3E00'              CTRL SWITCHES
001C42   0710                   DC    X'0710'              T E S T   N U M B E R
001C44   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001C46   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001C48   92 01 F F58            MVI   CCW,X'01'            INITIALIZE CCW
001C4C   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001C50   3E00                   DC    X'3E00'              CTRL SWITCHES
001C52   0720                   DC    X'0720'              T E S T   N U M B E R
001C54   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001C56   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
001C58   92 05 F F58            MVI   CCW,X'05'            INITIALIZE CCW
001C5C   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O
001C60   3E00                   DC    X'3E00'              CTRL SWITCHES
001C62   0730                   DC    X'0730'              T E S T   N U M B E R
001C64   F000                   DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001C66   FF3C                   DC    AL2(PFRCSW-SECNO+REG) EXP CSW ADDRESS
```

```
001C68    92 41 F F58          MVI   CCW,X'41'              INITIALIZE CCW
001C6C    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001C70    3E00                 DC    X'3E00'                CTRL SWITCHES
001C72    0740                 DC    X'0740'                T E S T    N U M B E R
001C74    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001C76    FF3C                 DC    AL2(PFRCSW-SECNO+REG)  EXP CSW ADDRESS
001C78    92 45 F F58          MVI   CCW,X'45'              INITIALIZE CCW
001C7C    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001C80    3E00                 DC    X'3E00'                CTRL SWITCHES
001C82    0750                 DC    X'0750'                T E S T    N U M B E R
001C84    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001C86    FF3C                 DC    AL2(PFRCSW-SECNO+REG)  EXP CSW ADDRESS
001C88    92 81 F F58          MVI   CCW,X'81'              INITIALIZE CCW
001C8C    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001C90    3E00                 DC    X'3E00'                CTRL SWITCHES
001C92    0760                 DC    X'0760'                T E S T    N U M B E R
001C94    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001C96    FF3C                 DC    AL2(PFRCSW-SECNO+REG)  EXP CSW ADDRESS
001C98    92 85 F F58          MVI   CCW,X'85'              INITIALIZE CCW
001C9C    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001CA0    3E00                 DC    X'3E00'                CTRL SWITCHES
001CA2    0770                 DC    X'0770'                T E S T    N U M B E R
001CA4    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001CA6    FF3C                 DC    AL2(PFRCSW-SECNO+REG)  EXP CSW ADDRESS
001CA8    0A D6                SVC   X'D6'                  ROUTINE EXIT
001CAA                         CNOP  0,4
001CAA    07 00                BCR   0,0
```

```
*
*****************************************************************************
* ROUTINE 12-ISSUE ALL VALID DIAGNOSTIC CHECK READ COMMANDS TO THE
*           PUNCH.  EXPECT COND. CODE 0 ON THE START I-O WITH
*           CHANNEL END AND DEVICE END INTERRUPT TOGETHER.
*           ISSUE ALL VALID SENSE COMMANDS TO THE PUNCH.  EXPECT
*           COND. CODE 0 ON THE START I-O WITH CHANNEL END DEVICE
*           END INTERRUPT TOGETHER.
*           ISSUE ALL VALID -2 CHANNEL SWITCH FEATURE- COMMANDS TO THE
*           PUNCH ONLY IF -2 CHAN. SW. FEATURE-  IS  N O T  INSTALLED.
*           IF THE 2 CHAN. SW. FEATURE IS NOT INSTALLED, THE COMMANDS
*           WILL DECODE AS SENSE COMMANDS.  EXPECT COND. CODE 0 ON THE
*           START I-O WITH CHANNEL END DEVICE END INTERRUPT TOGETHER.
*****************************************************************************
```

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001CAC    12                   ROUT12 DC    X'12'                  ROUTINE NUMBER
001CAD    000E3C                      DC    AL3(ROUT13-SECNO)      ADDRESS OF NEXT ROUTINE
001CB0    92 C6 F F58                 MVI   CCW,X'C6'              INITIALIZE CCW
001CB4    45 B0 F 10E                 BAL   R11,ISIO               BR. TO ISSUE START I-O
001CB8    2A00                        DC    X'2A00'                CTRL SWITCHES
001CBA    0780                        DC    X'0780'                T E S T    N U M B E R
001CBC    F000                        DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001CBE    FF4C                        DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001CC0    92 D6 F F58                 MVI   CCW,X'D6'              INITIALIZE CCW
001CC4    45 B0 F 10E                 BAL   R11,ISIO               BR. TO ISSUE START I-O
001CC8    2A00                        DC    X'2A00'                CTRL SWITCHES
001CCA    0790                        DC    X'0790'                T E S T    N U M B E R
001CCC    F000                        DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001CCE    FF4C                        DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001CD0    92 E6 F F58                 MVI   CCW,X'E6'              INITIALIZE CCW
001CD4    45 B0 F 10E                 BAL   R11,ISIO               BR. TO ISSUE START I-O
001CD8    2A00                        DC    X'2A00'                CTRL SWITCHES
001CDA    0800                        DC    X'0800'                T E S T    N U M B E R
001CDC    F000                        DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001CDE    FF4C                        DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001CE0    92 F6 F F58                 MVI   CCW,X'F6'              INITIALIZE CCW
001CE4    45 B0 F 10E                 BAL   R11,ISIO               BR. TO ISSUE START I-O
001CE8    2A00                        DC    X'2A00'                CTRL SWITCHES
001CEA    0810                        DC    X'0810'                T E S T    N U M B E R
001CEC    F000                        DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001CEE    FF4C                        DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001CF0    92 CE F F58                 MVI   CCW,X'CE'              INITIALIZE CCW
```



```
001CF4    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001CF8    2A00                 DC    X'2A00'                CTRL SWITCHES
001CFA    0820                 DC    X'0820'                T E S T    N U M B E R
001CFC    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001CFE    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001D00    92 DE F F58          MVI   CCW,X'DE'              INITIALIZE CCW
001D04    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001D08    2A00                 DC    X'2A00'                CTRL SWITCHES
001D0A    0830                 DC    X'0830'                T E S T    N U M B E R
001D0C    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001D0E    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001D10    92 EE F F58          MVI   CCW,X'EE'              INITIALIZE CCW
001D14    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001D18    2A00                 DC    X'2A00'                CTRL SWITCHES
001D1A    0840                 DC    X'0840'                T E S T    N U M B E R
001D1C    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001D1E    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001D20    92 FE F F58          MVI   CCW,X'FE'              INITIALIZE CCW
001D24    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001D28    2A00                 DC    X'2A00'                CTRL SWITCHES
001D2A    0850                 DC    X'0850'                T E S T    N U M B E R
001D2C    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001D2E    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001D30    92 04 F F58          MVI   CCW,X'04'              INITIALIZE CCW
001D34    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001D38    2A00                 DC    X'2A00'                CTRL SWITCHES
001D3A    0860                 DC    X'0860'                T E S T    N U M B E R
001D3C    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001D3E    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001D40    92 24 F F58          MVI   CCW,X'24'              INITIALIZE CCW
001D44    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001D48    2A00                 DC    X'2A00'                CTRL SWITCHES
001D4A    0870                 DC    X'0870'                T E S T    N U M B E R
001D4C    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001D4E    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001D50    92 44 F F58          MVI   CCW,X'44'              INITIALIZE CCW
001D54    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001D58    2A00                 DC    X'2A00'                CTRL SWITCHES
001D5A    0880                 DC    X'0880'                T E S T    N U M B E R
001D5C    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001D5E    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001D60    92 64 F F58          MVI   CCW,X'64'              INITIALIZE CCW
001D64    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001D68    2A00                 DC    X'2A00'                CTRL SWITCHES
001D6A    0890                 DC    X'0890'                T E S T    N U M B E R
001D6C    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001D6E    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001D70    92 84 F F58          MVI   CCW,X'84'              INITIALIZE CCW
001D74    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001D78    2A00                 DC    X'2A00'                CTRL SWITCHES
001D7A    0900                 DC    X'0900'                T E S T    N U M B E R
001D7C    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001D7E    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001D80    92 A4 F F58          MVI   CCW,X'A4'              INITIALIZE CCW
001D84    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001D88    2A00                 DC    X'2A00'                CTRL SWITCHES
001D8A    0910                 DC    X'0910'                T E S T    N U M B E R
001D8C    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001D8E    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001D90    92 C4 F F58          MVI   CCW,X'C4'              INITIALIZE CCW
001D94    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001D98    2A00                 DC    X'2A00'                CTRL SWITCHES
001D9A    0920                 DC    X'0920'                T E S T    N U M B E R
001D9C    F000                 DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001D9E    FF4C                 DC    AL2(PRDCSW-SECNO+REG)  EXP. CSW ADDRESS
001DA0    92 E4 F F58          MVI   CCW,X'E4'              INITIALIZE CCW
001DA4    45 B0 F 10E          BAL   R11,ISIO               BR. TO ISSUE START I-O
001DA8    2A00                 DC    X'2A00'                CTRL SWITCHES
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001DAA   0930                    DC    X'0930'              T E S T   N U M B E R
001DAC   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001DAE   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001DB0   91 01 F 0E1             TM    U1OP,X'01'           TEST FOR  2 CHAN SW. FEAT.
001DB4   47 10 F E38             BC    ALL,DONRTN           BR. TO EXIT IF 2 CHAN SW PRESENT
001DB8   92 F4 F F58             MVI   CCW,X'F4'            INITIALIZE CCW
001DBC   45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001DC0   2A00                    DC    X'2A00'              CTRL SWITCHES
001DC2   0940                    DC    X'0940'              T E S T   N U M B E R
001DC4   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001DC6   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001DC8   92 34 F F58             MVI   CCW,X'34'            INITIALIZE CCW
001DCC   45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001DD0   2A00                    DC    X'2A00'              CTRL SWITCHES
001DD2   0950                    DC    X'0950'              T E S T   N U M B E R
001DD4   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001DD6   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001DD8   92 54 F F58             MVI   CCW,X'54'            INITIALIZE CCW
001DDC   45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001DE0   2A00                    DC    X'2A00'              CTRL SWITCHES
001DE2   0960                    DC    X'0960'              T E S T   N U M B E R
001DE4   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001DE6   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001DE8   92 74 F F58             MVI   CCW,X'74'            INITIALIZE CCW
001DEC   45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001DF0   2A00                    DC    X'2A00'              CTRL SWITCHES
001DF2   0970                    DC    X'0970'              T E S T   N U M B E R
001DF4   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001DF6   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001DF8   92 94 F F58             MVI   CCW,X'94'            INITIALIZE CCW
001DFC   45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001E00   2A00                    DC    X'2A00'              CTRL SWITCHES
001E02   0980                    DC    X'0980'              T E S T   N U M B E R
001E04   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001E06   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001E08   92 B4 F F58             MVI   CCW,X'B4'            INITIALIZE CCW
001E0C   45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001E10   2A00                    DC    X'2A00'              CTRL SWITCHES
001E12   0990                    DC    X'0990'              T E S T   N U M B E R
001E14   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001E16   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001E18   92 D4 F F58             MVI   CCW,X'D4'            INITIALIZE CCW
001E1C   45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001E20   2A00                    DC    X'2A00'              CTRL SWITCHES
001E22   1000                    DC    X'1000'              T E S T   N U M B E R
001E24   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001E26   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001E28   92 14 F F58             MVI   CCW,X'14'            INITIALIZE CCW
001E2C   45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001E30   2A00                    DC    X'2A00'              CTRL SWITCHES
001E32   1010                    DC    X'1010'              T E S T   N U M B E R
001E34   F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001E36   FF4C                    DC    AL2(PRDCSW-SECNO+REG) EXP. CSW ADDRESS
001E38   0A D6           DONRTN  SVC   X'D6'                 ROUTINE EXIT
001E3A                           CNOP  0,4
001E3A   07 00                   BCR   0,0
                         *
                         *
                         *
                         ********************************************************************************
                         *
                         *            THE FOLLOWING ROUTINES REQUIRE MANUAL INTERVENTION
                         *
                         ********************************************************************************
                         *
                         *
                         ********************************************************************************
                         * ROUTINE 13- MANUAL INTERVENTION ROUTINE
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```
                         *            NOTE--THIS ROUTINE IS BYPASSED UNLESS SECTION SENSE
                         *            SWITCH 5 IS ON.
                         *
                         *            -NOT READY TESTING-
                         *            A START I-O NOOP IS ISSUED TO NOT READY DEVICE.  EXPECT
                         *            COND. CODE 1 UNIT CHECK.  A TEST I-O IS ISSUED.  EXPECT
                         *            SAME.  A HALT I-O IS ISSUED.  EXPECT COND. CODE 1 ZEROED
                         *            STATUS.  INTERVENTION REQUIRED IS IN SENSE BYTE FOR ABOVE
                         ********************************************************************************
                         *
001E3C   13              ROUT13 DC    X'13'                ROUTINE NUMBER
001E3D   000E90                 DC    AL3(ROUT14-SECNO)    ADDRESS OF NEXT ROUTINE
001E40   0A D0                  SVC   X'D0'                PRINT A BLANK
001E42   80                     DC    X'80'                     ,,
001E43   01                     DC    X'01'                     ,,
001E44   FF60                   DC    AL2(BYPASS-SECNO+REG)     ,,
001E46   91 04 F 004            TM    SNSW,X'04'           CHECK SENSE SW. 5
001E4A   47 10 F E56            BC    ALL,GO10             BR. TO EXECUTE ROUTINE
001E4E   0A D0           SOLONG SVC   X'D0'                PRINT BYPASS MESSAGE
001E50   04                     DC    X'04'                     ,,
001E51   0D                     DC    X'0D'                     ,,
001E52   FF60                   DC    AL2(BYPASS-SECNO+REG)     ,,
001E54   0A D6                  SVC   X'D6'                ROUTINE EXIT
001E56   45 40 F 690     GO10   BAL   R4,INIT              BR. TO INITIALIZE
001E5A   0A D0                  SVC   X'D0'                PRINT A BLANK
001E5C   80                     DC    X'80'                     ,,
001E5D   01                     DC    X'01'                     ,,
001E5E   FF60                   DC    AL2(BYPASS-SECNO+REG)     ,,
001E60   0A D0                  SVC   X'D0'                PRINT-MAKE PUNCH NOT READY-
001E62   04                     DC    X'04'                     ,,
001E63   19                     DC    X'19'                     ,,
001E64   FF6D                   DC    AL2(PCH1-SECNO+REG)       ,,
001E66   0A DA                  SVC   X'DA'                HALT TO PERFORM INTERVENTION
001E68   45 B0 F 10E            BAL   R11,ISIO             BR. TO ISSUE START I-O NOOP
001E6C   0800                   DC    X'0800'              CONTROL SWITCH
001E6E   1020                   DC    X'1020'              T E S T   N U M B E R
001E70   F140                   DC    X'F140'              EXP. COND. CODE - EXP. SENSE
001E72   FF32                   DC    AL2(UCNVLD-SECNO+REG) EXP. CSW ADDRESS
001E74   45 B0 F 0FA            BAL   R11,ITIO             BR. TO ISSUE TEST I-O
001E78   4800                   DC    X'4800'              CONTROL SWITCH
001E7A   1030                   DC    X'1030'              T E S T   N U M B E R
001E7C   F140                   DC    X'F140'              EXP. COND. CODE - EXP. SENSE
001E7E   FF32                   DC    AL2(UCNVLD-SECNO+REG) EXP. CSW ADDRESS
001E80   45 B0 F 0E6            BAL   R11,IHIO             BR. TO ISSUE HALT I-O
001E84   0800                   DC    X'0800'              CONTROL SWITCH
001E86   1040                   DC    X'1040'              T E S T   N U M B E R
001E88   F140                   DC    X'F140'              EXP. COND. CODE - EXP. SENSE
001E8A   FF1A                   DC    AL2(CSW0-SECNO+REG)  EXP. CSW ADDRESS
001E8C   0A D6                  SVC   X'D6'                ROUTINE EXIT
001E8E                          CNOP  0,4
001E8E   07 00                  BCR   0,0
                         *
                         *
                         *
                         ********************************************************************************
                         * ROUTINE 14- MANUAL INTERVENTION ROUTINE
                         *            NOTE--THIS ROUTINE IS BYPASSED UNLESS SECTION SENSE
                         *                  SWITCHES 5 AND 8 ARE BOTH ON.
                         *
                         *            -NOT OPERATIONAL TESTING-
                         *            A START I-O NOOP A TEST I-O AND A HALT I-O ARE ISSUED TO
                         *            A DEVICE THAT IS OFF LINE.  EXPECT COND. CODE 3 WITH NO
                         *            STATUS.
                         ********************************************************************************
001E90   14              ROUT14 DC    X'14'                ROUTINE NUMBER
001E91   000EDC                 DC    AL3(ROUT15-SECNO)    ADDRESS OF NEXT ROUTINE
001E94   91 04 F 004            TM    SNSW,X'04'           TEST FOR SECTION SENSE SWITCH 5
001E98   47 80 F E4E            BC    NONE,SOLONG          BR. TO TERMINATE RTN IF NO SS 5
```

```
001E9C   91 80 F 005          TM    SNSW+1,X'80'        TEST FOR SECTION SENSE SWITCH 8
001EA0   47 80 F E4E          BC    NONE,SOLONG         TERMINATE RTN IF NO SS 8
001EA4   45 40 F 690          BAL   R4,INIT             BR. TO INITIALIZE
001EA8   0A D0                SVC   X'D0'               PRINT A BLANK
001EAA   80                   DC    X'80'                     ,,
001EAB   01                   DC    X'01'                     ,,
001EAC   FF60                 DC    AL2(BYPASS-SECNO+REG)     ,,
001EAE   0A D0                SVC   X'D0'               PRINT-MAKE PUNCH NOT OPERATIONAL-
001EB0   04                   DC    X'04'                           ,,
001EB1   29                   DC    X'29'                           ,,
001EB2   FF86                 DC    AL2(PCH2-SECNO+REG)             ,,
001EB4   0A DA                SVC   X'DA'               HALT FOR MANUAL INTERVENTION
001EB6   45 B0 F 10E          BAL   R11,ISID            BR. TO ISSUE START I-O
001EBA   0200                 DC    X'0200'             CONTROL SWITCHES
001EBC   1050                 DC    X'1050'             T E S T   N U M B E R
001EBE   F300                 DC    X'F300'             EXP. COND. CODE - EXP. SENSE
001EC0   45 B0 F 0FA          BAL   R11,ITIO            BR. TO ISSUE TEST I-O
001EC4   4200                 DC    X'4200'             CONTROL SWITCHES
001EC6   1060                 DC    X'1060'             T E S T   N U M B E R
001EC8   F300                 DC    X'F300'             EXP. COND. CODE - EXP. SENSE
001ECA   45 B0 F 0E6          BAL   R11,IHIO            BR. TO ISSUE HALT I-O
001ECE   0200                 DC    X'0200'             CONTROL SWITCHES
001ED0   1070                 DC    X'1070'             T E S T   N U M B E R
001ED2   F300                 DC    X'F300'             EXP. COND. CODE - EXP. SENSE
001ED4   0A D0                SVC   X'D0'               PRINT A BLANK
001ED6   80                   DC    X'80'                     ,,
001ED7   01                   DC    X'01'                     ,,
001ED8   FF60                 DC    AL2(BYPASS-SECNO+REG)     ,,
001EDA   0A D6                SVC   X'D6'               ROUTINE EXIT
001EDC                        CNOP  0,4
                      *
                      *
                      ********************************************************************************
                      * ROUTINE 15 - MANUAL INTERVENTION ROUTINE
                      *
                      *       NOTE -- THIS ROUTINE IS BYPASSED UNLESS SECTION SENSE
                      *               SWITCH 5 IS ON.
                      *
                      *          -NOT READY TO READY TESTING-
                      *          A TEST I-O IS ISSUED TO A DEVICE THAT JUST WENT
                      *          FROM NOT READY TO READY.  EXPECT COND. CODE 1 WITH
                      *          DEVICE END ALONE IN THE CSW AND A ZEROED CSW ADDRESS.
                      ********************************************************************************
001EDC   15           ROUT15 DC    X'15'                ROUTINE NUMBER
001EDD   00FFFF              DC    X'00FFFF'            LAST ROUTINE
001EE0   91 04 F 004         TM    SNSW,X'04'           TEST FOR SECTION SENSE SWITCH 5
001EE4   47 80 F E4E         BC    NONE,SOLONG          TERMINATE RTN IF SS 5
001EE8   45 40 F 690         BAL   R4,INIT              BR. TO INITIALIZE
001EEC   0A D0               SVC   X'D0'                PRINT MAKE PUNCH OPER AND READY
001EEE   04                  DC    X'04'                      ,,
001EEF   25                  DC    X'25'                      ,,
001EF0   FFAF                DC    AL2(PCH3-SECNO+REG)        ,,
001EF2   0A DA               SVC   X'DA'                HALT FOR MANUAL INTERVENTION
001EF4   45 B0 F 0FA         BAL   R11,ITIO             BR. TO ISSUE TEST I-O
001EF8   0A00                DC    X'0A00'              CONTROL SWITCHES
001EFA   1080                DC    X'1080'              T E S T   N U M B E R
001EFC   F100                DC    X'F100'              EXP. COND. CODE - EXP. SENSE
001EFE   FF44                DC    AL2(DONLY-SECNO+REG) EXP. CSW ADDRESS
001F00   0A D6               SVC   X'D6'                ROUTINE EXIT
                      *
                      *
                      ********************************************************************************
                      ********************************************************************************
                      *                EXPECTED CSW AND STATUS
                      ********************************************************************************
001F02   00000000     NOPCSW DC    XL4'0'               EXP. CSW ADDR
001F06   0C000000            DC    X'0C000000'          EXP. STATUS
001F0A   00000000     DBIZ   DC    XL4'0'
```



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001F0E   10000000                    DC    X'10000000'
001F12   00000000                    DC    XL4'0'
001F16   04000000                    DC    X'04000000'
001F1A   0000000000000000    CSW0    DC    XL8'0'
001F22   00000000                    DC    XL4'0'
001F26   04000000                    DC    X'04000000'
001F2A   00000000            DBZY    DC    XL4'0'
001F2E   14000000                    DC    X'14000000'
001F32   00000000            UCNVLD  DC    XL4'0'
001F36   02000000                    DC    X'02000000'
001F3C   00001F60            PFRCSW  DC    A(CCW+8)
001F40   08000000                    DC    X'08000000'
001F44   00000000            DONLY   DC    XL4'0'
001F48   04000000                    DC    X'04000000'
001F4C   00001F60            PRDCSW  DC    A(CCW+8)
001F50   0C000000                    DC    X'0C000000'
                      *
                      *
                      ********************************************************************************
                      *                CHANNEL COMMAND WORDS
                      ********************************************************************************
001F58   03 0016D8 2000 0001 CCW     CCW   X'03',PCHAR,X'20',1   NO OP CCW
                      *
                      *
                      ********************************************************************************
                      *                MESSAGES
                      ********************************************************************************
001F60   40D9E3D540C2E8D7C1  BYPASS  DC    C' RTN BYPASSED'
001F69   E2E2C5C4
001F6D   40D4C1D2C540E3C8C5  PCH1    DC    C' MAKE THE PUNCH '
001F76   40D7E4D5C3C840
001F7D   D5D6E340D9C5C1C4E8          DC    C'NOT READY'
001F86   40D4C1D2C540E3C8C5  PCH2    DC    C' MAKE THE PUNCH '
001F8F   40D7E4D5C3C840
001F96   D5D6E340D6D7C5D9C1          DC    C'NOT OPERATIONAL-'
001F9F   E3C9D6D5C1D360
001FA6   60D6C6C640D3C9D5C5          DC    C'-OFF LINE'
001FAF   40D4C1D2C540E3C8C5  PCH3    DC    C' MAKE THE PUNCH '
001FB8   40D7E4D5C3C840
001FBF   D6D7C5D9C1E3C9D6D5          DC    C'OPERATIONAL AND '
001FC8   C1D340C1D5C440
001FCF   D9C5C1C4E8                  DC    C'READY'
001FD4   40D7D3C1C3C540C2D3  PCH4    DC    C' PLACE BLANK CAR'
001FDD   C1D5D240C3C1D9
001FE4   C4E240C9D540D7E4D5          DC    C'DS IN PUNCH HOPP'
001FED   C3C840C8D6D7D7
001FF4   C5D9                        DC    C'ER'
                      *
                      ********************************************************************************
                      *                EQUATES
                      ********************************************************************************
                           000000  NEVER  EQU   0
                           000007  NCCO   EQU   7
                           00000F  UNC    EQU   15
                           000008  NONE   EQU   8
                           000004  SOME   EQU   4
                           000001  ALL    EQU   1
                           000005  ANY    EQU   5
                           000008  CC0    EQU   8
                           000004  CC1    EQU   4
                           000002  CC2    EQU   2
                           000001  CC3    EQU   1
                           00000A  CC02   EQU   10
                           000006  CC12   EQU   6
                           000008  EQ     EQU   8
                           000004  LO     EQU   4
                           000002  HI     EQU   2
                           000006  UNEQ   EQU   6
```

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00000C      EQLO    EQU   12
00000A      EQHI    EQU   10
000080      LOGOUT  EQU   X'80'
000181      SYSMOD  EQU   X'181'
00F000      REG     EQU   X'F000'
00005A      WHAT    EQU   90
000000      R0      EQU   0
000001      R1      EQU   1
000002      R2      EQU   2
000003      R3      EQU   3
000004      R4      EQU   4
000005      R5      EQU   5
000006      R6      EQU   6
000007      R7      EQU   7
000008      R8      EQU   8
000009      R9      EQU   9
00000A      R10     EQU   10
00000B      R11     EQU   11
00000C      R12     EQU   12
00000D      R13     EQU   13
00000E      R14     EQU   14
00000F      R15     EQU   15
000198      WT      EQU   408
000040      HCSW    EQU   64
000048      HCAW    EQU   72
0001A0      DMSSW   EQU   X'01A0'
            END     ROUT01
```


POST ASSEMBLY DATA.

REFERENCES TO DEFINED SYMBOLS.

```
1      8     EQ    1350, 14DA, 14E2
1      2     HI
1      4     LO
1      0     R0
1      1     R1    118C, 1190, 119C
1      2     R2
1      3     R3
1      4     R4    16B4, 1764, 1778, 17A8, 17CC, 17F4, 184C
                   186C, 1870, 1874, 1890, 1904, 1940, 187C
                   1E56, 1EA4, 1EE8
1      5     R5    1546, 16C6
1      6     R6
1      7     R7
1      8     R8    1128, 1288, 12BC, 1320, 1324, 1342, 1342
                   1346, 138C, 1390, 1442, 1446, 144A, 144A
                   144E, 1558
1      9     R9    1128, 11F4, 11F8, 1204, 125A, 12B0, 12B4
                   12D0, 13E8, 1416, 1458, 1470, 1488, 14A0
                   1558, 18AC, 18B0, 18B4
1    198     WT    118C, 11F4, 12B0, 186C, 18AC
1      1     ALL   1150, 11EC, 1224, 127C, 129C, 12DC, 12E8
                   1364, 13AC, 1546, 16A8, 17F0, 1854, 1DB4
                   1E4A
1      5     ANY   153E
4   1048     CAW
1      8     CC0   1198, 11B2
1      4     CC1   11B6, 12CC
1      2     CC2   11BA
1      1     CC3
8   1F58     CCW   16AC, 16B0, 177C, 17AC, 17D0, 17D4, 17F8
                   1858, 1868, 1884, 1894, 1908, 1918, 1928
                   1944, 1954, 1964, 1974, 1984, 1994, 19A4
                   19B4, 19C4, 19D4, 19E4, 19F4, 1A04, 1A14
                   1A24, 1A34, 1A44, 1A54, 1A64, 1A74, 1A84
                   1A94, 1AA4, 1AB4, 1AC4, 1AD4, 1AE4, 1AF4
                   1B04, 1B14, 1B24, 1B34, 1B44, 1B54, 1B64
                   1B80, 1B90, 1BA0, 1BB0, 1BC0, 1BD0, 1BE8
                   1BF8, 1C08, 1C18, 1C28, 1C38, 1C48, 1C58
                   1C68, 1C78, 1C88, 1C98, 1CB0, 1CC0, 1CD0
                   1CE0, 1CF0, 1D00, 1D10, 1D20, 1D30, 1D40
                   1D50, 1D60, 1D70, 1D80, 1D90, 1DA0, 1DB8
                   1DC8, 1DD8, 1DE8, 1DF8, 1E08, 1E18, 1E28
                   1F3A, 1F4C
8   1040     CSW
2    100A    ICM
4    118C    IHI   1170, 1180
2    10E4    ISW   11A0, 11A0, 11A6, 11D8, 11E4, 11F0, 11FC
                   120C, 121C, 1220, 122E, 125E, 126C, 1278
                   1280, 1290, 12A0, 12D8, 12E4, 12F8, 1318
                   133A, 1354, 1360, 145C, 148C, 14AA, 151A
                   1522, 1542, 16A4, 16C2, 16CA
4    1554    IUP   154C
1       A    R10   1124, 1132, 13C6, 13E2, 13EC, 13F4, 13F4
                   1536, 16B0, 17D4
1       B    R11   111E, 1124, 114C, 11E8, 1270, 1288, 12FC
                   1306, 1310, 1320, 1332, 1378, 1390, 1392
                   13A4, 13A4, 13A8, 1418, 1434, 1442, 1474
                   14A4, 1548, 1550, 1550, 1554, 1554, 155C
                   1768, 1780, 178A, 1796, 17B0, 17BC, 17D8
                   17FC, 1808, 1814, 1820, 182C, 1838, 185C
                   1878, 1898, 18A2, 18B8, 18C2, 18CE, 18DA
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			18E6, 18F2, 190C, 191C, 192C, 1948, 1958
			1968, 1978, 1988, 1998, 19A8, 19B8, 19C8
			19D8, 19E8, 19F8, 1A08, 1A18, 1A28, 1A38
			1A48, 1A58, 1A68, 1A78, 1A88, 1A98, 1AA8
			1AB8, 1AC8, 1AD8, 1AE8, 1AF8, 1B08, 1B18
			1B28, 1B38, 1B48, 1B58, 1B68, 1B84, 1B94
			1BA4, 1BB4, 1BC4, 1BD4, 1BEC, 1BFC, 1C0C
			1C1C, 1C2C, 1C3C, 1C4C, 1C5C, 1C6C, 1C7C
			1C8C, 1C9C, 1CB4, 1CC4, 1CD4, 1CE4, 1CF4
			1D04, 1D14, 1D24, 1D34, 1D44, 1D54, 1D64
			1D74, 1D84, 1D94, 1DA4, 1DBC, 1DCC, 1DDC
			1DEC, 1DFC, 1E0C, 1E1C, 1E2C, 1E68, 1E74
			1E80, 1E86, 1EC0, 1ECA, 1EF4
1	C	R12	1164, 1174, 1184, 1194, 11AE, 1214, 12C0
			12C8, 169C, 16A0, 1756
1	D	R13	1132, 1140, 1140, 11D2, 12BC, 12F0, 1536
			1690, 1690, 169A
1	E	R14	1146, 1146, 11F4, 12B0, 14E6, 14EE, 1692
			186C, 18AC
1	F	R15	1228, 1236, 1266, 169A
1	F000	REG	1248, 138A, 13A2, 13BC, 13D6, 1414, 1422
			1428, 14BE, 14CC, 1518, 152E, 1534, 16C0
			1746, 174C, 1752, 1794, 17BA, 17E2, 1806
			1812, 181E, 182A, 1836, 1842, 1866, 1882
			18CC, 18D8, 18E4, 18F0, 1916, 1926, 1936
			1952, 1962, 1972, 1982, 1992, 19A2, 19B2
			19C2, 19D2, 19E2, 19F2, 1A02, 1A12, 1A22
			1A32, 1A42, 1A52, 1A62, 1A72, 1A82, 1A92
			1AA2, 1AB2, 1AC2, 1AD2, 1AE2, 1AF2, 1B02
			1B12, 1B22, 1B32, 1B42, 1B52, 1B62, 1B72
			1B8E, 1B9E, 1BAE, 1BBE, 1BCE, 1BDE, 1BF6
			1C06, 1C16, 1C26, 1C36, 1C46, 1C56, 1C66
			1C76, 1C86, 1C96, 1CA6, 1CBE, 1CCE, 1CDE
			1CEE, 1CFE, 1D0E, 1D1E, 1D2E, 1D3E, 1D4E
			1D5E, 1D6E, 1D7E, 1D8E, 1D9E, 1DAE, 1DC6
			1DD6, 1DE6, 1DF6, 1E06, 1E16, 1E26, 1E36
			1E44, 1E52, 1E5E, 1E64, 1E72, 1E7E, 1E8A
			1EAC, 1EB2, 1ED8, 1EF0, 1EFE
1	F	UNC	10F6, 110A, 1168, 1188, 11C2, 11CA, 11DC
			1210, 1232, 1262, 1284, 12D4, 12E0, 12EC
			13F8, 1416, 1526, 155C, 1684, 16CE, 175A
1	A	CC02	
1	6	CC12	
8	1F1A	CSW0	1842, 18D8, 18F0, 1E8A
4	1F0A	DBIZ	1812, 182A
4	1F2A	DBZY	1882, 18E4
1	A	EQHI	14D2
1	C	EQLO	
4	1E56	GO10	1E4A
4	1194	GREG	119C
1	48	HCAW	1132, 128C, 1536
1	40	HCSW	1140, 1140, 11D2, 1228, 1236, 1266, 12F0
16	1728	HUNG	16C0
3	15DF	IACT	1254, 1464, 1494
6	1306	IBSN	1294, 12A4, 12AC, 12D4
12	1583	ICAW	13C6, 13CE, 13D0, 13D6
3	15C2	ICCW	13D8
1	1413	ICNT	1250, 13DE, 1430
3	158F	ICSW	124A, 142A
4	148C	IDID	1478
3	15E2	IEXP	143C, 147C
4	10E6	IHIO	1838, 1888, 18CE, 18E6, 1E80, 1ECA
2	1690	INIT	1764, 1778, 17A8, 17CC, 17F4, 184C, 1890
			1904, 1940, 1B7C, 1E56, 1EA4, 1EE8
4	11E4	INOW	1150, 11C2, 11CA, 11DC
4	1270	INT3	1232
4	11CE	IONE	11B6
6	14A4	IPAS	1490

4	1288	ISEN	11EC, 1210, 1274, 127C
4	110E	ISIO	1780, 17B0, 17D8, 17FC, 1814, 1820, 182C
			185C, 1878, 1898, 18A2, 18DA, 190C, 191C
			192C, 1948, 1958, 1968, 1978, 1988, 1998
			19A8, 19B8, 19C8, 19D8, 19E8, 19F8, 1A08
			1A18, 1A28, 1A38, 1A48, 1A58, 1A68, 1A78
			1A88, 1A98, 1AA8, 1AB8, 1AC8, 1AD8, 1AE8
			1AF8, 1B08, 1B18, 1B28, 1B38, 1B48, 1B58
			1B68, 1B84, 1B94, 1BA4, 1BB4, 1BC4, 1BD4
			1BEC, 1BFC, 1C0C, 1C1C, 1C2C, 1C3C, 1C4C
			1C5C, 1C6C, 1C7C, 1C8C, 1C9C, 1CB4, 1CC4
			1CD4, 1CE4, 1CF4, 1D04, 1D14, 1D24, 1D34
			1D44, 1D54, 1D64, 1D74, 1D84, 1D94, 1DA4
			1DBC, 1DCC, 1DDC, 1DEC, 1DFC, 1E0C, 1E1C
			1E2C, 1E68, 1EB6
6	1266	ISV2	1224
4	12D0	ITIC	12F4
4	10FA	ITIO	1768, 178A, 1796, 17BC, 1808, 18C2, 18F2
			1E74, 1EC0, 1EF4
4	11C6	ITWO	11BA
6	1236	IUIO	1218
6	11A0	JOHN	1158, 1198
1	1673	MSK1	1200
1	1674	MSK2	1208
1	7	NCC0	1178, 12C4, 12F4
1	100D	NIOU	
1	8	NONE	1158, 1160, 1170, 1180, 1274, 128C, 1294
			12A4, 12AC, 1314, 131C, 1336, 133E, 136C
			13F0, 1438, 1460, 1478, 1490, 14AE, 151E
			154C, 1696, 1E98, 1EA0, 1EE4
16	1F6D	PCH1	1E64
16	1F86	PCH2	1EB2
16	1FAF	PCH3	1752, 1EF0
16	1FD4	PCH4	174C
1	1675	RTSV	112C, 16B6
1	100C	SDMF	
4	1004	SNSW	1154, 115C, 116C, 117C, 1368, 153A, 17EC
			1850, 1E46, 1E94, 1E9C, 1EE0
1	4	SOME	
3	105D	SRET	
1	10E1	U10P	1DB0
1	6	UNEQ	1218, 1302, 130C, 132E, 13C2, 14EA
1	5A	WHAT	
1	1568	WORK	1236, 13E2, 1400, 1402, 1404, 140A, 1452
			1452, 146A, 1482, 1482, 149A, 14EE, 14F8
			14FA, 14FC, 1502, 1508, 150E
4	16A4	BLOOP	16CE
1	1A0	DMSSW	
4	1F44	DONLY	1EFE
1	100E	FLAG1	
1	100F	FLAG2	
4	1132	GOMAN	175A
16	15C5	IBLAH	124A, 1254, 13D8, 1404, 140A, 1414, 142A
			143C, 1464, 147C, 1494
2	13FC	ICOUT	125A, 13E8, 1458, 1470, 1488, 14A0
8	1656	ICSW1	11D2, 1228, 1298, 1328, 1328, 146A
8	165E	ICSW2	1266, 12A8, 134A, 134A, 149A
4	151A	ICUIO	14EA
4	145C	IDIDI	1438
4	1174	IHANG	1188
16	15A3	ILINK	1392, 139A, 139C, 13A2, 1534
4	12F0	ILOKE	12CC
4	1164	ILOOP	10F2, 10FE, 1112
4	1354	INDER	12C4, 12DC, 12E8, 1302, 130C, 131C, 132E
			133E
5	1010	INPSW	
3	1670	IOADR	13B4
6	142A	IOCSW	13AC

16	15FB	IOLOG	14FC, 1502, 1508, 150E, 1518
16	1620	IOPT1	10EA, 1102, 1116, 152E
4	14E6	IPASS	14AE, 14D2, 14DA
8	1560	ISAVE	1128, 1558
4	11AE	ISSUE	10E6, 10FA, 110E, 13BE, 1670
4	115C	ITRY1	1168, 1178, 153E
4	116C	ITRY2	1160
11	1676	IUNEX	1242, 1248
4	11F4	IWAIT	1284, 1526
4	11E0	IZERO	11B2
4	16D4	MOD50	16A0
1	0	NEVER	
1	16D8	PCHAR	1136, 113A, 113A, 1F58
4	1000	SECNO	112C, 1240, 1242, 1248, 1382, 1384, 138A
			139A, 139C, 13A2, 13B4, 13B6, 13BC, 13CE
			13D0, 13D6, 1400, 1402, 1414, 1422, 1428
			14B6, 14B8, 14BE, 14C4, 14C6, 14CC, 14CE
			14F8, 14FA, 1518, 152E, 1534, 16B6, 16C0
			1746, 174C, 1752, 1761, 1775, 1794, 17A5
			17BA, 17C9, 17E2, 17E9, 1806, 1812, 181E
			182A, 1836, 1842, 1849, 1866, 1882, 188D
			18CC, 18D8, 18E4, 18F0, 1901, 1916, 1926
			1936, 193D, 1952, 1962, 1972, 1982, 1992
			19A2, 19B2, 19C2, 19D2, 19E2, 19F2, 1A02
			1A12, 1A22, 1A32, 1A42, 1A52, 1A62, 1A72
			1A82, 1A92, 1AA2, 1AB2, 1AC2, 1AD2, 1AE2
			1AF2, 1B02, 1B12, 1B22, 1B32, 1B42, 1B52
			1B62, 1B72, 1B79, 1B8E, 1B9E, 1BAE, 1BBE
			1BCE, 1BDE, 1BE5, 1BF6, 1C06, 1C16, 1C26
			1C36, 1C46, 1C56, 1C66, 1C76, 1C86, 1C96
			1CA6, 1CAD, 1CBE, 1CCE, 1CDE, 1CEE, 1CFE
			1D0E, 1D1E, 1D2E, 1D3E, 1D4E, 1D5E, 1D6E
			1D7E, 1D8E, 1D9E, 1DAE, 1DC6, 1DD6, 1DE6
			1DF6, 1E06, 1E16, 1E26, 1E36, 1E3D, 1E44
			1E52, 1E5E, 1E64, 1E72, 1E7E, 1E8A, 1E91
			1EAC, 1EB2, 1ED8, 1EF0, 1EFE
1	10E0	UNIT1	169C
13	1F60	BYPASS	1746, 1E44, 1E52, 1E5E, 1EAC, 1ED8
2	1E38	DONRTN	1DB4
2	1B74	EXIT10	
5	1058	EXNPSW	
8	1018	EXOPSW	
6	16B6	HANGUP	16A8
11	15F0	IACSNS	12FC, 14C4, 14C6, 14CC, 14DE, 1668
10	158A	IACTCC	11AA, 11BE, 11C6, 11CE, 11E0, 1306, 1428
6	1418	ICCOUT	13C2, 13F0
6	1328	ICCSW1	1324
6	134A	ICCSW2	1346
6	1452	ICHNG1	1446
6	1482	ICHNG2	144E
6	13E2	ICWOUT	13F8
4	12B0	IDOSNS	128C, 129C, 16C6
4	1358	IDUNCK	12E0, 12EC, 1350
10	1580	IEXPCC	1418, 1422
11	15E5	IEXSNS	14A4, 14B6, 14B8, 14BE, 14D6
6	111E	IEYEOH	10F6, 110A
1	1388	IFLAG1	1358, 1370
1	152C	IFLAG2	135C, 1374
4	1548	ILEAVE	136C
6	14EE	ILOGED	1262
4	1474	IMORST	1460
4	12D8	INDEX1	1314
4	12E4	INDEX2	1336
15	1594	IOADDR	10EE, 1106, 111A, 13B6, 13BC
4	1078	IONPSW	
8	1038	IOOPSW	1214, 1240
2	152A	IOPOUT	151E
6	1378	IOUTIT	1364

4	1214	IRETRN	107C
8	1668	ISENSE	1288
8	1688	ISLAVE	1124
4	12C8	ITIOLP	12D0
9	1617	ITSTNO	111E, 1378, 1382, 1384, 138A
1	80	LOGOUT	1146, 1146, 14EE
8	1070	MGNPSW	
8	1030	MCOPSW	
4	169C	NITWIT	1696
4	1F02	NOPCSW	17E2
4	1F3C	PFRCSW	1806, 181E, 1836, 1866, 18CC, 1916, 1962
			1982, 19A2, 19C2, 19E2, 1A02, 1A22, 1A42
			1A62, 1A82, 1AA2, 1AC2, 1AE2, 1B02, 1B22
			1B42, 1B62, 1B8E, 1B9E, 1BAE, 1BBE, 1BCE
			1BDE, 1BF6, 1C06, 1C16, 1C26, 1C36, 1C46
			1C56, 1C66, 1C76, 1C86, 1C96, 1CA6
8	1068	PGNPSW	
8	1028	PGOPSW	
4	1F4C	PRDCSW	1794, 17BA, 1926, 1936, 1952, 1972, 1992
			19B2, 19D2, 19F2, 1A12, 1A32, 1A52, 1A72
			1A92, 1AB2, 1AD2, 1AF2, 1B12, 1B32, 1B52
			1B72, 1CBE, 1CCE, 1CDE, 1CEE, 1CFE, 1D0E
			1D1E, 1D2E, 1D3E, 1D4E, 1D5E, 1D6E, 1D7E
			1D8E, 1D9E, 1DAE, 1DC6, 1DD6, 1DE6, 1DF6
			1E06, 1E16, 1E26, 1E36
1	1760	ROUT01	1015, 1FF6
1	1774	ROUT02	1761
1	17A4	ROUT03	1775
1	17C8	ROUT04	17A5
1	17E8	ROUT05	17C9
1	1848	ROUT06	17E9
1	188C	ROUT07	1849
1	1900	ROUT08	188D
1	193C	ROUT09	1901
1	1B78	ROUT10	193D
1	1BE4	ROUT11	1B79
1	1CAC	ROUT12	1BE5
1	1E3C	ROUT13	1CAD
1	1E90	ROUT14	1E3D
1	1EDC	ROUT15	1E91
2	1E4E	SOLONG	17F0, 1854, 1E98, 1EA0, 1EE4
8	1060	SVNPSW	
8	1020	SVOPSW	
1	181	SYSMOD	14E6
2	1742	TELHIM	14E2
2	10E2	U1ADDR	
4	1F32	UCNVLD	1E72, 1E7E
1	1000	XF8203	

NO ERROR DETECTED IN ABOVE ASSEMBLY

PERIODS CORRESPOND TO BLANK COLUMNS.

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COLS.  1 THROUGH 20     COLS.  21 THROUGH 40       COLS.  41 THROUGH 60       COLS.  61 THROUGH 80

BESD......AA..AAXF82    03..AAAA.AG6........       ................840        192.130498..82030001
9          YQ  Y9          YYQY Y8
           99  9           9999 99

BTXT.AAA..A8..AA8JAA    AAAAAAAAAA0AADAAAAP-       AAAAAAAAAAAAAAAAAAAA       AAAAAAAAAAAA82030002
9    YQY  Y9  Y9 YQY    YYYYYYYYY9+Y99YYYY9        YYYYYYYYYYYYYYYYYYYY       YYYYYYYYYYYY
     999  9   9  9Z9    999999999  9  9999         99999999999999999999       999999999999

BTXT.AA8..A8..AAAAAA    AAAAAAAAAAAAAAAAAAAA       AAAAAAAAADAAAAAAAAAA       AAAAAAAAAAAA82030003
9    YQ9  Y9  Y9YYYY    YYYYYYYYYYYYYYYYYYYY       YYYYYYYYY9YYYYYYYYYY       YYYYYYYYYYYY
     99   9   9 9999    99999999999999999999       999999999 9999999999       999999999999

BTXT.AA0..AA..AAAAAA    AAAAADAAAAKM........       ....................       ...........82030004
9    YQ+  YQ  Y9YYYY    YYYY99YYYY99
     99-  99  9 9999    9999  9999

BTXT.AAS..A8..AABAAA    AABF10BH61BH5JBF1MG0       10BE10BE1MBT61BT5JG0       10BD10BD1M8S82030005
9    YQ8  Y9  Y90YYY    YY-Q Y-  8-  Y-Q ZZ         8-Q Y-Q Z-   8-  YZ        8-Q Y-Q Z-
     99   9   9  9 9    99          9               9           9              9

BTXT.AJQ..A8..AA61BS    5JKA6MABAL6HAI5-KA6E       0C+NAHB.6QKF6R6QPG0.       0.PCSASAAAAA82030006
9    Y99  Y9  Y9 8-      Y 9 8Q9QY 0Q0    Y R       9 YYZ-     8      9-      -  88Y8Y-YQY
     9    9   9  9          90            9 0         9                          9       09

BTXT.AJ+..A8..AAGA1U    A00DGA1JAA0DGA1UDA0A       G01MA.0DGA1DEA0AG01M       A.0DGA1DDA0A82030007
9    Y9   Y9  Y9ZQ      -+ 9ZY Y-Y 9ZY 8QY+Y       Z  8-  9ZY YQY+YZ+ 8       -  9ZY YQY+Y
     9    9   9  9                         9 9                 9 9 -                  9 9

BTXT.AJH..A8..AAG01D    HDAHHAACEA0AGA1JFA1D       PA0U0UFA0UBX5GDA0AGA       1SG.1FGJ1FB382030008
9    Y90  Y9  Y9Z  R    R89-0QY9QY+YZY YZQ -        9    -Y  -   YQY+YZY       8Z  YZY   -
     9    9   9    0     9   99  9 9      9                          9 9           9 9

BTXT.AJ0..A8..AA5GG0    1UB25GG01UB15GKG6F0.       F.0UG01UB05GD70UA.AA       GA2HFA0UHFAH82030009
9    Y9+  Y9  Y9 YZ       -  YZ   -   Y 9 R-       -    Z    -   Y-8   - QY    ZQ 0-Q  RQ9-
     9    9   9                                                          09     9   9

BTXT.AJ8..A8..AAHAAC    FA0UAA6CFA2DAA6DD70U       G02HA002G-26D70UA.0U       GA20KG6F0.F.82030010
9    Y9   Y9  Y90QY9    -Y   YY RZQ 9YY R-8        Z  08+ 8Z  9-8   -         ZQ Z 9 R   -
     9    9   9   9          9 0       9 0                9                    9

BTXT.AKA..A8..AA0UG0    20KG5Q0.BEACA1F3B0MC       6FKB5F5GBK4LKB5D5GEA       3DFB0UG040KG82030011
9    Y9Q  Y9  Y9   Z     + 9 Z   8QY9Y8988-Z8       R 9    Q-8 9 9 Q QZQ        Q-9   Z   Y 9
     9 Z  9   9          -       999 99   9  9      0      0 9        9 9       Z         9

BTXT.AKQ..A8..AA600.    FJ0UAAAAGA2HAH0UGA2H       FH0UG014ABAAGA2AA.0U       GA3FAB6KGA2A82030012
9    Y9Z  Y9  Y9 8      -Y   -QQYZY 0-9   ZQ 0     -9  Z    -9QYZY Q-         ZY 9-9 8ZQ Q
     9    9   9          9    909             9                 09    0                  9 0

BTXT.AKJ..A8..AAAJ0U    GA3FAB6KGA3FHFAHHAAB       AA6Q+EAHDA0AG03DEA0A       G.20FA2HG03F82030013
9    Y9Y  Y9  Y9-Y      ZY 9-9 ZZY 9RQ9-0QY9       ZY Z YYZQY+YZ+ RQY+Y       Z   ZQ  Z  9
     9    9   9  9                         9              9  9 9 -    9 9

BTXT.AKQ..A8..AAA.0U    GA3DG03HAJ0UGA3DG03H       ED0DG020FD0UNA55AEG-       3DNA5GADG-3D82030014
9    Y9   Y9  Y9-       ZQ RZ   R-Y   ZQ RZ   R    -8-ZZ+ ---9    Y  Q9Z       R Y YQ9Z   R
     9    9   9          9          9   9           9   -            9  0        9  0

BTXT.ALA..A8..AAAHAA    GA2QA.0UGA3DHCAF.A3U       NG6F6FG-3DADAAGA2UAJ       0UGA3DAHAH.A82030015
9    Y9Q  Y9  Y9-9QY    ZY   -     ZY RZYY9 Y 8     9 R RZ   R-9QYZY   -Y      ZY RZ0Y9 Y
     9 9  9   9    09                     9    9              09       9              9

BTXT.ALH..A8..AA3FNG    6060GA3HFA0UBM3HB05U       AA0UGA3HAA0DGA5HBU3H       BA5UKA6MABBE82030016
9    Y9Z  Y9  Y9 8 9     8 8ZY R-9   -Z 0-+ 8      -9   ZQ R-9 9ZY Z-9 0      -Y  8 9  8Q98Q
     9    9   9                               9         9 0                     9   90 99
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BTXT.ALA..A8..AAABFM    FMB0MA6PAAADLH+A5QBE       ACEREQB0JA5LACADAAAA       GA4SBEACF0EI82030017
9    Y9Y  Y9  Y9Y998    988-Z8 9ZYY980 Q 08Q       Y990908-YQ 0ZQY9-YQY       ZQ 88QY99+9-
     9    9   9 9  9     99  9    9 9- 0  99       9      9 9   09   09        9 9999  -

BTXT.ALH..A8..AAB0JG    5DED10G-4Q+J5HBEACEI       EHB0JC5CKB5F5BB04LKG       5QJAEA3DA0JD82030018
9    Y90  Y9  Y98-Y8     --Q YZ  9 Y 08QY990       908-Y8 0 9    -9 9 9        ZYYZQ Q-+Y9
     9 -  9   9 9  9                   -999  -      -9  9 -                      9   Z

BTXT.AL0..A8..AAGA4Q    AKAHG03SBEAHEQEQKG5B       5QKG5L50B0JK5EG9KA5E       ADB0JB5AB0JB82030019
9    Y9   Y9  Y9ZY 9    ZYY9Z    8QY99Z9Z 9 Y        Z 9   +8-Y8  9  Y 0       Q98-Y8 Y8-Y8
     9    9   9           9      999        9               -9  9     9        0 9  9  9  9

BTXT.AMY..A8..AA5BKB    5F5GBK4LAHAAGA4MKB5D       5SHCAF.A4FAHAH.A4FKG       5Q5QEA3DA.0U82030020
9    Y99  Y9  Y9 Y 9        Q-8 9-9QYZY 8 9 Q        ZYY9 Y RZ0Y9 Y 0 9         Z ZZQ Q-
     9    9   9             0 9    09       9           9        9                    Z

BTXT.AM-..A8..AAGA4D    KB5D5GKG5Q6FEA3DADAA       GA4DKB5D5SKG5Q5QEA3D       AJ0UGA4MKB5D82030021
9    Y9   Y9  Y9ZY R     9 Q Q 9 Z RZQ Q-9QY       ZY Y 9 Q    9 Z ZZQ Q      -Y  ZY 0 9 Q
     9    9   9    0       9 9           Z  09                9          Z      9         9

BTXT.AMH..A8..AA5GKG    5Q60EA3DKA5KAEAD0UGA       4WBEAAEKEKB0JC5VBEAA       E5E5B0JC50EL82030022
9    Y9-  Y9  Y9 Q 9     Z 8ZQ Q Y YQ9-9  ZY         8QY99Y9Y8-Y8  8QY9       9 9 8-Y8   -9
     9    9   9  9               Z 9 90              999  9 99  9  999            9  9

BTXT.AM0..A8..AA0CGJ    4WE45KGA4WE455GA7BEA       JAG-5KKC5QSABEADEQEQ       KA6A5QKE6C5+82030023
9    Y9-  Y9  Y9 9ZY       -  YZY   -    ZY Z-Q    Z0Z   8 8 Z8Y8QY89Z9Z         9 Y Z 9 9 -
     9    9   9                9              Z           9 9   9999              9

BTXT.ANH..A8..AAKE6B    5BKE6J52B0JM5CAB0UGA       5SDE0UG014B0066JB0JA       5L+NAHA00DG+82030024
9    Y99  Y9  Y9 9 8     R 9 9 88-Y8 Q-9   ZY       8-Q   Z    8-+9 Y8-Y9       0 YYZ-+ 9Z
     9    9   9    9    0        9  9 Z             9 Z        9     99            9

BTXT.AN...AY..AA1MAA    0UGNAHAAGA5DACABACAF       HI5-GCGAAAAAAAAA....       ...........82030025
9    Y9   Y9  Y9 8-Y      99-9QYZY RZQY9ZQY9       -0   9Q9YYYYYYYYY
     9    9   9                09      09  09             Z 999999999

BTXT.ANA..AU..AA.CC.    .X.EXP.CC..X.ACT.ADR       .XXXXXX.XIOA........       ...........82030026
9    Y9Y  Y9  Y9                                               Y
     9    9   9                                                9

BTXT.ANL..AJ..AA.ADR    .XXXXXX.LINKA.......       ....................       ...........82030027
9    Y90  Y9  Y9                     Y
     9    9   9                      9

BTXT.ANC..A8..AA.CAW    .XXXXXX.CSWCCW.CSW.X       XXXXXXX.XXXXXXXX.EXP       ACTEXP.SNS.X82030028
9    Y90  Y9  Y9
     9 -  9   9

BTXT.ANL..A8..AAX.EX    P.SNS.XX.ACT.LOG.XX.       XXXXXX.XXXXXX.XXXXXX       .TST.XXXX.SE82030029
9    Y9Y  Y9  Y9
     9 9  9   9

BTXT.AOT..A8..AAT.SS    .O.ON.FOR.LOOP.ON.XI       OT.SS.1.ON.FOR.TIO.S       IO.LOOPAAAAA82030030
9    Y99  Y9  Y9                                    8                                 YYYYY
     9    9   9                                                                       99999

BTXT.AOL..A8..AAAAAA    AAAAAAAAADAN5AAAAAJO       FAA.UIO.XXXXXXAGAGAG       AAAAAAAAALEA82030031
9    Y98  Y9  Y9YYYY    YYYYYYYYY9Y9 YYY9Y9Y       Q9Y              Y9Y9Y9    YYYYYYYYY8Q-
     9    9   9 9999    999999999 9  999 9         Z 9              9 9 9     99999999999

BTXT.AOC..A8..AA.JFG    A6DQGH00SD06MAA0UGA6       FBCGHAJGHG4KA0C6EB0M       K7YFA0UE+2AB82030032
9    Y9-  Y9  Y9 Z-Z    Y Q9QR+ 8R+  -Y   ZQ       0-9QRZYQR9  Y 9 R8-Z       8 9-9  Z   Q-
     9    9   9            9              9        -  Z   Z    9   09          9          0

BTXT.AOC..AE..AAA0UG    06MGAAA7G...........       ....................       ...........82030033
9    Y9Y  Y8  Y9Y  Z      09YYY8Q
     9 9  99  9 9           9999Z
```

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BTXT.APY..A8..AA.PRE      VIOUS.HANG.UP.DETECT      EDBOAAG-BOJSGMBOAVGP      BBEAOAG012GA82030034
9    Y99  Y9  Y9                                     8-Y9Q 8-Y9Q 8-Y9QY        8QQY+YZ  99Y
     9    9   9                                      9   Z 9   Z 9   Z         99 9 9     9

BTXT.AP-..A8..AAAAGD      E.6AEAOBBAAAOABOBAGM      E.6ABDGHEA1FBAAJOAEA      OBBAAA1AGDEA82030035
9    Y9   Y9  Y99Y9R      Z  QZQ Q9YYQ Y8 9Y90      Z  Q-9QRZQ 8ZYYY YZQ       Q8YYQ YQ8ZQ
     9    9   9  9 0        0 Z 999 99  9             Z  0 9 999 9 0            Z 99Z 9Z  0

BTXT.APH..A8..AAOBBA      A.OABDGACAGHE.6ABDGH      EA1FSAA+OAGDEAOBBAA-      OABODAGYE.6A82030036
9    Y9-  Y9  Y9 Q9Y      Y  Y8 9Y9Y9 Z  Q-9QR      ZQ 88YY  YQ8ZQ Q9YY       Y8 9Y9 Z  Q
     9    9   9  Z 9      9  99  9 9        Z       0 9999  9Z  0 Z 99         99  9

BTXT.APO..A8..AABCGH      AJGHEA1FBAAO1AGBBOGA      EAHHAAODGAFFE.6ABAGH      EA1FSAAAOAG482030037
9    Y9-  Y9  Y9-9QR      ZYQRZQ 88YY+ YQ98 9Y      9Y9Z-9 9ZQQ8Z  Q-ZQR       ZQ 88YYY YQ8
     9    9   9  Z        Z  0 9999- 9Z 9  9         9        9Z      Z          0 9999  9Z9

BTXT.AQH..A8..AAEAOB      4AAA1AGBEA1FSAAAOAG4      EA1F4AAA1AGBEA1FSAAJ      OAG4EAOW4AAA82030038
9    Y99  Y9  Y9ZQ Q      8YYQ YQ8ZQ 88Y9Y YQ8      ZQ 88Y9Q YQ8ZQ 88Y9Y       YQ8ZQ  8Y9Q
     9    9   9  0 Z      999  9Z9 0 999 9 9Z9       0 999 9 9Z9 0 999 9        9Z9 0  99 Z

BTXT.AQ...A8..AA1AGK      BOGAFAHDE.6AAAODGAFF      BAGHEA1FSAA.OAG4B5GH      HFAHH.ADF.8D82030039
9    Y9   Y9  Y9 YQ8      8 9Y9Y9YZ  Q-9 9ZQQ8      -ZQRZQ 88Y9  YQ8- QR       R89-O Y9Z  R
     9    9   9  9Z9      9  9 9             9Z       Z  0 999   9Z9  Z            9    0

BTXT.AQH..A8..AAEA1F      8AA+1AGSBCGHBOGAGAAA      E.6ABAGHEA1FBAA-OAEA      1FBAAO2AHFAH82030040
9    Y9R  Y9  Y9ZQ 8      9Y9  YQ8-9QR8 9Y9Y8Y      Z  Q-ZQRZQ 8ZY9  YZQ         8ZY9+ YRQ9-
     9 0  9   9  0 9      9   9Z9  Z 9  9 999         Z    0 9 9    9 0          9 9 - 9

BTXT.AQA..A8..AAHAAD      FA8DEAOWBAAAOAEAOBBA      AA1AG4EAOWBABA1AGKEA      1FHABA1AGSEA82030041
9    Y9Q  Y9  Y90QY9      ZQ OZQ  ZY9Y YZQ Q8Y      9Q YQ8ZQ  8Y9Y YQ8ZQ        89Y9Q YQ8ZQ
     9 0  9   9  9        - 0   9   9 0 Z 9          9Z9 0    9 9 9Z9 0          9 9 9 9Z9 0

BTXT.AQY..A8..AAOWBA      BJ1AGKEAOBBABAOABOGA      HAA4E.6ABAGHEA1F6AB.      OAG4BBGHEA1F82030042
9    Y9   Y9  Y9  8Y      9Y YQ8ZQ QZY9Q Y8 9Y      9Y88Z  Q-ZQRZQ 88Y9        YQ8- QRZQ 8
     9    9   9   9       9 9Z9 0 Z 9 Z 99  9        999      Z  0 999           9Z9  Z 0 9

BTXT.AJJ..A8..AAYAB+      OAGDBFGHEA1FYAB-OAGD      BOGAAACHE.6ABBGHEA1F      SABNOAGDB/GH82030043
9    Y8Y  Y9  Y99Y9       YQ8- QRZQ 89Y9  YQ8       8 9Y8Y8RZ  Q- QRZQ 8       8Y9Z YQ8-8QR
     999  9   9  9        9Z   Z 0 9 9    9Z        9  99990       Z  0 9          99   9Z  9Z

BTXT.AJH..A8..AAEA1F      6ABOOAG4BBGHEA1FSABA      OAGDB1GHEA1F6ABAOAG4      BKGHEA1FSACA82030044
9    Y8R  Y9  Y9ZQ 8       8Y9+ YQ8- QRZQ 88Y9Y      YQ8-8QRZQ 88Y9Q YQ8       - QRZQ 88Y9Y
     99   9   9  0 9       99 - 9Z9  Z  0 999        9Z  9Z  0 999   9Z9         Z  0 999 9

BTXT.AJA..A8..AAOAGD      B/GHEA1F6ACAOAG4BSGH      EA1FSACJOAGDB1GHEA1F      6ACAOAG4B2GH82030045
9    Y8Q  Y9  Y9 YQ8       -8QRZQ 88Y9Q YQ8- QR      ZQ 88Y9Y YQ8-8QRZQ 8      8Y9Q YQ8- QR
     99   9   9  9Z        Z  0 999 9 9Z9  Z         0 999 9 9Z    Z  0 9       99 Z 9Z9  Z

BTXT.AJH..A8..AAEA1F      SAC.OAGDBIGHEA1F6AC+      OAG4BBGHEA1FSAC-OAGD      BIGHEA1F6AC082030046
9    Y8   Y9  Y9ZQ 8       8Y9  YQ8-OQRZQ 88Y9       YQ8-YQRZQ 88Y9  YQ8       -OQRZQ 88Y9+
     99   9   9  0 9       99   9Z   Z  0 999         9Z9 9Z  0 999   9Z          -Z  0 999 -

BTXT.AKA..A8..AAOAG4      BBGHEA1FSACAOAGDBAGH      EA1F6ACAOAG4BKGHEA1F      SADAOAGDBEGH82030047
9    Y8Y  Y9  Y9 YQ8       -QQRZQ 88Y9Y YQ8-8QR      ZQ 88Y9Q YQ8-YQRZQ 8      8Y9Y YQ8-8QR
     999  9   9  9Z9       9Z  0 999   9Z  9Z        0 999    9Z9 9Z  0 9       99 9 9Z  9Z

BTXT.AK8..A8..AAEA1F      6ADAOAG4BBGHEA1FSADJ      OAGDBJGHEA1F6ADAOAG4      BBGHEA1FSAD.82030048
9    Y89  Y9  Y9ZQ 8       8Y9Q YQ8-QQRZQ 88Y9Y      YQ8-8QRZQ 88Y9Q YQ8       - QRZQ 88Y9
     99   9   9  0 9       99 9 9Z9 ZZ  0 999 9      9Z  9Z  0 999 Z 9Z9       Z  0 999

BTXT.AKO..A8..AAOAGD      BNGHEA1F6AD+OAG4BKGH      EA1FSAD-OAGDBAGHEA1F      6ADOOAG4BSGH82030049
9    Y8+  Y9  Y9 YQ8       -8QRZQ 88Y9  YQ8- QR      ZQ 88Y9  YQ8-8QRZQ 8      8Y9+ YQ8- QR
     99-  9   9  9Z        9Z  0 999   9Z9  Z        0 999   9Z    Z  0 9       99 - 9Z9  Z

BTXT.AKQ..A8..AAEA1F      SADAOAGDBEGHEA1F6ADA      OAG4B2GHEA1FSAEAOAGD      BJGHEA1F6AEA82030050
9    Y80  Y9  Y9ZQ 8       8Y9Y YQ8-8QRZQ 88Y9Q      YQ8- QRZQ 88Y9Y YQ8       -8QRZQ 88Y9Q
     99   9   9  0 9       99   9Z   Z  0 999        9Z9  Z  0 999 9 9Z        Z  0 999 9
```



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BTXT.AKS..A8..AAOAG4      BBGHEA1FSAEJOAGDBNGH      EA1F6AEAOAG4BBGHEA1F      SAE.OAGDBEGH82030051
9    Y88  Y9  Y9 YQ8       -YQRZQ 88Y9Y YQ8-8QR      ZQ 88Y9Q YQ8-QQRZQ 8      8Y9  YQ8-YQR
     99   9   9  9Z9       9Z  0 999 9 9Z  Z         0 999 Z 9Z9 9Z  0 9       99   9Z  Z

BTXT.ALQ..A8..AAEA1F      6AE+OAG4BKGHEA1FSAE-      OAGDBIGHEA1F6AEOOAG4      BBGHEA1FSAEA82030052
9    Y89  Y9  Y9ZQ 8       8Y9  YQ8-YQRZQ 88Y9       YQ8--QRZQ 88Y9+ YQ8       -QQRZQ 88Y9Y
     99   9   9  0 9       99   9Z9 9Z  0 999         9Z   Z  0 999 - 9Z9        ZZ  0 999

BTXT.AL+..A8..AAOAGD      BEGHEA1F6AEAOAG4BFGH      EA1FSAEEOAGDBOGAAACU      E.6AB/GHEA1F82030053
9    Y8   Y9  Y9 YQ8       -QQRZQ 88Y9Q YQ8- QR      ZQ 88Y9- YQ88 9YQY8      Z  Q-9QRZQ 8
     99   9   9  9Z        Z  0 999   9Z9  Z         0 999   9Z 9  9999             Z  0 9

BTXT.ALH..A8..AA6AFA      OAG4B1GHEA1F6AFAOAG4      B/GHEA1F6AFJOAG4BAGH      EA1F6AFAOAG482030054
9    Y8O  Y9  Y98Y9Y      YQ8-9QRZQ 88Y9Q YQ8       - QRZQ 88Y9Y YQ8-RQR      ZQ 88Y9Q YQ8
     99   9   9 99 9      9Z9  Z  0 999 9 9Z9       Z  0 999 9 9Z9 0Z         0 999 Z 9Z9

BTXT.ALO..A8..AABJGH      EA1F6AF-OAG4BAGHEA1F      6AF+OAG4BOGAJADMBJGH      EA1F6AF-DAG482030055
9    Y8+  Y9  Y9-0QR      ZQ 88Y9  YQ8-OQRZQ 8      8Y9  YQ88 9Y9Y8Y-9QR      ZQ 88Y9  YQ8
     99   9   9  Z        0 999    9Z9 -Z  0 9      99   9Z99  9 99   Z          0 999    9Z9

BTXT.AL8..A8..AABNGH      EA1F6AFOOAG4BAGHEA1F      6AFAOAG4BEGHEA1F6AFA      OAG4BAGHEA1F82030056
9    Y8   Y9  Y9-9QR      ZQ 88Y9+ YQ8-RQRZQ 8      8Y9Y YQ8-RQRZQ 88Y9Q      YQ8--QRZQ 8
     99   9   9  Z        0 999 - 9Z9  Z  0 9      99   9Z9  Z  0 999          9Z9  Z  0 9

BTXT.AMA..A8..AA6AGA      OAG4BEGHEA1F6AGAOAG4      BAGHEA1F6AGJOAG4BEGH      EA1F6AGAOAG482030057
9    Y8Q  Y9  Y98Y9Y      YQ8--QRZQ 88Y9Q YQ8       -9QRZQ 88Y9Y YQ8-9QR      ZQ 88Y9Q YQ8
     99Z  9   9 99 9      9Z9  Z  0 999 9 9Z9       Z  0 999 9 9Z9  Z         0 999 Z 9Z9

BTXT.AMQ..A8..AABAGH      EA1F6AG-OAG4BEGHEA1F      6AG+OAG4BAGHEA1F6AG-      OAG4BEGHEA1F82030058
9    Y8Z  Y9  Y9-ZQR       ZQ 88Y9  YQ8-ZQRZQ 8      8Y9  YQ8-OQRZQ 88Y9       YQ8-OQRZQ 8
     99   9   9  Z        0 999    9Z9  Z  0 9      99   9Z9  Z  0 999          9Z9  Z  0 9

BTXT.AMJ..A8..AA6AGO      OAG4BOGAKAF4BFGHEA1F      SAGAOAGDBOGHEA1FSAGA      OAGDBWGHEA1F82030059
9    Y8Y  Y9  Y98Y9+       YQ88 9Y9Y88- QRZQ 8      8Y9Y YQ8- QRZQ 88Y9Q      YQ8- QRZQ 8
     99   9   9 99 -       9Z99  9 999  Z  0 9      99   9Z  Z  0 999          9Z  Z  0 9

BTXT.AMQ..A8..AASAHA      OAGDB6GHEA1FSAHAOAGD      BFGHEA1FSAHJOAGDBFGH      EA1FSAHAOAGD82030060
9    Y8   Y9  Y98Y9Y       YQ8- QRZQ 88Y9Q YQ8       -YQRZQ 88Y9Y YQ8-QQR      ZQ 88Y9Q YQ8
     99   9   9 99 9       9Z   Z  0 999 9 9Z       9Z  0 999 9 9Z  9Z         0 999 Z 9Z

BTXT.ANA..A8..AABOGH      EA1FSAH.OAGDBFGHEA1F      SAH+OAGDBDGHEA1FSAH-      OAGDBUGHEA1F82030061
9    Y8Q  Y9  Y9-YQR       ZQ 88Y9  YQ8-QQRZQ 8      8Y9  YQ8-9QRZQ 88Y9       YQ8-9QRZQ 8
     999  9   9  9Z        0 999    9Z  ZZ  0 9      99   9Z  Z  0 999          9Z  Z  0 9

BTXT.ANH..A8..AASAHO      OAGDBDGHEA1FSAHAOAGD      BMGHEA1FSAHAOAGDBDGH      EA1FSAAAOAGD82030062
9    Y8Z  Y9  Y98Y9+       YQ8-ZQRZQ 88Y9Y YQ8       -ZQRZQ 88Y9Q YQ8-OQR      ZQ 88Y8Y YQ8
     99   9   9 99 -       9Z   Z  0 999   9Z        Z  0 999   9Z  Z          0 99999 9Z

BTXT.ANA..A8..AABMGH      EA1FSAAAOAGDBDGHEA1F      SAAJOAGDBUGHEA1FSAAA      OAGDAAOJGAF882030063
9    Y8Y  Y9  Y9-OQR       ZQ 88Y8Q YQ8- QRZQ 8      8Y8Y YQ8- QRZQ 88Y8Q      YQ8-9 ZZQQ9
     99   9   9  Z        0 99999 9Z  Z  0 9      9999 9Z   Z  0 9999Z          9Z      9Z

BTXT.ANH..A8..AAB4GH      EA1FSAA.OAGDB4GHEA1F      SAA+OAGDBDGHEA1FSAA-      OAGDBDGHEA1F82030064
9    Y8O  Y9  Y9- QR       ZQ 88Y8  YQ8-9QRZQ 8      8Y8  YQ8-RQRZQ 88Y8       YQ8-RQRZQ 8
     99-  9   9  Z        0 9999  9Z  Z  0 9      999  9Z   Z  0 9999          9Z 0Z  0 9

BTXT.ANO..A8..AASAAO      OAGDBDGHEA1FSAAAOAGD      BDGHEA1FSAAAOAGDBMGH      EA1FSAAAOAGD82030065
9    Y8   Y9  Y98Y8+       YQ8--QRZQ 88Y8Y YQ8       -OQRZQ 88Y8Q YQ8- QR      ZQ 88YQY YQ8
     99   9   9 999-       9Z   Z  0 9999  9Z        -Z  0 9999  9Z  Z          0 99999 9Z

BTXT.AOY..A8..AABMGH      EA1FSAAAOAGDBOGALAFA      BOAAG-ADODGAFFBODEG-      BDE.6ABOAAG-82030066
9    Y89  Y9  Y9-9QR       ZQ 88YQQ YQ88 9Y9Y8Q      8-Y9Q -9 9ZQQR8-98Q       8 Z  Q8-Y9Q
     99   9   9  Z        0 99999 9Z 9  9 99       9  Z       9Z 9  9Z          9    9   Z

BTXT.AO-..A8..AABODJ      GVBBEA1FHAAJ1.G2EAOB      HAAA1.G2EAOWHAA.1.GK      BOGAMAFDADOD82030067
9    Y8   Y9  Y98-98       Q88QZQ 89YQY  Q9ZQ Q      ZYQQ  Q9ZQ  9YQ   Q8          8 9Y9Y8Q-9 9
     99   9   9 9  9       Z 99 0 9 999  Z  0 Z      99Z  Z  0   99   Z9          9  9 999
```

F820 2540 PCH FUNCTION SEC 1

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BTXT.AOH..A8..AAGAFF     AAOEGAFFE.6ABOAAG-BO      D/GFBBEA1FBAA+3AEAOB     BAA-3AEAOWBA82030068
9    Y8-  Y9  Y9ZYQ8     -Y 9ZYQ8Z  Q8-Y9Q 8-      98Q08QZQ 89YQ  YZQ Q    ZYQ  YZQ  9Y
     99   9   9   Z           Z     9   Z 9       9Z 99 0 9 99  9 0 Z      99  9 0   9

BTXT.AOO..A8..AAA03A     BOAAG-BONAGGADODGAFF      E.6ABODVGPBBEAOBBAAA     1AGDBOAAAADA82030069
9    Y8-  Y9  Y9Q+ Y     8-Y9Q 8 9YQQ-9 9ZYQ8      Z  Q8-99QY8QZQ Q8YQY     YQZ8 YYYY8Y
     99   9   9 9- 9     9   Z 9  9ZZ      Z          9   Z 99 0 Z999      9Z 9 999999

BTXT.APH..A8..AAAAAA     AAAAAAAAAADAAAAAAAA      AAAAADAAAAAAAMAAAAA      AABAAAAAAAP-82030070
9    Y89  Y9  Y9YYYY     YYQYYYYYYY9YYYYYYYY      YYYYYY9YYYYYYY9YYYYY     YY9YYYYYYY8
     99   9   9 9999     9999999999 999999999      999999 9999999 99999     99 99999999

BTXT.AP...A8..AAHAAA     AAAADAAAAAP-DAAAAAAA      CAOQJAAA.RTN.BYPASSE     D.MAKE.THE.P82030071
9    Y8   Y9  Y99YYY     YYYY9YYYYY8 8YYYYYYY      9Y9 YYY9
     99   9   9  999     9999 999999 99999999       9  999

BTXT.APH..A8..AAUNCH     .NOT.READY.MAKE.THE.      PUNCH.NOT.OPERATIONA     L--OFF.LINE.82030072
9    Y8R  Y9  Y9
     990  9   9

BTXT.APA..A8..AAMAKE     .THE.PUNCH.OPERATION      AL.AND.READY.PLACE.B     LANK.CARDS.I82030073
9    Y8Q  Y9  Y9
     990  9   9

BTXT.APY..AF..AAN.PU     NCH.HOPPER.........       ..................       ............82030074
9    Y8   Y8  Y9
     99   99  9

BRLD......AJ....AAAA     AAANEAA4AAO/AADOEAP4      EAPDHAPJ.............    ............82030075
9         YY    Y9Y9     8YQ98YQ88Y988Y9+8Y88      8Y889Y88
          99    9 9      999 999 99  99 -9999      999  99

BEND.AP-......AA....     ..................        ..................       ............82030076
9    Y9       Y9
     9        9

BLDT..............        ..................        ..................       ............82030077
9
```

---------- LAST PAGE ----------

```
                8213   TITLE
                *
                *
                ********************************************************************
                * MODIFICATIONS
                *
                * REVISION LEVEL 3 - THIS REVISION DIFFERS FROM VERSION 2 AS FOLLOWS..
                *      1.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE -TEST NUMBERS-.
                *      2.  THE PROGRAM NOW INCLUDES STANDARD ERROR MESSAGE PRINTOUTS.
                *      3.  THE PROGRAM TESTS RESPONSE TO ALL INVALID COMMANDS.
                *      4.  THE PROGRAM TESTS PROPER SETTING AND SUPPRESSION OF THE
                *          INCORRECT LENGTH INDICATOR.
                *      5.  THE STACKER SELECT TESTING HAS BEEN SIMPLIFIED.  SECTION
                *          SENSE SW 11 12 AND 13 ALLOW LOOPS ON STACKER SELECT POCKET
                *          1 2 3 RESPECTIVELY.  A NEW STACKER SELECT PATTERN OF 1-2-1-3
                *          HAS REPLACED THE PREVIOUS RIPPLE PATTERN.
                *                                                                  *
                * E.C. PREREQUISITES                                              *
                *      MACHINE . . . NONE                                         *
                *      PROGRAM . . . NONE                                         *
                *                                                                  *
                * USE DESCRIPTION F820* AT EC 130498, DATED 15 JUN 67  OR LATER.  *
                *                                                                  *
                ********************************************************************
                * REVISION LEVEL 2 - THIS REVISION DIFFERS FROM VERSION 1 AS FOLLOWS..
                *      1.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE 1400 MODE CCWS IF
                *          THE COMPATIBILITY FEATURE IS ON THE 2821.
                *
                ********************************************************************
                XF8213 START 4096
001000                 USING *,15
                *
                *
                ********************************************************************
                *                        TEST NUMBER DESCRIPTION
                ********************************************************************
                ********************************************************************
                * TEST       DESCRIPTION
                *
                *
                *                    **************
                *                      ROUTINE 01
                *                    **************
                *
                * 0010 - OPERATION ATTEMPTED
                *
                *        A TEST I-O IS ISSUED TO A READY TEST DEVICE.
                *
                *        EXPECTED RESPONSE
                *
                *        EXPECT COND. CODE 0
                *
                *        POSSIBLE FAILURE CAUSES
                *
                *        1. CONDITION CODE 2 INDICATES THE CHANNEL APPEARS TO BE BUSY.
                *        2. CONDITION CODE 3 INDICATES THERE IS NO DEVICE FOR THE
                *           ADDRESS USED.  THE DM UDT ENTRY COULD BE IN ERROR, THE
                *           DEVICE MAY BE OFF LINE, OR IF THE 2821 TWO CHANNEL SWITCH
                *           FEATURE IS INSTALLED, THE PARTITIONING SWITCH FOR THIS
                *           INTERFACE MAY BE DISABLED.
                *        3. IF CONDITION CODE 1 IS SET, THE CSW MUST BE INSPECTED TO
                *           DETERMINE THE CAUSE.  UNIT CHECK MIGHT BE DUE TO NOT READY
                *
                *
                *                    **************
```



```
                *                      ROUTINE 02
                *                    **************
                *
                * 0020 - OPERATION ATTEMPTED
                *
                *        ISSUE INDIVIDUALLY ALL COMMANDS THAT ARE CONSIDERED INVALID
                *        TO THE PUNCH.   EACH INVALID COMMAND IS FOLLOWED BY THE
                *        EXECUTION OF A DIAGNOSTIC CHECK READ COMMAND TO RESET THE
                *        SENSE LATCHES IN THE PUNCH.
                *
                *        EXPECTED RESPONSE
                *
                *        EXPECT CONDITION CODE 1, STATUS STORED WITH UNIT CHECK IN THE
                *        DEVICE STATUS AND COMMAND REJECT IN THE SENSE BYTE FOR THE
                *        INVALID COMMAND CCW.
                *
                * 0030 - OPERATION ATTEMPTED
                *
                *        ISSUE DIAGNOSTIC CHECK READ FOLLOWING AN INVALID COMMAND
                *        START I-O, TO RESET THE PUNCH  SENSE LATCHES.
                *
                *        EXPECTED RESPONSE
                *
                *        EXPECT CONDITION CODE 0 FOR THE VALID DIAGNOSTIC CHECK READ
                *        WHICH FOLLOWS EACH INVALID COMMAND START I-O, AND A SENSE
                *        BYTE WITH NO BITS ON.
                *
                *
                *                    **************
                *                      ROUTINE 03
                *                    **************
                *
                * 0040 - OPERATION ATTEMPTED
                *
                *        A WRITE COMMAND -41-, IS ISSUED WITH A SHORT CCW COUNT OF 79.
                *        THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
                *
                *        EXPECTED RESPONSE
                *
                *        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
                *        INTERRUPT SHOULD OC&UR WITH THE INCORRECT LENGTH RECORD BIT
                *        SET ON IN THE CHANNEL STATUS BYTE.  A SECOND INTERRUPT SHOULD
                *        OCCUR, WITH DEVICE END ALONE IN THE CSW.
                *
                * 0050 - OPERATION ATTEMPTED
                *
                *        A WRITE COMMAND -41-, IS ISSUED WITH A LONG CCW COUNT OF 81.
                *        THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
                *
                *        EXPECTED RESPONSE
                *
                *        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
                *        INTERRUPT SHOULD OCCUR WITH THE INCORRECT LENGTH RECORD BIT
                *        SET ON IN THE CHANNEL STATUS BYTE AND A RESIDUAL COUNT OF 1.
                *        A SECOND INTERRUPT SHOULD OCCUR, WITH DEVICE END IN THE CSW.
                *
                * 0060 - OPERATION ATTEMPTED
                *
                *        A WRITE COMMAND -41-, IS ISSUED WITH A SHORT CCW COUNT OF 79,
                *        AND THE SUPPRESS INCORRECT LENGTH RECORD FLAG ON.  THE CHANNEL
                *        IS ENABLED TWICE FOR INTERRUPTS.
                *
                *        EXPECTED RESPONSE
                *
                *        COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
                *        INTERRUPT SHOULD OCCUR, FOLLOWED BY A DEVICE END INTERRUPT.
                *        INCORRECT LENGTH RECORD INDICATION SHOULD BE SUPPRESSED.
                *
```

```
*
* 0070 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND -41- IS ISSUED WITH A LONG CCW COUNT OF 81,
*       AND THE SUPPRESS INCORRECT LENGTH RECORD FLAG ON.  THE CHANNEL
*       IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       INTERRUPT SHOULD OCCUR WITH A RESIDUAL COUNT OF 1 FOLLOWED
*       BY A DEVICE END INTERRUPT.
*       INCORRECT LENGTH RECORD INDICATION SHOULD BE SUPPRESSED.
*
*
*                       **************
*                         ROUTINE 04
*                       **************
*
* 0080 - OPERATION ATTEMPTED
*
*       A DIAGNOSTIC READ -C2- IS ISSUED WITH A SHORT CCW COUNT OF -79
*       THE CHANNEL IS ENABLED ONCE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       AND DEVICE END INTERRUPT SHOULD OCCUR WITH THE INCORRECT
*       LENGTH RECORD BIT SET ON IN THE CHANNEL STATUS BYTE.
*
* 0090 - OPERATION ATTEMPTED
*
*       A DIAGNOSTIC READ -C2- IS ISSUED WITH A LONG CCW COUNT OF -81-
*       THE CHANNEL IS ENABLED ONCE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       AND DEVICE END INTERRUPT SHOULD OCCUR WITH THE INCORRECT
*       LENGTH RECORD BIT SET ON IN THE CHANNEL STATUS BYTE AND A
*       RESIDUAL COUNT OF -1-.
*
*       POSSIBLE FAILURE CAUSES
*
*       UNUSUAL COMMAND SEQUENCE -SENSE 02- WILL OCCUR IF PFR FEATURE
*       IS INSTALLED BUT NOT DEFINED IN THE UDT.
*
* 0100 - OPERATION ATTEMPTED
*
*       A DIAGNOSTIC READ -C2- IS ISSUED WITH A SHORT CCW COUNT OF -79
*       AND THE SUPPRESS INCORRECT LENGTH RECORD FLAG ON.  THE CHANNEL
*       IS ENABLED ONCE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       AND DEVICE END INTERRUPT SHOULD OCCUR WITH THE INCORRECT
*       LENGTH RECORD BIT SUPPRESSED.
*
*       POSSIBLE FAILURE CAUSES
*
*       UNUSUAL COMMAND SEQUENCE -SENSE 02- WILL OCCUR IF PFR FEATURE
*       IS INSTALLED BUT NOT DEFINED IN THE UDT.
*
* 0110 - OPERATION ATTEMPTED
*
*       A DIAGNOSTIC READ -C2- IS ISSUED WITH A LONG CCW COUNT OF -81-
*       AND THE SUPPRESS INCORRECT LENGTH RECORD FLAG ON.  THE CHANNEL
*       IS ENABLED ONCE FOR INTERRUPTS.
```



```
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  A CHANNEL END
*       DEVICE END INTERRUPT SHOULD OCCUR WITH A RESIDUAL COUNT OF -1-
*       INCORRECT LENGTH RECORD INDICATION SHOULD BE SUPPRESSED.
*
*       POSSIBLE FAILURE CAUSES
*
*       UNUSUAL COMMAND SEQUENCE -SENSE 02- WILL OCCUR IF PFR FEATURE
*       IS INSTALLED BUT NOT DEFINED IN THE UDT.
*
*
*                       **************
*                         ROUTINE 05
*                       **************
*
* 0120 - OPERATION ATTEMPTED
*
*       A WRITE COMMAND -41-, IS COMMAND CHAINED TO AN INVALID COMMAND
*       TO THE PUNCH, -53-.  THE CHANNEL IS ENABLED ONCE FOR AN
*       INTERRUPT, AND A SENSE IS PERFORMED
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O.  UNIT CHECK
*       SHOULD BE SET BY COMMAND REJECT ON INITIAL SELECTION OF THE
*       SECOND COMMAND.  THIS SHOULD BREAK THE COMMAND CHAIN, AND AN
*       INTERRUPT SHOULD OCCUR.  THE CSW SHOULD CONTAIN THE ADDRESS
*       OF THE INVALID CCW + 8, AND THE DEVICE STATUS BYTE SHOULD
*       HAVE UNIT CHECK ONLY.  THE COMMAND REJECT BIT SHOULD BE ON
*       IN THE SENSE BYTE.
*
* 0130 - OPERATION ATTEMPTED
*
*       A NOP -03-, IS ISSUED, AND THE CHANNEL IS ENABLED ONCE, FOR
*       ANY UNEXPECTED INTERRUPT.  A SENSE IS PERFORMED.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 1 SHOULD BE SET ON THE START I-O WITH CHANNEL AND
*       DEVICE END ONLY STORED.  THE SENSE BYTE SHOULD CONTAIN THE
*       COMMAND REJECT BIT, WHICH WAS SET ON BY THE PREVIOUS TEST.
*       THE NOP SHOULD NOT RESET THE SENSE BYTE.
*
* 0140 - OPERATION ATTEMPTED
*
*       A DIAGNOSTIC CHECK READ -C6-, IS ISSUED AND THE CHANNEL IS
*       ENABLED ONCE FOR AN INTERRUPT.  A SENSE IS PERFORMED.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I/O.  AN INTERRUPT
*       SHOULD OCCUR, WITH ONLY CHANNEL AND DEVICE END IN THE DEVICE
*       STATUS BYTE.  NO SENSE BITS SHOULD BE ON.  THE PREVIOUSLY
*       SET COMMAND REJECT BIT SHOULD BE RESET.
*
* 0150 - OPERATION ATTEMPTED
*
*       A NOP -03-, IS COMMAND CHAINED TO ANOTHER NOP.  THE CHANNEL
*       IS ENABLED FOR AN INTERRUPT, THEN A SENSE IS PERFORMED.
*
*       EXPECTED RESPONSE
*
*       COND. CODE 0 SHOULD BE SET ON THE START I-O, DUE TO THE
*       COMMAND CHAIN FLAG.  AN INTERRUPT SHOULD OCCUR, AND THE CSW.
*       SHOULD CONTAIN THE ADDRESS OF THE SECOND CCW + 8.  THE DEVICE
```

```
*       STATUS BYTE SHOULD CONTAIN CHANNEL AND DEVICE END.  A RESIDUAL
*       COUNT OF 1 SHOULD REMAIN.
*
*
*                    **************
*                      ROUTINE 06
*                    **************
*
* 0160 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT IS COMMAND CHAINED TO ANOTHER
*       PUNCH FEED STACKER SELECT.  THE CHANNEL IS ENABLED TWICE
*       FOR INTERRUPTS.     EACH COMMAND HAS A COUNT OF -80-.
*
*       EXPECTED RESPONSE
*
*       EXPECT COND. CODE 0 ON THE START I-O DUE TO THE COMMAND CHAIN
*       FLAG.  AT EXECUTION OF THE SECOND COMMAND IN THE CHAIN AN
*       INTERRUPT WILL BE TAKEN FOR CHANNEL END FOLLOWED BY A SECOND
*       INTERRUPT FOR DEVICE END.  THE 80 CHARACTERS PUNCHED -ALL
*       BLANKS- BY EACH COMMAND SHOULD  N O T  BRING WRONG LENGTH
*       RECORD INTO STATUS.
*
*
*                    **************
*                      ROUTINE 07
*                    **************
*
* 0170 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT WITH A COUNT OF -79- IS COMMAND
*       CHAINED TO A PUNCH FEED STACKER SELECT WITH A COUNT OF -80-.
*       THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       EXPECT COND. CODE 0 ON THE START I-O DUE TO COMMAND CHAINING.
*       THE SHORT COUNT -79- OF THE FIRST COMMAND SHOULD BREAK COMMAND
*       CHAINING AND THE INCORRECT LENGTH RECORD BIT SHOULD BE SET ON.
*       EXPECT CHANNEL END WITH ILR BIT ON FOLLOWED BY DEVICE END.
*       CSW ADDRESS SHOULD POINT AT THE SECOND CCW OF THE CHAIN.
*
* 0180 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT WITH A COUNT OF -81- IS COMMAND
*       CHAINED TO A PUNCH FEED STACKER SELECT WITH A COUNT OF -80-.
*       THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       EXPECT COND. CODE 0 ON THE START I-O DUE TO COMMAND CHAINING.
*       THE LONG COUNT -81- OF THE FIRST COMMAND SHOULD BREAK COMMAND
*       CHAINING AND THE INCORRECT LENGTH RECORD BIT SHOULD BE SET ON
*       TOGETHER WITH A RESIDUAL COUNT OF 1 INDICATED.
*       EXPECT CHANNEL END, ILR, AND RESIDUAL COUNT OF 1 ALL TOGETHER
*       FOLLOWED BY DEVICE END.  THE CSW ADDRESS SHOULD POINT AT THE
*       SECOND CCW OF THE CHAIN.
*
*
*                    **************
*                      ROUTINE 08
*                    **************
*
* 0190 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT IS  D A T A  AND  C O M M A N D
*       CHAINED TO AN INVALID COMMAND.  THE CHANNEL IS ENABLED TWICE
```



```
*       FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       EXPECT DATA CHAINING TO TAKE PRIORITY OVER COMMAND CHAINING
*       AND THE INVALID COMMAND SHOULD NOT BE INSPECTED AND SHOULD
*       NOT CAUSE COMMAND REJECT.  EXPECT COND. CODE 0 ON THE START
*       I-O DUE TO CHAINING.  CHAINING SHOULD NOT BE BROKEN AND EXPECT
*       CHANNEL END FOLLOWED BY DEVICE END WITH NO OTHER STATUS BITS
*       INDICATED.
*
*
*                    **************
*                      ROUTINE 09
*                    **************
*
* 0200 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT IS DATA CHAINED TO FOUR DIFFERENT
*       PLACES WITH THE TOTAL COUNT EQUAL TO -80-.  THE CHANNEL IS
*       ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       EXPECT CONDITION CODE 0 TO BE SET ON THE START I-O.
*       EXPECT NO WRONG LENGTH RECORD INDICATION DUE TO TOTAL COUNT
*       OF -80-.  CHANNEL END FOLLOWED BY DEVICE END INTERRUPT SHOULD
*       OCCUR.
*
*                    **************
*                      ROUTINE 10
*                    **************
*
* 0210 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT IS DATA CHAINED TO FOUR DIFFERENT
*       PLACES WITH THE TOTAL COUNT  E X C E E D I N G  -80-.  THE
*       CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       EXPECT CONDITION CODE 0 TO BE SET ON THE START I-O.
*       SINCE THE COUNT EXCEEDS  -80- EXPECT CHAINING TO BE BROKEN
*       WITH ILR AND RESIDUAL COUNT INDICATED IN THE STATUS.
*       CHANNEL END WITH A RESIDUAL COUNT AND WRONG LENGTH RECORD
*       INDICATION WILL BE FOLLOWED BY DEVICE END STATUS.
*
*
*                    **************
*                      ROUTINE 11
*                    **************
*
* 0220 - OPERATION ATTEMPTED
*
*       A PUNCH FEED STACKER SELECT IS DATA CHAINED TO FOUR DIFFERENT
*       PLACES WITH TOTAL COUNT  E X C E E D I N G  -80-.  THE SIL BIT
*       IS SET ON AND THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*       EXPECTED RESPONSE
*
*       EXPECT CONDITION CODE 0 TO BE SET ON THE START I-O.
*       SINCE THE COUNT EXCEEDS -80- EXPECT CHAINING TO BE BROKEN AND
*       A RESIDUAL COUNT INDICATED.  SUPPRESS INCORRECT LENGTH RECORD
*       FLAG IN ON BUT INCORRECT LENGTH RECORD SHOULD STILL BE
*       INDICATED.  WHEN DATA CHAIN FLAG IS ON WITH SIL FLAG, WRONG
*       LENGTH RECORD IS  N O T  SUPPRESSED.
*       CHANNEL END WITH A RESIDUAL COUNT AND WRONG LENGTH RECORD
```

```
*        INDICATION WILL BE FOLLOWED BY DEVICE END STATUS.
*
*
*                    **************
*                      ROUTINE 12
*                    **************
*
*        NOTE--THE NUMBERS PUNCHED IN THE FIRST EIGHT COLUMNS OF EACH
*        CARD SHOULD MATCH THE STACKER POCKET THEY FALL INTO.
*
* 0230 - OPERATION ATTEMPTED
*
*        A PUNCH FEED STACKER SELECT -STACKER 1- COMMAND -01- IS ISSUED
*        THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O.  A CHANNEL END INTERRUPT
*        SHOULD OCCUR FOLLOWED BY A DEVICE END INTERRUPT.  THE CARD
*        THAT IS PUNCHED SHOULD FALL INTO STACKER -1- AND THE FIRST
*        EIGHT COLUMNS OF THE CARD SHOULD BE PUNCHED WITH -1-.
*
* 0240 - OPERATION ATTEMPTED
*
*        A PUNCH FEED STACKER SELECT -STACKER 2- COMMAND -41- IS ISSUED
*        THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O.  A CHANNEL END INTERRUPT
*        SHOULD OCCUR FOLLOWED BY A DEVICE END INTERRUPT.  THE CARD
*        THAT IS PUNCHED SHOULD FALL INTO STACKER -2- AND THE FIRST
*        EIGHT COLUMNS OF THE CARD SHOULD BE PUNCHED WITH -2-.
*
* 0250 - OPERATION ATTEMPTED
*
*        A PUNCH FEED STACKER SELECT -STACKER 1- COMMAND -01- IS ISSUED
*        THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O.  A CHANNEL END INTERRUPT
*        SHOULD OCCUR FOLLOWED BY A DEVICE END INTERRUPT.  THE CARD
*        THAT IS PUNCHED SHOULD FALL INTO STACKER -1- AND THE FIRST
*        EIGHT COLUMNS OF THE CARD SHOULD BE PUNCHED WITH -1-.
*
* 0260 - OPERATION ATTEMPTED
*
*        A PUNCH FEED STACKER SELECT -STACKER 3- COMMAND -81- IS ISSUED
*        THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O.  A CHANNEL END INTERRUPT
*        SHOULD OCCUR FOLLOWED BY A DEVICE END INTERRUPT.  THE CARD
*        THAT IS PUNCHED SHOULD FALL INTO STACKER -3- AND THE FIRST
*        EIGHT COLUMNS OF THE CARD SHOULD BE PUNCHED WITH -3-.
*
*
* 0265 - OPERATION ATTEMPTED
*
*        A /360 WRITE STACKER SELECT POCKET 3 COMMAND -81- IS ISSUED
*        AND 8 BLANKS ARE SENT OVER THE BUS.  THIS COMMAND IS GIVEN TO
*        FEED THE LAST CARD TO THE PROPER STACKER.
*
*        EXPECTED RESPONSE
```



```
*
*        EXPECT COND CODE 0 WITH CHANNEL END RETURNED IN THE 1ST CSW
*        AND DEVICE END RETURNED ALONE IN THE 2ND CSW.
*
*
* 0270 - OPERATION ATTEMPTED
*
*************************************************************************
*        NOTE--SECTION SENSE SWITCH -1- MUST BE ON IN CONJUNCTION WITH
*              SECTION SENSE SWITCH 11 12 OR 13 TO ENTER THIS TEST
*************************************************************************
*
*        A PUNCH FEED STACKER SELECT COMMAND IS ISSUED IN A TIGHT
*        START I-O TEST I-O LOOP.  THE STACKER SELECTED IS DETERMINED
*        FROM THE SETTING OF SNS SWITCH 11 12 OR 13.  NO ERROR CHECKING
*        IS PERFORMED AND NO PRINTOUTS WILL INTERRUPT THIS LOOP.
*        NOTE--TO LOOP ON ANY ONE STACKER SELECT COMMAND SECTION SENSE
*              SWITCH 11 12 OR 13 MUST BE ON.  TO GO INTO A TIGHT START
*              I-O TEST I-O LOOP SECTION SENSE SW 1 MUST BE ON IN
*              CONJUNCTION WITH EITHER SENSE SW 11 12 OR 13.
*              SENSE SWITCH 11 SELECTS STACKER POCKET -1-
*              SENSE SWITCH 12 SELECTS STACKER POCKET -2-
*              SENSE SWITCH 13 SELECTS STACKER POCKET -3-
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0.
*
*
*                    **************
*                      ROUTINE 13
*                    **************
*
*************************************************************************
*        NOTE--THE NUMBERS PUNCHED IN THE FIRST EIGHT COLUMNS OF EACH
*              CARD SHOULD MATCH THE STACKER POCKET THEY FALL INTO.
*************************************************************************
*
* 1230 - OPERATION ATTEMPTED
*
*        A 1400 PUNCH COMPATIBILITY STACKER SELECT -STACKER 3- COMMAND
*        -91- IS ISSUED.  THE FIRST EIGHT COLUMNS ARE PUNCHED WITH -1-
*        THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*        THE STACKER SELECTION WHEN IN 1400 PUNCH COMPATIBILITY REFERS
*        TO THE PREVIOUSLY PUNCHED CARD.  AS AN EXAMPLE, THE NEXT PUNCH
*        STACKER SELECT COMMAND WILL STACKER SELECT THE CARD JUST
*        PUNCHED.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O.  A CHANNEL END INTERRUPT
*        SHOULD OCCUR FOLLOWED BY A DEVICE END INTERRUPT.  THE CARD
*        WILL FALL INTO STACKER -1- UPON ISSUANCE OF THE NEXT PUNCH
*        STACKER SELECT COMMAND.
*        THE CARD PREVIOUSLY PUNCHED, IF ANY, WILL BE SELECTED INTO
*        STACKER -3-.
*
*
* 1240 - OPERATION ATTEMPTED
*
*        A 1400 PUNCH COMPATIBILITY STACKER SELECT -STACKER 1- COMMAND
*        -11- IS ISSUED.  THE FIRST EIGHT COLUMNS ARE PUNCHED WITH -2-.
*        THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*        THE STACKER SELECTION WHEN IN 1400 PUNCH COMPATIBILITY REFERS
*        TO THE PREVIOUSLY PUNCHED CARD.  AS AN EXAMPLE, THE NEXT PUNCH
*        STACKER SELECT COMMAND WILL STACKER SELECT THE CARD JUST
```

```
*        PUNCHED.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O.  A CHANNEL END INTERRUPT
*        SHOULD OCCUR FOLLOWED BY A DEVICE END INTERRUPT.  THE CARD
*        THAT WAS PUNCHED BY THE PREVIOUS TEST NUMBER WILL NOW BE
*        STACKER SELECTED INTO POCKET -1-.
*
*
* 1250 - OPERATION ATTEMPTED
*
*        A 1400 PUNCH COMPATIBILITY STACKER SELECT -STACKER 2- COMMAND
*        -51- IS ISSUED.  THE FIRST EIGHT COLUMNS ARE PUNCHED WITH -1-.
*        THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*        THE STACKER SELECTION WHEN IN 1400 PUNCH COMPATIBILITY REFERS
*        TO THE PREVIOUSLY PUNCHED CARD.  AS AN EXAMPLE, THE NEXT PUNCH
*        STACKER SELECT COMMAND WILL STACKER SELECT THE CARD JUST
*        PUNCHED.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O.  A CHANNEL END INTERRUPT
*        SHOULD OCCUR FOLLOWED BY A DEVICE END INTERRUPT.  THE CARD
*        THAT WAS PUNCHED BY THE PREVIOUS TEST NUMBER WILL NOW BE
*        STACKER SELECTED INTO POCKET -2-.
*
*
* 1260 - OPERATION ATTEMPTED
*
*        A 1400 PUNCH COMPATIBILITY STACKER SELECT -STACKER 1- COMMAND
*        -11- IS ISSUED.  THE FIRST EIGHT COLUMNS ARE PUNCHED WITH -3-.
*        THE CHANNEL IS ENABLED TWICE FOR INTERRUPTS.
*
*        THE STACKER SELECTION WHEN IN 1400 PUNCH COMPATIBILITY REFERS
*        TO THE PREVIOUSLY PUNCHED CARD.  AS AN EXAMPLE, THE NEXT PUNCH
*        STACKER SELECT COMMAND WILL STACKER SELECT THE CARD JUST
*        PUNCHED.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND. CODE 0 ON THE START I-O.  A CHANNEL END INTERRUPT
*        SHOULD OCCUR FOLLOWED BY A DEVICE END INTERRUPT.  THE CARD
*        THAT WAS PUNCHED BY THE PREVIOUS TEST NUMBER WILL NOW BE
*        STACKER SELECTED INTO POCKET -1-.
*
* 1265 - OPERATION ATTEMPTED
*
*        A 1400 WRITE STACKER SELECT POCKET 3 COMMAND -91- IS ISSUED
*        AND 8 BLANKS ARE SENT OVER THE BUS.  THIS COMMAND IS GIVEN
*        TO ALLOW FEEDING THE LAST CARD PUNCHED FROM THE PRE-CHECK
*        STATION TO THE PROPER STACKER BEFORE LEAVING THE TEST.
*
*        EXPECTED RESPONSE
*
*        EXPECT COND CODE 0 WITH CHANNEL END RETURNED IN THE 1ST CSW
*        AND DEVICE END RETURNED ALONE IN THE 2ND CSW.
*
* 1270 - OPERATION ATTEMPTED
*
***********************************************************************
*        NOTE--SECTION SENSE SW -1- MUST BE ON IN CONJUNCTION WITH
*              SECTION SENSE SWITCH 11 12 OR 13 TO ENTER THIS TEST.
***********************************************************************
*
*        A 1400 MODE PUNCH STACKE SELECT COMMAND IS ISSUED IN A TIGHT
*        START I-O TEST I-O LOOP.  THE STACKER SELECTED IS DETERMINED
```



```
                                        *        FROM THE SETTING OF SNS SWITCH 11 12 OR 13.  NO ERROR CHECKING
                                        *        IS PERFORMED AND NO PRINTOUTS WILL INTERRUPT THIS LOOP.
                                        *
                                        *        EXPECTED RESPONSE
                                        *
                                        *        EXPECT COND. CODE 0.
                                        *
                                        *        NOTE--TO LOOP ON ANY ONE STACKER SELECT COMMAND SECTION SENSE
                                        *              SWITCH 11 12 OR 13 MUST BE ON.  TO GO INTO A TIGHT START
                                        *              I-O TEST I-O LOOP SECTION SENSE SW 1 MUST BE ON IN
                                        *              CONJUNCTION WITH EITHER SENSE SW 11 12 OR 13.
                                        *              SENSE SWITCH 11 SELECTS STACKER POCKET -1-
                                        *              SENSE SWITCH 12 SELECTS STACKER POCKET -2-
                                        *              SENSE SWITCH 13 SELECTS STACKER POCKET -3-
                                        *        WHEN DOING 1400 PUNCH COMPATIBILITY STACKER SELECT LOOP OPTION
                                        *        THE NUMBER PUNCHED IN THE CARD WILL MATCH THE STACKER POCKET
                                        *        IT IS FOUND IN.  HOWEVER, WHEN LOOP OPTION SWITCH 11 12 OR 13
                                        *        IS TURNED OFF THERE WILL UNAVOIDABLY BE GENERATED ONE PUNCHED
                                        *        CARD WHICH HAS AN INCORRECT EXPECTED STACKER POCKET NUMBER
                                        *        PUNCHED IN IT.  THIS SHOULD NOT BE CONSIDERED A MALFUNCTION.
                                        *
                                        ***********************************************************************
                                        *******************                                 *******************
                                        * SECTION PREFACE ************************************ SECTION PREFACE *
                                        *******************                                 *******************
001000   F8213000                       SECNO  DC    XL4'F8213000'        PROGRAM,SECTION AND REVISION NOS.  *
001004   00000000                       SNSW   DC    XL4'00'              SECTION SENSE SWITCHES             *
001008   0000                                  DC    XL2'00'                                                 *
00100A   0000                           ICM    DC    XL2'00'              INTERRUPTION CONDITION MASK        *
00100C   00                             SDMF   DC    XL1'00'              SECTION DM FLAGS                   *
00100D   01                             NIOU   DC    XL1'01'              NUMBER OF UNIT TABLE ENTRYS        *
00100E   C0                             FLAG1  DC    X'C0'                EXCLUSIVE CPU                      *
00100F   00                             FLAG2  DC    X'00'                I/O INT ARE ERR, EXT INT TO PROG   *
001010   0104000000                     INPSW  DC    X'0104000000'        DISABLED, SPVSR STATE, NO PGM MASK *
001015   001784                                DC    AL3(ROUT01)          ADR OF 1ST ROUTINE PREFIX          *
001018   0000000000000000               EXOPSW DC    XL8'0'               SECTION OLD EXTERNAL PSW           *
001020   0000000000000000               SVOPSW DC    XL8'00'              CLEAR ALL OLD PSWS                 *
001028   0000000000000000               PGOPSW DC    XL8'00'              PROGRAM OLD PSW                    *
001030   0000000000000000               MCOPSW DC    XL8'00'              MACHINE CHECK OLD PSW              *
001038   0000000000000000               IOOPSW DC    XL8'00'              I/O OLD PSW                        *
001040   0000000000000000               CSW    DC    XL8'00'              CHANNEL STATUS WORD                *
001048   00000000                       CAW    DC    XL4'00'              CAW                                *
00104C   000000000000000000                    DC    XL12'00'             RESERVED FOR DM USE                *
001055   000000
001058   0004000000                     EXNPSW DC    X'0004000000'        EXTERNAL NEW PSW                   *
00105D   000000                         SRET   DC    XL3'0'               ADR OF EXT INTRPT ROUTINE          *
001060   0000000000000000               SVNPSW DC    XL8'00'              SUPERVISOR NEW PSW                 *
001068   0000000000000000               PGNPSW DC    XL8'00'              PROGRAM NEW PSW                    *
001070   0000000000000000               MCNPSW DC    XL8'00'              MACHINE CHECK NEW PSW              *
001078   01040000                       IONPSW DC    XL4'01040000'        I/O NEW PSW                        *
00107C   00001230                              DC    AL4(IRETRN)          ADDRESS OF I/O INTRPT ROUTINE      *
001080                                         DS    96C                  96 BYTE REG DUMP AREA FOR DM USE   *
0010E0   82                             UNIT1  DC    X'82'                UNIT TYPE - 2540 PUNCH
0010E1   00                             U1OP   DC    X'00'                OPTIONAL FEATURES BYTE             *
0010E2   8000                           U1ADDR DC    X'8000'              FLAGS AND CHAN/UNIT ADDRESS        *
                                        ***********************************************************************
                                        ***********************************************************************
                                        *                  2540 PUNCH OPTIONAL FEATURES ASSIGNMENT
                                        ***********************************************************************
                                        *
                                        * UNITITYPE I OPTIONAL FEATURE DIGIT 1    I  OPTIONAL FEATURE DIGIT 2
                                        ******I*****I*****************************I****************************
                                        *     I     IBIT 0  BIT 1  BIT 2  BIT 3  I BIT 4  BIT 5  BIT 6  BIT 7
                                        *     I     IHEX 8  HEX 4  HEX 2  HEX 1  I HEX 8  HEX 4  HEX 2  HEX 1
                                        *2540 I 82  I       CARD   PUNCH  51 COL I 1400                 2 CHAN
                                        *PUNCHI     I       IMAGE  FEED   FEAT.  I COMPAT               SW. ON
                                        *     I     I              READ          I FEAT.                2821
                                        ******I*****I*****************************I****************************
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*
*********************************************************************
*********************************************************************
*                    2540 PUNCH DIAGNOSTIC CHECK READ BYTE
*********************************************************************
*      BIT MEANING
*       0    NOT USED
*       1    NOT USED
*       2    NOT USED
*       3    X UPPER CHECK PLANE
*       4    X LOWER CHECK PLANE
*       5    BUFFER PARITY CHECK
*       6    PUNCH TRANSLATE CHECK
*       7    PUNCH BUFFER ADDRESS CHECK
*********************************************************************
*********************************************************************
*********************************************************************
*                    2540 PUNCH SENSE BYTE
*********************************************************************
*      BIT   MEANING
*       0    COMMAND REJECT - INVALID COMMAND ISSUED TO THE PUNCH
*       1    INTERVENTION REQUIRED
*       2    BUS OUT CHECK - PARITY ERROR
*       3    EQUIPMENT CHECK - TRANSLATE CHECK, ADDRESS CHECK,
*            DATA REGISTER PARITY ERROR, OR A HOLE COUNT ERROR.
*       4    DATA CHECK
*       5    OVERRUN - NOT USED
*       6    UNUSUAL COMMAND SEQUENCE
*       7    NOT USED
*********************************************************************
*********************************************************************
*              2540 PUNCH STATUS BYTE
*********************************************************************
*      BIT   MEANING
*       0    ATTENTION - NOT USED FOR THE 2540 PUNCH
*       1    STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
*       2    CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
*       3    DEVICE BUSY
*       4    CHANNEL END
*       5    DEVICE END
*       6    UNIT CHECK
*       7    UNIT EXCEPTION - NOT USED FOR THE 2540 PUNCH
*********************************************************************
*********************************************************************
*********************************************************************
*                        PARAMETERS USED TO ENTER
*                        THE I-O HANDLER ROUTINE
*********************************************************************
*      BAL   R11,ISIO              LINK TO I-O HANDLER
*      DC    XL2'0000'             CONTROL SWITCHES
*      DC    X'0014'               TEST NO. IN DEC EXPRESSED IN HEX
*      DC    X'F0'                 EXPECTED COND. CODE
*      DC    X'00'                 EXPECTED SENSE DATA
*      DC    AL2(ADR-BASE+REG)     ADDR. OF EXPECTED CSW IF NEEDED
*********************************************************************
*********************************************************************
*                        I-O HANDLER CONTROL SWITCHES
*                        2 BYTE PARAMETER FOLLOWING BAL
*********************************************************************
* SWITCH     DESCRIPTION
*   0 ----   OFF - ISSUE AN I-O COMMAND
*            ON  - DO NOT ISSUE AN I-O COMMAND
*   1 ----   OFF - ENABLE
*            ON  - DO NOT ENABLE
*   2 ----   OFF - EXPECT NO INTERRUPT
*            ON  - EXPECT AN INTERRUPT
*   3 ----   OFF - DO NOT EXPECT 2 INTERRUPTS
*            ON  - EXPECT 2 INTERRUPTS
```



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*   4 ----   OFF - EXPECT NO CSWS
*            ON  - EXPECT A CSW
*   5 ----   OFF - DO NOT EXPECT 2 CSWS
*            ON  - EXPECT 2 CSWS
*   6 ----   OFF - ALWAYS TRY TO ISSUE SENSE
*            ON  - SENSE ON UNIT CHECK ONLY
*
*   8 ----   OFF - NOT EXECUTING STACKER SELECT TESTS
*            ON  - EXECUTING STACKER SELECT TESTS.
*
*********************************************************************
*********************************************************************
*                        SWITCHES USED BY I-O HANDLER
*********************************************************************
* SWITCH     DESCRIPTION
*   0 ----   OFF - NO HANGUP ON INTERFACE
*            ON  - HANGUP OCCURRED
*   1 ----   OFF - NO CSWS STORED
*            ON  - ONE CSW STORED
*   2 ----   OFF - SECOND CSW NOT RECEIVED
*            ON  - SECOND CSW RECEIVED
*   3 ----   OFF - DID NOT ENABLE
*            ON  - ENABLED ONCE
*   4 ----   OFF - DID NOT ENABLE TWICE
*            ON  - ENABLED TWICE
*   5 ----   OFF - NO SENSE DATA RECEIVED
*            ON  - SENSE DATA RECEIVED
*   6 ----   OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*            ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*   7 ----   OFF - NO ERROR DETECTED
*            ON  - AN ERROR WAS DETECTED
*********************************************************************
*                    REGISTERS USED IN I-O HANDLER
*********************************************************************
*      REG          COMMENTS
*       5    USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
*            PREVIOUS HANGUP ON INTERFACE DETECTED.
*
*       8    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       9    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       10   MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
*
*       11   MUST BE USED AS LINK REG TO THIS ROUTINE
*
*       12   MUST CONTAIN DEVICE ADDRESS
*
*********************************************************************
0010E4  0000            ISW   DC    XL2'0'
*********************************************************************
*********************************************************************
*                        * I-O HANDLER SUB-ROUTINE *
*********************************************************************
0010E6  92 9E F 1B6     IHIO  MVI   ISSUE,X'9E'       SET UP FOR HALT I-O
0010EA  92 C8 F 659           MVI   IOPT1+25,X'C8'    MOVE -H- TO OPTION MSG.
0010EE  92 C8 F 5C0           MVI   IOADDR+12,X'C8'
0010F2  92 9E F 15A           MVI   ILOOP,X'9E'
0010F6  47 F0 F 11E           BC    UNC,IEYEOH        BR. UNCONDITIONAL
0010FA  92 9D F 1B6     ITIO  MVI   ISSUE,X'9D'       SET UP FOR TEST I-O
0010FE  92 9D F 15A           MVI   ILOOP,X'9D'
001102  92 E3 F 659           MVI   IOPT1+25,X'E3'    MOVE -T- TO OPTION MSG.
001106  92 E3 F 5C0           MVI   IOADDR+12,X'E3'
00110A  47 F0 F 11E           BC    UNC,IEYEOH        BR. UNCONDITIONAL
00110E  92 9C F 1B6     ISIO  MVI   ISSUE,X'9C'       SET UP FOR START I-O
001112  92 9C F 15A           MVI   ILOOP,X'9C'
001116  92 E2 F 659           MVI   IOPT1+25,X'E2'    MOVE -S- TO OPTION MSG.
00111A  92 E2 F 5C0           MVI   IOADDR+12,X'E2'
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00111E    D2 01 F 63C B 002   IEYEOH MVC   ITSTNO+5(2),2(R11)    SAVE TEST NUMBER
001124    90 AB F 6A8                STM   R10,R11,ISLAVE        SAVE REG 10 AND REG 11
001128    90 89 F 580                STM   R8,R9,ISAVE           SAVE REGS 8 AND 9
00112C    D2 00 F 695 F 003          MVC   RTSV(1),SECNO+3       SAVE RT NO. FOR HANGUP.
001132    50 AD 0 048         GOMAN  ST    R10,HCAW(R13)         STORE COMMAND ADDRESS
001136    D7 07 D 040 D 040          XC    HCSW(8,R13),HCSW(R13)
00113C    D7 0B E 080 E 080          XC    LOGOUT(12,R14),LOGOUT(R14)
001142    91 80 B 000                TM    0(R11),X'80'          CHECK CONTROL SWITCH FOR NO I-O
001146    47 10 F 200                BC    ALL,INOW              BR. IF ON
00114A    91 C0 F 004                TM    SNSW,X'C0'
00114E    47 80 F 196                BC    NONE,JOHN
                              *****************************************************************
                              *                     SENSE SWITCH LOOPS
                              *****************************************************************
001152    91 80 F 004         ITRY1  TM    SNSW,X'80'            CHECK SECTION SENSE SWITCH 0
001156    47 80 F 162                BC    NONE,ITRY2            BR. IF OFF
00115A    9C 00 C 000         ILOOP  SIO   0(R12)                SIO, TIO, OR HIO
00115E    47 F0 F 152                BC    UNC,ITRY1             BR. UNCONDITIONAL
001162    91 40 F 004         ITRY2  TM    SNSW,X'40'            CHECK SECTION SENSE SWITCH 1
001166    47 80 F 182                BC    NONE,IHI              BR. IF OFF
00116A    9D 00 C 000         IHANG  TIO   0(R12)                TEST I-O
00116E    47 70 F 152                BC    NCC0,ITRY1            BR. IF NOT COND. CODE 0
001172    91 40 F 004                TM    SNSW,X'40'            CHECK SECTION SENSE SWITCH 1
001176    47 80 F 182                BC    NONE,IHI              BR. IF OFF
00117A    9C 00 C 000                SIO   0(R12)                START I-O
00117E    47 F0 F 16A                BC    UNC,IHANG             BR. UNCONDITIONAL
001182    58 1E 0 198         IHI    L     R1,WT(14)
001186    88 10 0 003                SRL   R1,3
00118A    9D 00 C 000         GREG   TIO   0(R12)
00118E    47 80 F 196                BC    CC0,JOHN
001192    46 10 F 18A                BCT   R1,GREG
001196    D7 01 F 0E4 F 0E4   JOHN   XC    ISW(2),ISW
00119C    96 80 F 0E4                OI    ISW,X'80'
0011A0    92 E7 F 5AF                MVI   IACTCC+5,C'X'         MOVE IN A -X-
0011A4    91 01 B 001                TM    1(R11),X'01'          SEE IF IN STACKER SELECT TEST.
0011A8    47 10 F 1B6                BC    ALL,ISSUE             BR IF YES.
0011AC    92 40 F 6FC                MVI   PCHAR,C' '             CLEAR WORK AREA.
0011B0    D2 4E F 6FD F 6FC          MVC   PCHAR+1(79),PCHAR           ,,
0011B6    9C 00 C 000         ISSUE  SIO   0(R12)                I-O COMMAND- SIO, TIO, OR HIO
0011BA    47 80 F 1FC                BC    CC0,IZERO             BR. IF COND. CODE 0
0011BE    47 40 F 1D6                BC    CC1,IONE              BR. IF COND. CODE 1
0011C2    47 20 F 1CE                BC    CC2,ITWO              BR. IF COND. CODE 2
0011C6    92 F3 F 5AF                MVI   IACTCC+5,X'F3'        INDICATE COND. CODE 3
0011CA    47 F0 F 200                BC    UNC,INOW              BR. UNCONDITIONAL
0011CE    92 F2 F 5AF         ITWO   MVI   IACTCC+5,X'F2'        INDICATE COND. CODE 2
0011D2    47 F0 F 200                BC    UNC,INOW              BR. UNCONDITIONAL
0011D6    92 F1 F 5AF         IONE   MVI   IACTCC+5,X'F1'        INDICATE COND. CODE 1
0011DA    D2 07 F 676 D 040          MVC   ICSW1(8),HCSW(R13)    SAVE CSW
0011E0    96 40 F 0E4                OI    ISW,X'40'             INDICATE 1 CSW
0011E4    91 80 B 001                TM    1(R11),X'80'          SEE IF INVALID COMMANDS TEST
0011E8    47 80 F 200                BC    NONE,INOW             BR. IF NOT
0011EC    91 08 F 67A                TM    ICSW1+4,X'08'         SEE IF CHANNEL END IN STATUS
0011F0    47 10 F 200                BC    ALL,INOW              BR. IF YES
0011F4    96 40 B 000                OI    0(R11),X'40'          DO NOT ALLOW FOR ENABLE INTERRUPT
0011F8    47 F0 F 200                BC    UNC,INOW              BR. UNCONDITIONAL
0011FC    92 F0 F 5AF         IZERO  MVI   IACTCC+5,X'F0'        INDICATE COND. CODE 0
001200    94 7F F 0E4         INOW   NI    ISW,X'7F'             TURN OFF HANG UP SWITCH
001204    91 40 B 000                TM    0(R11),X'40'          CHECK CONTROL SWITCH FOR NO ENABLE
001208    47 10 F 2A4                BC    ALL,ISEN              BR. IF ON
00120C    96 10 F 0E4                OI    ISW,X'10'             INDICATE ENABLED ONCE
001210    58 9E 0 198         IWAIT  L     R9,WT(R14)            LOAD DM WAIT FACTOR
001214    88 90 0 003                SRL   R9,3                  ADJUST
001218    96 80 F 0E4                OI    ISW,X'80'             TURN ON HANG UP SW
00121C    80 00 F 693                SSM   MSK1                  ENABLE
001220    46 90 F 220                BCT   R9,*                  WAIT
001224    80 00 F 694                SSM   MSK2                  DISABLE
001228    94 7F F 0E4                NI    ISW,X'7F'             TURN OFF HANG SW
00122C    47 F0 F 2A4                BC    UNC,ISEN              BR. UNCONDITIONAL
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                              *****************************************************************
                              *                 ALL I-O INTERRUPTS RETURN HERE
                              *****************************************************************
001230    49 C0 F 03A         IRETRN CH    R12,IOOPSW+2          COMPARE FOR CURRENT I-O ADDRESS
001234    47 60 F 252                BC    UNEQ,IUIO             BR. IF UNEQUAL
001238    94 7F F 0E4                NI    ISW,X'7F'             RESET HANG UP SW
00123C    91 40 F 0E4                TM    ISW,X'40'
001240    47 10 F 282                BC    ALL,ISV2              BR. IF 1 CSW ALREADY STORED
001244    D2 07 F 676 F 040          MVC   ICSW1(8),HCSW(R15)    SAVE CSW 1
00124A    96 40 F 0E4                OI    ISW,X'40'             INDICATE 1 CSW STORED
00124E    47 F0 F 28C                BC    UNC,INT3              BR. UNCONDITIONAL
001252    D2 07 F 588 F 040   IUIO   MVC   WORK(8),HCSW(R15)
001258    0A DD                      SVC   X'DD'                 CONVERT ADDRESS
00125A    0003                       DC    AL2(3)
00125C    0039                       DC    AL2(IOOPSW+1-SECNO)
00125E    069B                       DC    AL2(IUNEX+5-SECNO)
001260    0A D0                      SVC   X'D0'                 PRINT UNEXPECTED INTERRUPT DEVICE
001262    64                         DC    X'64'                 ADDRESS
001263    0B                         DC    X'0B'
001264    F696                       DC    AL2(IUNEX-SECNO+REG)
001266    D2 02 F 5E6 F 5DF          MVC   IBLAH+1(3),ICSW       MOVE -CSW- TO MESSAGE
00126C    92 1A F 42F                MVI   ICNT,X'1A'            ADJUST COUNT
001270    D2 02 F 5FC F 5FF          MVC   IBLAH+23(3),IACT      MOVE -ACT- TO MESSAGE
001276    45 90 F 418                BAL   R9,ICOUT              BR. TO OUTPUT CSW
00127A    96 02 F 0E4                OI    ISW,X'02'             INDICATE UIO
00127E    47 F0 F 502                BC    UNC,ILOGED            BR. UNCONDITIONAL
001282    D2 07 F 67E F 040   ISV2   MVC   ICSW2(8),HCSW(R15)    SAVE CSW 2
001288    96 20 F 0E4                OI    ISW,X'20'             INDICATE 2 CSWS STORED
00128C    91 10 B 000         INT3   TM    0(R11),X'10'          CHECK CTRL SW FOR 2 INTR EXPECTED
001290    47 80 F 2A4                BC    NONE,ISEN             BR. IF NOT
001294    91 08 F 0E4                TM    ISW,X'08'
001298    47 10 F 2A4                BC    ALL,ISEN              BR. IF ALREADY ENABLED TWICE
00129C    96 08 F 0E4                OI    ISW,X'08'             INDICATE ENABLED TWICE
0012A0    47 F0 F 210                BC    UNC,IWAIT
0012A4    91 02 B 000         ISEN   TM    0(R11),X'02'          CHECK CONTROL SWITCH FOR SNS ON UC
0012A8    47 80 F 2CC                BC    NONE,IDOSNS           BR. IF OFF TO ISSUE SENSE
0012AC    91 40 F 0E4                TM    ISW,X'40'
0012B0    47 80 F 322                BC    NONE,IBSN             BR. IF NO CSW STORED TO BYPASS SENSE
0012B4    91 02 F 67A                TM    ICSW1+4,X'02'         CHECK FOR UNIT CHECK
0012B8    47 10 F 2CC                BC    ALL,IDOSNS            IF YES BR. TO ISSUE SENSE
0012BC    91 20 F 0E4                TM    ISW,X'20'             CHECK FOR SECOND CSW
0012C0    47 80 F 322                BC    NONE,IBSN             BR. IF NOT TO BYPASS SENSE
0012C4    91 02 F 682                TM    ICSW2+4,X'02'         CHECK FOR UNIT CHECK
0012C8    47 80 F 322                BC    NONE,IBSN             BR. IF NOT TO BYPASS SENSE
0012CC    58 9E 0 198         IDOSNS L     R9,WT(R14)            LOAD DM WAIT FACTOR
0012D0    88 90 0 002                SRL   R9,2                  CUT IT DOWN TO 2.5 SECS.
0012D4    41 80 F 688                LA    R8,ISENSE             LOAD SENSE COMMAND ADDRESS
0012D8    50 8D 0 048                ST    R8,HCAW(R13)          STORE IN CAW
0012DC    9C 00 C 000                SIO   0(R12)                ISSUE SENSE
0012E0    47 70 F 370                BC    NCC0,INDER            BR. IF NOT ACCEPTED
0012E4    9D 00 C 000         ITIOLP TIO   0(R12)                TEST I-O
0012E8    47 40 F 30C                BC    CC1,ILOKE             BR. IF CSW STORED
0012EC    46 90 F 2E4         ITIC   BCT   R9,ITIOLP
0012F0    47 F0 F 322                BC    UNC,IBSN              BR. UNCONDITIONAL
0012F4    91 40 F 0E4         INDEX1 TM    ISW,X'40'
0012F8    47 10 F 370                BC    ALL,INDER             BR. IF CSW STORED
0012FC    47 F0 F 374                BC    UNC,IDUNCK            BR. UNCONDITIONAL
001300    91 20 F 0E4         INDEX2 TM    ISW,X'20'
001304    47 10 F 370                BC    ALL,INDER             BR. IF CSW 2 STORED
001308    47 F0 F 374                BC    UNC,IDUNCK            BR. UNCONDITIONAL
00130C    95 0C D 044         ILOKE  CLI   HCSW+4(R13),X'0C'     CHECK FOR CE DE ONLY
001310    47 70 F 2EC                BC    NCC0,ITIC             BR. IF NOT
001314    96 04 F 0E4                OI    ISW,X'04'             INDICATE SENSE DATA RECIEVED
001318    D5 00 F 615 B 005          CLC   IACSNS+5(1),5(R11)    COMPARE FOR EXPECTED SENSE
00131E    47 60 F 370                BC    UNEQ,INDER            BR. IF UNEQUAL
001322    D5 00 F 5AF B 004   IBSN   CLC   IACTCC+5(1),4(R11)    COMPARE FOR EXPECTED COND. CODE
001328    47 60 F 370                BC    UNEQ,INDER            BR. IF UNEQUAL
00132C    91 08 B 000                TM    0(R11),X'08'
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001330   47 80 F 2F4                BC    NONE,INDEX1            BR. IF NO CSW EXPECTED
001334   91 40 F 0E4                TM    ISW,X'40'
001338   47 80 F 370                BC    NONE,INDER             BR. IF NO CSW RECIEVED
00133C   48 8B 0 006                LH    R8,6(R11)              LOAD CSW ADDR
001340   40 80 F 348                STH   R8,ICCSW1+4            STORE IN COMPARE INSTR.
001344   D5 07 F 676 F 676   ICCSW1 CLC   ICSW1(8),ICSW1         COMPARE FOR EXPECTED CSW
00134A   47 60 F 370                BC    UNEQ,INDER             BR. IF UNEQUAL
00134E   91 04 B 000                TM    0(R11),X'04'
001352   47 80 F 300                BC    NONE,INDEX2            BR. IF NO CSW 2 EXPECTED
001356   91 20 F 0E4                TM    ISW,X'20'
00135A   47 80 F 370                BC    NONE,INDER             BR. IF NO CSW 2 RECIEVED
00135E   41 88 0 008                LA    R8,8(R8)               UPDATE TO SECOND CSW
001362   40 80 F 36A                STH   R8,ICCSW2+4
001366   D5 07 F 67E F 67E   ICCSW2 CLC   ICSW2(8),ICSW2         COMPARE FOR EXPECTED CSW 2
00136C   47 80 F 374                BC    EQ,IDUNCK              BR. IF EQUAL
001370   96 01 F 0E4         INDER  OI    ISW,X'01'              INDICATE AN ERROR
001374   92 64 F 3A4         IDUNCK MVI   IFLAG1,X'64'           SET UP FOR ERROR PRINTOUT
001378   92 C0 F 548                MVI   IFLAG2,X'C0'
00137C   91 01 F 0E4                TM    ISW,X'01'              CHECK FOR A DETECTED ERROR
001380   47 10 F 394                BC    ALL,IOUTIT             BR. IF ERROR DETECTED
001384   91 01 F 004                TM    SNSW,X'01'             CHECK SECTION SENSE SWITCH 7
001388   47 80 F 564                BC    NONE,ILEAVE            BR. IF OFF
00138C   92 24 F 3A4                MVI   IFLAG1,X'24'           SET UP FOR CORRECT PRINTOUT
001390   92 80 F 548                MVI   IFLAG2,X'80'
001394   D2 01 F 63C B 002   IOUTIT MVC   ITSTNO+5(2),2(R11)     MOVE TEST NUMBER TO PRINT
00139A   0A DD                      SVC   X'DD'                  CONVERT TEST NUMBER
00139C   0002                       DC    AL2(2)
00139E   063C                       DC    AL2(ITSTNO+5-SECNO)
0013A0   063C                       DC    AL2(ITSTNO+5-SECNO)
0013A2   0A D0                      SVC   X'D0'                  PRINT TEST NUMBER
0013A4   64                  IFLAG1 DC    X'64'
0013A5   09                         DC    X'09'
0013A6   F637                       DC    AL2(ITSTNO-SECNO+REG)
0013A8   41 80 0 004                LA    R8,4                   ADJUST LINK ADDRESS FOR PRINTOUT
0013AC   1B B8                      SR    R11,R8
0013AE   50 B0 F 5C8                ST    R11,ILINK+5
0013B2   0A DD                      SVC   X'DD'                  CONVERT LINK ADDRESS
0013B4   0003                       DC    AL2(3)
0013B6   05C9                       DC    AL2(ILINK+6-SECNO)
0013B8   05C8                       DC    AL2(ILINK+5-SECNO)
0013BA   0A D0                      SVC   X'D0'                  PRINT LINK ADDRESS
0013BC   A0                         DC    X'A0'
0013BD   10                         DC    X'10'
0013BE   F5C3                       DC    AL2(ILINK-SECNO+REG)
0013C0   41 BB 0 004                LA    R11,4(R11)
0013C4   91 80 B 000                TM    0(R11),X'80'
0013C8   47 10 F 446                BC    ALL,IOCSW              BR. IF NO I-O COMMAND ISSUED
0013CC   0A DD                      SVC   X'DD'                  CONVERT I-O ADDRESS
0013CE   0003                       DC    AL2(3)
0013D0   0690                       DC    AL2(IOADR-SECNO)
0013D2   05B9                       DC    AL2(IOADDR+5-SECNO)
0013D4   0A D0                      SVC   X'D0'                  PRINT I-O ADDRESS
0013D6   A0                         DC    X'A0'
0013D7   0F                         DC    X'0F'
0013D8   F5B4                       DC    AL2(IOADDR-SECNO+REG)
0013DA   95 9C F 1B6                CLI   ISSUE,X'9C'            COMPARE FOR SIO COMMAND
0013DE   47 60 F 434                BC    UNEQ,ICCOUT            BR. IF NOT
0013E2   50 A0 F 5D8                ST    R10,ICAW+5             STORE CCW ADDR.
0013E6   0A DD                      SVC   X'DD'                  CONVERT CAW
0013E8   0003                       DC    AL2(3)
0013EA   05D9                       DC    AL2(ICAW+6-SECNO)
0013EC   05D8                       DC    AL2(ICAW+5-SECNO)
0013EE   0A D0                      SVC   X'D0'                  PRINT CAW
0013F0   A0                         DC    X'A0'
0013F1   0B                         DC    X'0B'
0013F2   F5D3                       DC    AL2(ICAW-SECNO+REG)
0013F4   D2 02 F 5E6 F 5E2          MVC   IBLAH+1(3),ICCW        MOVE -CCW- TO MESSAGE
0013FA   92 16 F 42F                MVI   ICNT,X'16'             ADJUST COUNT
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0013FE   D2 07 F 588 A 000   ICWOUT MVC   WORK(8),0(R10)         MOVE CCW TO WORK AREA
001404   45 90 F 418                BAL   R9,ICOUT               BR. TO OUTPUT CCW
001408   91 C0 A 004                TM    4(R10),X'C0'           CHECK FOR ANY CHAIN FLAGS
00140C   47 80 F 434                BC    NONE,ICCOUT            BR. IF NONE
001410   41 AA 0 008                LA    R10,8(R10)             UPDATE TO NEXT CCW
001414   47 F0 F 3FE                BC    UNC,ICWOUT             BR. UNCONDITIONAL
001418   0A DD               ICOUT  SVC   X'DD'                  CONVERT
00141A   0008                       DC    AL2(8)
00141C   0588                       DC    AL2(WORK-SECNO)
00141E   0588                       DC    AL2(WORK-SECNO)
001420   D2 07 F 5EA F 588          MVC   IBLAH+5(8),WORK        MOVE TO MESSAGE
001426   D2 07 F 5F3 F 590          MVC   IBLAH+14(8),WORK+8
00142C   0A D0                      SVC   X'D0'                  PRINT
00142E   A0                         DC    X'A0'
00142F   1A                  ICNT   DC    X'1A'
001430   F5E5                       DC    AL2(IBLAH-SECNO+REG)
001432   07 F9                      BCR   UNC,R9                 RETURN VIA REG 9
001434   D2 00 F 5A5 B 004   ICCOUT MVC   IEXPCC+5(1),4(R11)     MOVE EXP CC TO MESSAGE
00143A   0A D0                      SVC   X'D0'                  PRINT EXPECTED COND. CODE
00143C   A0                         DC    X'A0'
00143D   0A                         DC    X'0A'
00143E   F5A0                       DC    AL2(IEXPCC-SECNO+REG)
001440   0A D0                      SVC   X'D0'                  PRINT ACTUAL COND. CODE
001442   A0                         DC    X'A0'
001443   0A                         DC    X'0A'
001444   F5AA                       DC    AL2(IACTCC-SECNO+REG)
001446   D2 02 F 5E6 F 5DF   IOCSW  MVC   IBLAH+1(3),ICSW        MOVE -CSW- TO MESSAGE
00144C   92 1A F 42F                MVI   ICNT,X'1A'             ADJUST COUNT
001450   91 08 B 000                TM    0(R11),X'08'
001454   47 80 F 478                BC    NONE,IDIDI             BR. IF NO CSW EXPECTED
001458   D2 02 F 5FC F 602          MVC   IBLAH+23(3),IEXP       MOVE -EXP- TO MESSAGE
00145E   48 8B 0 006                LH    R8,6(R11)
001462   40 80 F 472                STH   R8,ICHNG1+4
001466   41 88 0 008                LA    R8,8(R8)
00146A   40 80 F 4A2                STH   R8,ICHNG2+4
00146E   D2 07 F 588 F 588   ICHNG1 MVC   WORK(8),WORK           MOVE EXPECTED CSW TO WORK AREA
001474   45 90 F 418                BAL   R9,ICOUT               BR. TO OUTPUT EXPECTED CSW
001478   91 40 F 0E4         IDIDI  TM    ISW,X'40'
00147C   47 80 F 490                BC    NONE,IMORST            BR. IF NO CSW STORED
001480   D2 02 F 5FC F 5FF          MVC   IBLAH+23(3),IACT       MOVE -ACT- TO MESSAGE
001486   D2 07 F 588 F 676          MVC   WORK(8),ICSW1          MOVE ACTUAL CSW TO WORK AREA
00148C   45 90 F 418                BAL   R9,ICOUT               BR. TO OUTPUT ACTUAL CSW
001490   91 04 B 000         IMORST TM    0(R11),X'04'
001494   47 80 F 4A8                BC    NONE,IDID              BR. IF NOT EXPECTING 2 CSWS
001498   D2 02 F 5FC F 602          MVC   IBLAH+23(3),IEXP       MOVE -EXP- TO MESSAGE
00149E   D2 07 F 588 F 588   ICHNG2 MVC   WORK(8),WORK           MOVE EXPECTED CSW TO WORK AREA
0014A4   45 90 F 418                BAL   R9,ICOUT               BR. TO OUTPUT EXPECTED CSW 2
0014A8   91 20 F 0E4         IDID   TM    ISW,X'20'
0014AC   47 80 F 4C0                BC    NONE,IPAS              BR. IF NO SECOND CSW STORED
0014B0   D2 02 F 5FC F 5FF          MVC   IBLAH+23(3),IACT       MOVE -ACT- TO MESSAGE
0014B6   D2 07 F 588 F 67E          MVC   WORK(8),ICSW2          MOVE CSW TO WORK AREA
0014BC   45 90 F 418                BAL   R9,ICOUT
0014C0   D2 0C F 60A B 005   IPAS   MVC   IEXSNS+5(1),5(R11)     MOVE EXP SENSE TO MESSAGE
0014C6   91 04 F 0E4                TM    ISW,X'04'
0014CA   47 80 F 4FA                BC    NONE,IPASS             BR. IF NO SENSE DATA RECIEVED
0014CE   0A DD                      SVC   X'DD'                  CONVERT EXPECTED SENSE
0014D0   0001                       DC    AL2(1)
0014D2   060A                       DC    AL2(IEXSNS+5-SECNO)
0014D4   060A                       DC    AL2(IEXSNS+5-SECNO)
0014D6   0A D0                      SVC   X'D0'                  PRINT EXPECTED SENSE
0014D8   A0                         DC    X'A0'
0014D9   0B                         DC    X'0B'
0014DA   F605                       DC    AL2(IEXSNS-SECNO+REG)
0014DC   0A DD                      SVC   X'DD'
0014DE   0001                       DC    AL2(1)
0014E0   0615                       DC    AL2(IACSNS+5-SECNO)
0014E2   0615                       DC    AL2(IACSNS+5-SECNO)
0014E4   0A D0                      SVC   X'D0'                  PRINT ACTUAL SENSE DATA
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0014E6   A0                                    DC    X'A0'
0014E7   0B                                    DC    X'0B'
0014E8   F610                                  DC    AL2(IACSNS-SECNO+REG)
0014EA   95 F4 F 60A                           CLI   IEXSNS+5,C'4'          SEE IF EXPECTED INTV REQD
0014EE   47 80 F 4FA                           BC    EQ,IPASS               BYPASS INTV REQD MESSAGE
0014F2   95 F4 F 615                           CLI   IACSNS+5,C'4'          SEE IF RECEIVED INTV REQD SNS
0014F6   47 80 F 766                           BC    EQ,TELHIM              BR. TO PRINT OUT INTV REQD MESSAGE
0014FA   95 30 E 181                 IPASS     CLI   SYSMOD(R14),X'30'       CHECK FOR MODEL 30
0014FE   47 60 F 52E                           BC    UNEQ,ICUIO             BR. IF NOT
001502   D2 0B F 588 E 080           ILOGED    MVC   WORK(12),LOGOUT(R14)   MOVE LOG OUT TO WORK AREA
001508   0A DD                                  SVC   X'DD'                  CONVERT
00150A   000C                                  DC    AL2(12)
00150C   0588                                  DC    AL2(WORK-SECNO)
00150E   0588                                  DC    AL2(WORK-SECNO)
001510   D2 01 F 620 F 588                     MVC   IOLOG+5(2),WORK        MOVE LOG OUT TO MESSAGE
001516   D2 05 F 623 F 58A                     MVC   IOLOG+8(6),WORK+2
00151C   D2 05 F 62A F 592                     MVC   IOLOG+15(6),WORK+10
001522   D2 05 F 631 F 59A                     MVC   IOLOG+22(6),WORK+18
001528   0A D0                                 SVC   X'D0'                  PRINT LOG OUT
00152A   A0                                    DC    X'A0'
00152B   1C                                    DC    X'1C'
00152C   F61B                                  DC    AL2(IOLOG-SECNO+REG)
00152E   91 02 F 0E4                 ICUIO     TM    ISW,X'02'
001532   47 80 F 53E                           BC    NONE,IOPOUT            BR. IF NOT UIO
001536   94 FD F 0E4                           NI    ISW,X'FD'              RESET UIO SWITCH
00153A   47 F0 F 210                           BC    UNC,IWAIT              BR. UNCONDITIONAL
00153E   91 01 B 001                 IOPOUT    TM    1(R11),X'01'           SEE IF STACKER SELECT ROUTINE
001542   47 10 F 886                           BC    ALL,SNSMES             BR. IF STACKER SELECT ROUTINE.
001546   0A D0                                 SVC   X'D0'
001548   C0                          IFLAG2    DC    X'C0'
001549   36                                    DC    X'36'
00154A   F640                                  DC    AL2(IOPT1-SECNO+REG)
00154C   0A D0                                 SVC   X'D0'                  SPACE A LINE
00154E   A0                                    DC    X'A0'
00154F   01                                    DC    X'01'
001550   F5C3                                  DC    AL2(ILINK-SECNO+REG)
001552   50 AD 0 048                           ST    R10,HCAW(R13)          STORE CAW
001556   91 C0 F 004                           TM    SNSW,X'C0'             CHECK SECTION SENSE SWITCH 0 AND 1
00155A   47 50 F 152                           BC    ANY,ITRY1              BR. IF ANY ON
00155E   91 80 F 0E4                 SSRET     TM    ISW,X'80'
001562   07 15                                 BCR   ALL,R5                 RETURN VIA REG 5 IF HANG UP
001564   91 08 B 000                 ILEAVE    TM    0(R11),X'08'
001568   47 80 F 570                           BC    NONE,IUP               BR. IF NO CSW EXPECTED
00156C   41 BB 0 002                           LA    R11,2(R11)             UPDATE LINK ADDRESS FOR RETURN
001570   41 BB 0 006                 IUP       LA    R11,6(R11)
001574   98 89 F 580                           LM    R8,R9,ISAVE            RESTORE REGS 8 AND 9
001578   07 FB                                 BCR   UNC,R11                RETURN VIA REG 11
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*       I-O HANDLER WORK AREA.
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00157A                                         CNOP  0,8
00157A   07 00                                BCR   0,0
00157C   07 00                                BCR   0,0
00157E   07 00                                BCR   0,0
001580   0000000000000000          ISAVE     DC    XL8'0'
001588                               WORK      DS    24C
0015A0   40C3C34040E740C5E7          IEXPCC    DC    C' CC  X EXP'
0015A9   D7
0015AA   40C3C34040E740C1C3          IACTCC    DC    C' CC  X ACT'
0015B3   E3
0015B4   40C1C4D940E7E7E7E7          IOADDR    DC    C' ADR XXXXXX XIO'
0015BD   E7E740E7C9D6
0015C3   00                                    DC    X'00'
0015C4                                         CNOP  0,4
                      0015C3                   ORG   *-1
0015C3   40C1C4D940E7E7E7E7          ILINK     DC    C' ADR XXXXXX LINK'
0015CC   E7E740D3C9D5D2
0015D3   00                                    DC    X'00'
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0015D4                                         CNOP  0,4
                      0015D3                   ORG   *-1
0015D3   40C3C1E640E7E7E7E7          ICAW      DC    C' CAW XXXXXX '
0015DC   E7E740
0015DF   C3E2E6                      ICSW      DC    C'CSW'
0015E2   C3C3E6                      ICCW      DC    C'CCW'
0015E5   40C3E2E640E7E7E7E7          IBLAH     DC    C' CSW XXXXXXXX XX'
0015EE   E7E7E7E7E740E7E7
0015F5   E7E7E7E7E7E740C5E7                    DC    C'XXXXXX EXP'
0015FE   D7
0015FF   C1C3E3                      IACT      DC    C'ACT'
001602   C5E7D7                      IEXP      DC    C'EXP'
001605   40E2D5E240E7E740C5          IEXSNS    DC    C' SNS XX EXP'
00160E   E7D7
001610   40E2D5E240E7E740C1          IACSNS    DC    C' SNS XX ACT'
001619   C3E3
00161B   40D3D6C740E7E740E7          IOLOG     DC    C' LOG XX XXXXXX X'
001624   E7E7E7E7E7E740E7
00162B   E7E7E7E7E7E740E7E7E7                  DC    C'XXXXX XXXXXX'
001634   E7E7E7
001637   40E3E2E340E7E7E7E7          ITSTNO    DC    C' TST XXXX'
001640   40E2C5E340E2E240F0          IOPT1     DC    C' SET SS 0 ON FOR'
001649   40D6D540C6D6D9
001650   40D3D6D6D740D6D540                     DC    C' LOOP ON XIO, SS'
001659   E7C9D66B40E2E2
001660   40F140D6D540C6D6D9                     DC    C' 1 ON FOR TIO SI'
001669   40E3C9D640E2C9
001670   D640D3D6D6D7                          DC    C'0 LOOP'
001676   0000000000000000          ICSW1     DC    XL8'0'
00167E   0000000000000000          ICSW2     DC    XL8'0'
001688   04 001615 0000 0001       ISENSE    CCW   X'04',IACSNS+5,X'00',1
001690   001186                    IOADR     DC    AL3(ISSUE)
001693   FE                        MSK1      DC    X'FE'
001694   01                        MSK2      DC    X'01'
001695   00                        RTSV      DC    X'00'                  SAVE RT NO. FOR HANGUP.
001696   40E4C9D640E7E7E7E7        IUNEX     DC    C' UIO XXXXXX'
00169F   E7E7
0016A2                                         CNOP  0,8
0016A2   07 00                               BCR   0,0
0016A4   07 00                               BCR   0,0
0016A6   07 00                               BCR   0,0
0016A8   0000000000000000          ISLAVE    DC    XL8'0'                 REGISTER SAVE AREA
*****************************************************************************
*                          INITIALIZE ROUTINE
*****************************************************************************
0016B0   18 DD                     INIT      SR    R13,R13                ZERO REG 13
0016B2   91 40 E 196                         TM    406(R14),X'40'         CHECK FOR FORCED PROBLEM STATE
0016B6   47 80 F 6BC                         BC    NONE,NITWIT            BR. IF NOT
0016BA   18 DF                               LR    R13,R15                SET UP FOR PROBLEM STATE
0016BC   58 C0 F 0E0               NITWIT    L     R12,UNIT1              PUT PCH UNIT TABLE IN 12.
0016C0   54 C0 F 6F8                         N     R12,MOD50              AND OUT ALL BUT ADDRESS.
0016C4   91 80 F 0E4               BLOOP     TM    ISW,X'80'              CHECK FOR HANG UP
0016C8   47 10 F 6DA                         BC    ALL,HANGUP             BR. IF DETECTED
0016CC   92 03 F CB8                         MVI   CCW,X'03'              PUT A NOOP INTO CCW.
0016D0   92 20 F CBC                         MVI   CCW+4,X'20'            INSURE SIL FLAG IS ON IN CCW
0016D4   41 A0 F CB8                         LA    R10,CCW
0016D8   07 F4                               BCR   UNC,R4                 RETURN VIA REG 4
0016DA   D2 00 F 003 F 695         HANGUP    MVC   SECNO+3(1),RTSV        RESTORE RT NO.
0016E0   0A D0                               SVC   X'D0'                  PRINT
0016E2   64                                  DC    X'64'                  -PREVIOUS HANGUP DETECTED-
0016E3   1A                                  DC    X'1A'
0016E4   F74C                                DC    AL2(HUNG-SECNO+REG)
0016E6   96 01 F 0E4                         OI    ISW,X'01'              SET HANG UP SWITCH
0016EA   45 50 F 2CC                         BAL   R5,IDOSNS              BR. TO OUTPUT AVAILABLE INFO
0016EE   92 00 F 0E4                         MVI   ISW,X'00'              RESET HANGUP SWITCH
0016F2   47 F0 F 6C4                         BC    UNC,BLOOP
0016F6                                       CNOP  0,4
0016F6   07 00                               BCR   0,0
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0016F8   00003FFF          MOD50  DC    X'00003FFF'
0016FC                     PCHAR  DS    80C                    PUNCH WORK AREA
00174C   40D7D9C5E5C9D6E4E2 HUNG   DC    C' PREVIOUS HANG U'
001755   40C8C1D5C740E4
00175C   D740C4C5E3C5C3E3C5        DC    C'P DETECTED'
001765   C4

                           *
                           ********************************************************************************
                           *                          INTERVENTION REQUIRED MESSAGE
                           ********************************************************************************
001766   0A D0             TELHIM SVC   X'D0'                  PRINT A BLANK
001768   80                       DC    X'80'                       ,,
001769   01                       DC    X'01'                       ,,
00176A   FF03                     DC    AL2(PCH4-SECNO+REG)
00176C   0A D0                    SVC   X'D0'                 PRINT OPERATOR INSTRUCTIONS
00176E   24                       DC    X'24'                  -PLACE BLANK CARDS
00176F   22                       DC    X'22'                   IN PUNCH HOPPER-
001770   FF03                     DC    AL2(PCH4-SECNO+REG)
001772   0A D0                    SVC   X'D0'                  -MAKE THE PUNCH OPERATIONAL
001774   80                       DC    X'80'                   AND READY-
001775   25                       DC    X'25'
001776   FEDE                     DC    AL2(PCH3-SECNO+REG)
001778   0A DA                    SVC   X'DA'                 HALT FOR MANUAL INTERVENTION
00177A   9D 00 C 000              TIO   0(R12)                CLEAR PENDING INTERRUPT
00177E   47 F0 F 132              BC    UNC,GOMAN
001782                           CNOP  0,4
001782   07 00                 BCR    0,0
                           ********************************************************************************
                           * ROUTINE 01- ISSUE A TEST I-O TO THE PUNCH.  EXPECT CONDITION CODE 0.
                           ********************************************************************************
001784   01                ROUT01 DC    X'01'                  ROUTINE NUMBER
001785   000798                   DC    AL3(ROUT02-SECNO)      ADDRESS OF NEXT ROUTINE
001788   45 40 F 6B0              BAL   R4,INIT                BR. TO INITIALIZE
00178C   45 B0 F 0FA              BAL   R11,ITIO               BR. TO ISSUE TEST I-O
001790   0000                     DC    X'0000'                CONTROL SWITCHES
001792   0010                     DC    X'0010'                T  E  S  T    N  U  M  B  E  R
001794   F000                     DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001796   0A D6                    SVC   X'D6'                  ROUTINE EXIT
001798                           CNOP  0,4
                           ********************************************************************************
                           * ROUTINE 02- ISSUE ALL COMMANDS THAT ARE INVALID TO THE PUNCH.  EACH
                           *             INVALID COMMAND IS ISSUED IN A SINGLE CCW.  EXPECT COND.
                           *             CODE 1 WITH UNIT CHECK IN THE DEVICE STATUS BYTE AND
                           *             COMMAND REJECT IN THE SENSE BYTE -80-.  EACH INVALID
                           *             COMMAND ISSUED IS FOLLOWED BY A DIAGNOSTIC CHECK READ
                           *             C6 TO RESET THE COMMAND REJECT LATCH.
                           ********************************************************************************
001798   02                ROUT02 DC    X'02'                  ROUTINE NUMBER
001799   00084C                   DC    AL3(ROUT03-SECNO)      ADDRESS OF NEXT ROUTINE
00179C   45 40 F 6B0              BAL   R4,INIT                BR. TO INITIALIZE
0017A0   1B 22                   SR    R2,R2                  CLEAR REGISTER 2
0017A2   41 10 0 OFF             LA    R1,255                 LOAD TOTAL COMMAND COUNT
0017A6   41 30 0 061      AGAIN  LA    R3,97                  LOAD TOTAL VALID COMMAND COUNT
0017AA   43 23 F 7E9      RIP    IC    R2,VALCOM-1(R3)        INSERT ADDRESS OF TABLE INTO REG 2
0017AE   19 12                   CR    R1,R2                  COMPARE FOR POSSIBLE INVALID
0017B0   47 80 F 7E4             BC    EQ,HOHO                BR. IF A VALID COMMAND
0017B4   46 30 F 7AA             BCT   R3,RIP                 RIPPLE DOWN THRU TABLE OF VALIDS
0017B8   42 10 F CB8             STC   R1,CCW                 INSERT COMMAND INTO CCW
0017BC   91 0F F CB8             TM    CCW,X'0F'              CHECK IF BITS 4 THUR 8
0017C0   47 80 F 7E4             BC    NONE,HOHO              BR. IF NONE - CHANNEL HANGS IF ISSUE
0017C4   92 38 F 7CC             MVI   NEIL,X'38'             RESTORE CONTROL SWITCH
0017C8   45 B0 F 10E             BAL   R11,ISIO               BR. TO ISSUE START I-O INVALID CMD.
0017CC   3880             NEIL   DC    X'3880'                CTRL SWITCHES
0017CE   0020                    DC    X'0020'                T  E  S  T    N  U  M  B  E  R
0017D0   F180                    DC    X'F180'                EXP. COND. CODE - EXP. SENSE
0017D2   FE40                    DC    AL2(UCNVLD-SECNO+REG)  EXP. CSW ADDRESS
0017D4   92 C6 F CB8             MVI   CCW,X'C6'              INSURE DIAGNOSTIC CK READ COMMAND
0017D8   45 B0 F 10E             BAL   R11,ISIO               BR. TO DO DIAG. CHECK READ START I-O
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0017DC   2800                    DC    X'2800'                CONTROL SWITCHES
0017DE   0030                    DC    X'0030'                T  E  S  T    N  U  M  B  E  R
0017E0   F000                    DC    X'F000'                EXP. COND. CODE - EXP. SENSE
0017E2   FD90                    DC    AL2(NORSET-SECNO+REG)  EXP. ADDRESS OF CSW
0017E4   46 10 F 7A6      HOHO   BCT   R1,AGAIN               DECREMENT TOTAL COMMAND COUNT
0017E8   0A D6                   SVC   X'D6'                  EXIT ROUTINE
0017EA   01030405         VALCOM DC    X'01030405'
0017EE   090D1114                DC    X'090D1114'
0017F2   15191D21                DC    X'15191D21'
0017F6   2425292D                DC    X'2425292D'
0017FA   31343539                DC    X'31343539'
0017FE   3D414445                DC    X'3D414445'
001802   494D5154                DC    X'494D5154'
001806   55595D61                DC    X'55595D61'
00180A   6465696D                DC    X'6465696D'
00180E   71747579                DC    X'71747579'
001812   7D818485                DC    X'7D818485'
001816   898D9194                DC    X'898D9194'
00181A   95999DA1                DC    X'95999DA1'
00181E   A4A5A9AD                DC    X'A4A5A9AD'
001822   B1B4B5B9                DC    X'B1B4B5B9'
001826   BDC4C6CE                DC    X'BDC4C6CE'
00182A   D4D6DEE4                DC    X'D4D6DEE4'
00182E   E6EEF4F6                DC    X'E6EEF4F6'
001832   FE                      DC    X'FE'
001833   0818283848586878 88     DC    X'0818283848586878 88' COMMANDS THAT ARE
00183C   98A8B8C8D8E8F8           DC    X'98A8B8C8D8E8F8'          TICS
001843   C2CAD2DA          PFRFTR DC    X'C2CAD2DA'            PUNCH FEED READ
001847   E2EAF2FA                DC    X'E2EAF2FA'                FEATURE
00184C                           CNOP  0,4
                           *
                           ********************************************************************************
                           * ROUTINE 03- ISSUE A PUNCH FEED STACKER SELECT WITH A SHORT COUNT 79.
                           *             EXPECT COND. CODE 0 WITH CHANNEL END AND INCORRECT
                           *             LENGTH INDICATED IN THE 1ST CSW, AND DEVICE END ALONE IN
                           *             SECOND CSW.
                           *
                           *             ISSUE A PUNCH FEED STACKER SELECT WITH A LONG COUNT 81.
                           *             EXPECT COND CODE 0 WITH CHANNEL END AND INCORRECT
                           *             LENGTH RECORD INDICATOR IN THE 1ST CSW, AND A RESIDUAL
                           *             COUNT OF 1 IN THE SAME CSW.  DEVICE END ALONE RETURNS
                           *             IN THE SECOND CSW.
                           *              ISSUE SAME COMMANDS AGAIN BUT THIS TIME SUPPRESS THE
                           *              INCORRECT LENGTH RECORD INDICATION.  EXPECT RESULTS AS
                           *              ABOVE BUT WITHOUT THE INCORRECT LENGTH RECORD BIT ON.
                           ********************************************************************************
00184C   03                ROUT03 DC    X'03'                  ROUTINE NUMBER
00184D   0008A8                  DC    AL3(ROUT04-SECNO)      ADDRESS OF NEXT ROUTINE
001850   45 40 F 6B0              BAL   R4,INIT                BR. TO INITIALIZE
001854   92 00 F C94              MVI   PCSHRT+4,X'00'         TURN OFF SIL BIT IN CCW SHORT COUNT
001858   41 A0 F C90              LA    R10,PCSHRT             SET UP TO DO PUNCH WITH SHORT COUNT
00185C   45 B0 F 10E              BAL   R11,ISIO               BR. TO ISSUE START I-O
001860   3E00                     DC    X'3E00'                CONTROL SWITCHES
001862   0040                     DC    X'0040'                T  E  S  T    N  U  M  B  E  R
001864   F000                     DC    X'F000'                EXP. COND. CODE - EXP. SENSE
001866   FD38                     DC    AL2(SHRTCW-SECNO+REG)  EXP. CSW ADDRESS
001868   92 00 F C9C              MVI   PCLONG+4,X'00'         TURN OFF SIL BIT IN CCW LONG  COUNT
00186C   41 A0 F C98              LA    R10,PCLONG             SET UP TO DO PUNCH WITH LONG COUNT
001870   45 B0 F 10E              BAL   R11,ISIO               BR. TO ISSUE START I-O
001874   3E00                     DC    X'3E00'                CONTROL SWITCHES
001876   0050                     DC    X'0050'                T  E  S  T    N  U  M  B  E  R
001878   F000                     DC    X'F000'                EXP. COND. CODE - EXP. SENSE
00187A   FD48                     DC    AL2(LNGCW-SECNO+REG)   EXP. CSW ADDRESS
00187C   92 20 F C94              MVI   PCSHRT+4,X'20'         TURN ON SIL BIT IN CCW SHORT COUNT
001880   41 A0 F C90              LA    R10,PCSHRT             SET UP TO DO PUNCH WITH SHORT COUNT
001884   45 B0 F 10E              BAL   R11,ISIO               BR. TO DO START I-O
001888   3E00                     DC    X'3E00'                CONTROL SWITCHES
00188A   0060                     DC    X'0060'                T  E  S  T    N  U  M  B  E  R
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00188C    F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
00188E    FD28                    DC    AL2(NORM-SECNO+REG)  EXP. CSW ADDRESS
001890    92 20 F C9C             MVI   PCLONG+4,X'20'       TURN ON SIL BIT IN CCW LONG COUNT
001894    41 A0 F C98             LA    R10,PCLONG           SET UP TO DO PUNCH WITH LONG COUNT
001898    45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
00189C    3E00                    DC    X'3E00'              CONTROL SWITCHES
00189E    0070                    DC    X'0070'              T E S T   N U M B E R
0018A0    F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
0018A2    FD58                    DC    AL2(NOILRL-SECNO+REG) EXP. CSW ADDRESS
0018A4    0A D6                   SVC   X'D6'                ROUTINE EXIT
0018A6                            CNOP  0,4
0018A6    07 00                 BCR     0,0
                          ***********************************************************************
                          * ROUTINE 04- ISSUE A DIAGNOSTIC READ WITH A SHORT COUNT 79.  EXPECT
                          *             CONDITION CODE 0 WITH CHANNEL END DEVICE END AND
                          *             INCORRECT LENGTH RECORD ALL TOGETHER
                          *             ISSUE A DIAGNOSTIC READ WITH A LONG COUNT 81.   EXPECT
                          *             CONDITION CODE 0 WITH CHANNEL END DEVICE END INCORRECT
                          *             LENGTH RECORD AND A RESIDUAL COUNT OF 1 ALL TOGETHER.
                          *
                          *             ISSUE ABOVE COMMANDS AGAIN BUT THIS TIME THE INCORRECT
                          *             LENGTH RECORD INDICATION IS SUPPRESSED.  EXPECT SAME
                          *             RESULTS AS ABOVE BUT WITHOUT INCORRECT LENGTH RECORD
                          *             BIT ON.
                          ***********************************************************************
0018A8    04              ROUT04  DC    X'04'                ROUTINE NUMBER
0018A9    00090C                  DC    AL3(ROUT05-SECNO)    ADDRESS OF NEXT ROUTINE
0018AC    45 40 F 6B0             BAL   R4,INIT              BR. TO INITIALIZE
0018B0    91 20 F 0E1             TM    U1OP,X'20'           TEST FOR PFR FEATURE
0018B4    47 10 F 908             BC    ALL,EXIT04           BR. OUT OF RTN IF PFR INSTALLED.
0018B8    92 00 F CC4             MVI   DIARDS+4,X'00'       TURN OFF SIL BIT IN DIAG. READ CCW
0018BC    41 A0 F CC0             LA    R10,DIARDS           SET UP TO DO DIAG. READ SHORT COUNT
0018C0    45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
0018C4    2A00                    DC    X'2A00'              CONTROL SWITCHES
0018C6    0080                    DC    X'0080'              T E S T   N U M B E R
0018C8    F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
0018CA    FD68                    DC    AL2(DIASRT-SECNO+REG) EXP. CSW ADDRESS
0018CC    92 00 F CCC             MVI   DIARDL+4,X'00'       TURN OFF SIL BIT IN DIAG. READ CCW
0018D0    41 A0 F CC8             LA    R10,DIARDL           SET UP TO DO DIAG. READ LONG COUNT
0018D4    45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
0018D8    2A00                    DC    X'2A00'              CONTROL SWITCHES
0018DA    0090                    DC    X'0090'              T E S T   N U M B E R
0018DC    F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
0018DE    FD70                    DC    AL2(DIALNG-SECNO+REG) EXP. CSW ADDRESS
0018E0    92 20 F CC4             MVI   DIARDS+4,X'20'       TURN ON SIL BIT IN DIAG. READ SHORT
0018E4    41 A0 F CC0             LA    R10,DIARDS           SET UP TO DO DIAG. READ SHORT COUNT
0018E8    45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
0018EC    2A00                    DC    X'2A00'              CONTROL SWITCHES
0018EE    0100                    DC    X'0100'              T E S T   N U M B E R
0018F0    F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
0018F2    FD78                    DC    AL2(DAILRS-SECNO+REG) EXP. CSW ADDRESS
0018F4    92 20 F CCC             MVI   DIARDL+4,X'20'       TURN ON SIL BIT IN DIAG. READ LONG
0018F8    41 A0 F CC8             LA    R10,DIARDL           SET UP TO DO DIAG. READ LONG COUNT
0018FC    45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001900    2A00                    DC    X'2A00'              CONTROL SWITCHES
001902    0110                    DC    X'0110'              T E S T   N U M B E R
001904    F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001906    FD80                    DC    AL2(DAILRL-SECNO+REG) EXP. CSW ADDRESS
001908    0A D6           EXIT04  SVC   X'D6'                ROUTINE EXIT
00190A                            CNOP  0,4
00190A    07 00                 BCR     0,0
                          ***********************************************************************
                          * ROUTINE 05- ISSUE A PUNCH FEED STACKER SELECT COMMAND CHAINED TO AN
                          *             INVALID COMMAND.  THE INVALID COMMAND BREAKS COMMAND
                          *             CHAINING AND THE CHANNEL END DEVICE END STATUS FROM
                          *             INITIAL SELECTION IS NOT STORED DUE TO CHAINING.
                          *             EXPECT CONDITION CODE 0 WITH UNIT CHECK ALONE IN THE
                          *             STATUS AND COMMAND REJECT IN THE SENSE BYTE.
```



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                          *
                          *             ISSUE A NOOP START I-O TO THE PUNCH.  THE NOOP COMMAND
                          *             SHOULD NOT RESET THE COMMAND REJECT BIT SET FROM THE
                          *             PREVIOUS INVALID COMMAND CHAIN.  EXPECT CONDITION CODE 1
                          *             CHANNEL END DEVICE END BUT NO UNIT CHECK.  THE COMMAND
                          *             REJECT SENSE BIT SHOULD BE ON.
                          *
                          *             ISSUE A DIAGNOSTIC CHECK READ COMMAND TO THE PUNCH.
                          *             EXPECT CONDITION CODE 0 CHANNEL END DEVICE END.  THE
                          *             COMMAND REJECT SENSE BIT SHOULD BE RESET WHEN THE
                          *             DIAGNOSTIC CHECK READ COMMAND IS ISSUED.
                          *
                          *             ISSUE A NOOP START I-O WITH A SHORT COUNT OF 1 COMMAND
                          *             CHAINED TO ANOTHER NOOP WITH A COUNT OF 1.  EXPECT
                          *             CONDITION CODE 0.  CHANNEL END DEVICE END STATUS FROM
                          *             INITIAL SELECTION IS NOT SAVED DUE TO CHAINING.  CHANNEL
                          *             END DEVICE END FROM THE SECOND COMMAND IS STORED ALONG
                          *             WITH A RESIDUAL COUNT OF 1 IN THE CHANNEL STATUS WORD.
                          ***********************************************************************
00190C    05              ROUT05  DC    X'05'                ROUTINE NUMBER
00190D    000960                  DC    AL3(ROUT06-SECNO)    ADDRESS OF NEXT ROUTINE
001910    45 40 F 6B0             BAL   R4,INIT              BR. TO INITIALIZE
001914    41 A0 F CA0             LA    R10,CHAINP           SET UP TO DO PUNCH CHAIN TO INVALID
001918    45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE SIO
00191C    2800                    DC    X'2800'              CONTROL SWITCHES
00191E    0120                    DC    X'0120'              T E S T   N U M B E R
001920    F080                    DC    X'F080'              EXP. COND. CODE - EXP. SENSE
001922    FD88                    DC    AL2(UNCK-SECNO+REG)  EXP. CSW ADDRESS
001924    41 A0 F CB8             LA    R10,CCW              SET UP TO ISSUE NOOP
001928    45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
00192C    2800                    DC    X'2800'              CONTROL SWITCHES
00192E    0130                    DC    X'0130'              T E S T   N U M B E R
001930    F180                    DC    X'F180'              EXP. COND. CODE - EXP. SENSE
001932    FD98                    DC    AL2(NEXT1-SECNO+REG) EXP. CSW ADDRESS
001934    92 C6 F CB8             MVI   CCW,X'C6'            INSURE DIAG CHECK READ COMMAND
001938    45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
00193C    2800                    DC    X'2800'              CONTROL SWITCHES
00193E    0140                    DC    X'0140'              T E S T   N U M B E R
001940    F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001942    FD90                    DC    AL2(NORSET-SECNO+REG) EXP. CSW ADDRESS
001944    41 A0 F CB0             LA    R10,NOPCCW           SET UP TO DO NOP COMMAND CHAINED NOP
001948    92 03 F CB8             MVI   CCW,X'03'            INSURE NO OP COMMAND
00194C    92 00 F CBC             MVI   CCW+4,X'00'          TURN OFF SIL FLAG IN CCW
001950    45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START T-O
001954    2800                    DC    X'2800'              CONTROL SWITCHES
001956    0150                    DC    X'0150'              T E S T   N U M B E R
001958    F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
00195A    FDA0                    DC    AL2(NOPRES-SECNO+REG) EXP. CSW ADDRESS
00195C    0A D6                   SVC   X'D6'                ROUTINE EXIT
00195E                            CNOP  0,4
00195E    07 00                 BCR     0,0
                          ***********************************************************************
                          * ROUTINE 06- ISSUE A PUNCH FEED STACKER SELECT COMMAND CHAINED TO
                          *             ANOTHER PUNCH FEED STACKER SELECT.  THE SIL FLAG IS LEFT
                          *             OUT OF THE COMMANDS AND 80 CHARACTERS PUNCHED BY EACH
                          *             COMMAND SHOULD NOT BRING WRONG LENGTH RECORD INTO STATUS.
                          ***********************************************************************
001960    06              ROUT06  DC    X'06'                ROUTINE NUMBER
001961    00097C                  DC    AL3(ROUT07-SECNO)    ADDRESS OF NEXT ROUTINE
001964    45 40 F 6B0             BAL   R4,INIT              BR. TO INITIALIZE
001968    41 A0 F CD0             LA    R10,CHNPCH           SET UP TO DO VALID COM CHAIN
00196C    45 B0 F 10E             BAL   R11,ISIO             BR. TO ISSUE START I-O
001970    3E00                    DC    X'3E00'              CONTROL SWITCHES
001972    0160                    DC    X'0160'              T E S T   N U M B E R
001974    F000                    DC    X'F000'              EXP. COND. CODE - EXP. SENSE
001976    FDA8                    DC    AL2(VLDCHN-SECNO+REG) EXP. CSW ADDRESS
001978    0A D6                   SVC   X'D6'                ROUTINE EXIT
00197A                            CNOP  0,4
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00197A   07 00                          BCR     0,0
                        ***********************************************************************
                        * ROUTINE 07- ISSUE A PUNCH FEED STACKER SELECT WITH A COUNT OF 79
                        *             COMMAND CHAINED TO A PUNCH FEED STACKER SELECT.  EXPECT
                        *             INCORRECT LENGTH RECORD BIT TO BE SET AND BREAK COMMAND
                        *             CHAINING.
                        *
                        *
                        *             ISSUE ABOVE CHAIN COMMAND AGAIN BUT WITH A LONG COUNT OF
                        *             81.  EXPECT INCORRECT LENGTH RECORD TO  BREAK COMMAND
                        *             CHAIN.  A RESIDUAL COUNT OF 1 IN THE CSW.
                        ***********************************************************************
00197C   07             ROUT07 DC     X'07'                   ROUTINE NUMBER
00197D   0009B4                DC     AL3(ROUT08-SECNO)       ADDRESS OF NEXT ROUTINE
001980   45 40 F 6B0           BAL    R4,INIT                 BR. TO INITIALIZE
001984   92 40 F CE4           MVI    SHRTCH+4,X'40'          INSURE PROPER FLAG IN CCW
001988   92 4F F CE7           MVI    SHRTCH+7,X'4F'          INSURE SHORT COUNT 79
00198C   41 A0 F CE0           LA     R10,SHRTCH              SET UP TO ISSUE SHORT COUNT CHAIN
001990   45 B0 F 10E           BAL    R11,ISIO                BR. TO ISSUE START I-O
001994   3C00                  DC     X'3C00'                 CONTROL SWITCHES
001996   0170                  DC     X'0170'                 T E S T   N U M B E R
001998   F000                  DC     X'F000'                 EXP. COND. CODE - EXP. SENSE
00199A   FDB8                  DC     AL2(CHNSRT-SECNO+REG)   EXP. CSW ADDRESS
00199C   92 51 F CE7           MVI    SHRTCH+7,X'51'          INSURE LONG COUNT OF 81
0019A0   41 A0 F CE0           LA     R10,SHRTCH              SET UP TO ISSUE LONG COUNT CHAIN
0019A4   45 B0 F 10E           BAL    R11,ISIO                BR. TO ISSUE START I-O
0019A8   3C00                  DC     X'3C00'                 CONTROL SWITCHES
0019AA   0180                  DC     X'0180'                 T E S T   N U M B E R
0019AC   F000                  DC     X'F000'                 EXP. COND. CODE - EXP. SENSE
0019AE   FDC8                  DC     AL2(CHNLNG-SECNO+REG)   EXP. CSW ADDRESS
0019B0   0A D6                 SVC    X'D6'                   ROUTINE EXIT
0019B2                         CNOP   0,4
0019B2   07 00                 BCR    0,0
                        ***********************************************************************
                        * ROUTINE 08- ISSUE A PUNCH FEED STACKER SELECT DATA CHAINED  A N D
                        *             COMMAND CHAINED TO AN INVALID COMMAND.  DATA CHAINING
                        *             SHOULD TAKE PRIORITY AND THE INVALID COMMAND SHOULD NOT
                        *             BE INSPECTED.  EXPECT COND. CODE 0 WITH CHANNEL END THEN
                        *             DEVICE END WITH NO COMMAND REJECT IN THE SENSE BYTE.
                        *             CHAINING SHOULD NOT BE BROKEN.
                        ***********************************************************************
0019B4   08             ROUT08 DC     X'08'                   ROUTINE NUMBER
0019B5   0009D0                DC     AL3(ROUT09-SECNO)       ADDRESS OF NEXT ROUTINE
0019B8   45 40 F 6B0           BAL    R4,INIT                 BR. TO INITIALIZE
0019BC   41 A0 F D10           LA     R10,DTAINV              SET UP TO DATA AND CMD CHAIN TO INVD
0019C0   45 B0 F 10E           BAL    R11,ISIO                BR. TO ISSUE START I-O
0019C4   3C00                  DC     X'3C00'                 CONTROL SWITCHES
0019C6   0190                  DC     X'0190'                 T E S T   N U M B E R
0019C8   F000                  DC     X'F000'                 EXP. COND. CODE - EXP. SENSE
0019CA   FE18                  DC     AL2(DTACCW-SECNO+REG)   EXP. CSW ADDRESS
0019CC   0A D6                 SVC    X'D6'                   ROUTINE EXIT
0019CE                         CNOP   0,4
0019CE   07 00                 BCR    0,0
                        ***********************************************************************
                        * ROUTINE 09- ISSUE A PUNCH FEED STACKER SELECT DATA CHAINED TO
                        *             FOUR DIFFERENT PLACES.  THE TOTAL COUNT WILL EQUAL 80,
                        *             THEREFORE NO WRONG LENGTH RECORD INDICATION WILL APPEAR
                        *             IN THE STATUS.
                        ***********************************************************************
0019D0   09             ROUT09 DC     X'09'                   ROUTINE NUMBER
0019D1   0009F4                DC     AL3(ROUT10-SECNO)       ADDRESS OF NEXT ROUTINE
0019D4   45 40 F 6B0           BAL    R4,INIT                 BR. TO INITIALIZE
0019D8   92 14 F CF7           MVI    DTACHN+7,20             PUT COUNT OF 20 INTO 1ST CCW
0019DC   92 80 F D04           MVI    DTACHN+20,X'80'         TURN OFF SIL FLAG IN 3RD CCW
0019E0   41 A0 F CF0           LA     R10,DTACHN              SET UP TO DATA CHAIN
0019E4   45 B0 F 10E           BAL    R11,ISIO                BR. TO ISSUE START I-O
0019E8   3C00                  DC     X'3C00'                 CONTROL SWITCHES
0019EA   0200                  DC     X'0200'                 T E S T   N U M B E R
0019EC   F000                  DC     X'F000'                 EXP. COND CODE - EXP. SENSE
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0019EE   FDE8                  DC     AL2(NORM1-SECNO+REG)    EXP. CSW ADDRESS
0019F0   0A D6                 SVC    X'D6'                   ROUTINE EXIT
0019F2                         CNOP   0,4
0019F2   07 00                 BCR    0,0
                        ***********************************************************************
                        * ROUTINE 10- ISSUE A PUNCH FEED STACKER SELECT DATA CHAINED TO
                        *             FOUR DIFFERENT PLACES.  THE TOTAL COUNT WILL EXCEED 80,
                        *             THEREFORE WRONG LENGTH RECORD SHOULD APPEAR IN THE STATUS
                        *             AND CHAINING WILL BE BROKEN.  A RESIDUAL COUNT WILL BE
                        *             IN THE CSW.
                        ***********************************************************************
0019F4   10             ROUT10 DC     X'10'                   ROUTINE NUMBER
0019F5   000A18                DC     AL3(ROUT11-SECNO)       ADDRESS OF NEXT ROUTINE
0019F8   45 40 F 6B0           BAL    R4,INIT                 BR. TO INITIALIZE
0019FC   92 28 F CF7           MVI    DTACHN+7,40             PUT COUNT OF 40 IN 1ST CCW
001A00   92 80 F D04           MVI    DTACHN+20,X'80'         TURN OFF SIL FLAG IN 3RD CCW
001A04   41 A0 F CF0           LA     R10,DTACHN              SET UP TO DATA CHAIN
001A08   45 B0 F 10E           BAL    R11,ISIO                BR. TO ISSUE START I-O
001A0C   3C00                  DC     X'3C00'                 CONTROL SWITCHES
001A0E   0210                  DC     X'0210'                 T E S T   N U M B E R
001A10   F000                  DC     X'F000'                 EXP. COND. CODE - EXP. SENSE
001A12   FDF8                  DC     AL2(NORM2-SECNO+REG)    EXP. CSW ADDRESS
001A14   0A D6                 SVC    X'D6'                   ROUTINE EXIT
001A16                         CNOP   0,4
001A16   07 00                 BCR    0,0
                        ***********************************************************************
                        * ROUTINE 11- ISSUE A PUNCH FEED STACKER SELECT DATA CHAINED TO FOUR
                        *             DIFFERENT PLACES WITH THE SIL FLAG ON IN THE COMMAND THAT
                        *             EXCEEDS A COUNT OF 80.  EXPECT CHAINING TO BE BROKEN.
                        *             EVEN THOUGH THE SIL FLAG IN ON, WRONG LENGTH RECORD
                        *             SHOULD APPEAR IN THE STATUS.
                        ***********************************************************************
001A18   11             ROUT11 DC     X'11'                   ROUTINE NUMBER
001A19   000A3C                DC     AL3(ROUT12-SECNO)       ADDRESS OF NEXT ROUTINE
001A1C   45 40 F 6B0           BAL    R4,INIT                 BR. TO INITIALIZE
001A20   92 29 F CF7           MVI    DTACHN+7,41             PUT COUNT OF 41 IN 1ST CCW
001A24   92 A0 F D04           MVI    DTACHN+20,X'A0'         TURN ON SIL FLAG IN 3RD CCW
001A28   41 A0 F CF0           LA     R10,DTACHN              SET UP TO DO DATA CHAIN
001A2C   45 B0 F 10E           BAL    R11,ISIO                BR. TO ISSUE START I-O
001A30   3C00                  DC     X'3C00'                 CONTROL SWITCHES
001A32   0220                  DC     X'0220'                 T E S T   N U M B E R
001A34   F000                  DC     X'F000'                 EXP. COND. CODE - EXP. SENSE
001A36   FE08                  DC     AL2(NORM3-SECNO+REG)    EXP. CSW ADDR
001A38   0A D6                 SVC    X'D6'                   ROUTINE EXIT
001A3A                         CNOP   0,4
001A3A   07 00                 BCR    0,0
                        ***********************************************************************
                        * ROUTINE 12- ISSUE A PUNCH FEED STACKER SELECT -STACKER 1- FOLLOWED
                        *             BY STACKER SELECT -STACKER 2- FOLLOWED BY STACKER SELECT
                        *             -STACKER 1- FOLLOWED BY STACKER SELECT -STACKER 3-.  THIS
                        *             SERIES OF COMMANDS WILL GIVE A STACKER PATTERN OF 1-2-1-3
                        *
                        *             THE ENTIRE SERIES IS REPEATED -10- TIMES.  BY SETTING THE
                        *             PROPER SENSE SWITCHES ANY ONE STACKER SELECT COMMAND CAN
                        *             BE LOOPED EITHER IN A TIGHT SIO-TIO LOOP OR A LOOP THAT
                        *             INCLUDES ERROR MESSAGE PRINTOUTS.  PUNCHED IN EACH CARD
                        *             THAT IS STACKER SELECTED IS THE NUMBER OF THE STACKER
                        *             POCKET THE CARD SHOULD BE FOUND IN.
                        *             SENSE SWITCH OPTIONS ARE DESCRIBED IN THE PROGRAM
                        *             DESCRIPTION AND THE TEST NUMBER WRITE-UP.
                        ***********************************************************************
001A3C   12             ROUT12 DC     X'12'
001A3D   000C14                DC     AL3(ROUT13-SECNO)       ADDRESS OF NEXT ROUTINE
001A40   91 04 F 004           TM     SNSW,X'04'              SEE IF SSW 5 IS ON.
001A44   47 80 F B38           BC     NONE,EXIT12             BR IF NOT.
001A48   45 40 F 6B0           BAL    R4,INIT
001A4C   45 40 F C6A           BAL    R4,RAC                  BR TO SET UP STK SELECT.
001A50   92 01 F A93           MVI    DOSS1+1,X'01'           INSURE 360 MODE OP CODES
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001A54   92 41 F AB1                MVI   DOSS2+1,X'41'      INSURE 360 MODE OP CODES
001A58   92 01 F ACF                MVI   INTERV+1,X'01'     INSURE 360 MODE OP CODES
001A5C   92 81 F AED                MVI   DOSS3+1,X'81'      INSURE 360 MODE OP CODES
001A60   92 11 F B4B                MVI   COMP1+1,X'11'      INSURE 360 MODE OP CODES
001A64   92 51 F B6D                MVI   COMP2+1,X'51'      INSURE 360 MODE OP CODES
001A68   92 91 F B8F                MVI   COMP3+1,X'91'      INSURE 360 MODE OP CODES
001A6C   92 02 F AA2                MVI   TST230,X'02'       MODIFY TEST NUMBER
001A70   92 02 F ACO                MVI   TST240,X'02'       MODIFY TEST NUMBER
001A74   92 02 F ADE                MVI   TST250,X'02'       MODIFY TEST NUMBER
001A78   92 02 F AFC                MVI   TST260,X'02'       MODIFY TEST NUMBER
001A7C   92 02 F BAA                MVI   TST270,X'02'       MODIFY TEST NUMBER
001A80   92 02 F B2E                MVI   TST265,X'02'       MODIFY TEST NUMBER
001A84   41 00 0 00A          RTN13 LA    R0,10              SET UP TO STKR SEL 10 CARDS
001A88   41 A0 F D20                LA    R10,SSCOMN         SET UP CCW ADDRESS
001A8C   D2 17 F 6FC F BFA          MVC   PCHAR(24),STKR1    SET UP PUNCH INFO WORK AREA
001A92   92 01 F D20          DOSS1 MVI   SSCOMN,X'01'       SET UP STKR SEL 1 CMD
001A96   D2 02 F D21 F E58    DOSS1C MVC  SSCOMN+1(3),SSONE  SET UP PUNCH ADDR IN CCW
001A9C   45 B0 F 10E                BAL   R11,ISIO           BR. TO ISSUE START I-O
001AA0   3E01                       DC    X'3E01'
001AA2   0230                 TST230 DC   X'0230'           T E S T   N U M B E R
001AA4   F000                       DC    X'F000'
001AA6   FE48                       DC    AL2(SSADRS-SECNO+REG)
001AA8   91 1C F 005          ANY1  TM    SNSW+1,X'1C'       TEST FOR ANY LOOP REQUESTS
001AAC   47 40 F B3A                BC    SOME,SEE11         BR. IF ANY REQUESTS
001AB0   92 41 F D20          DOSS2 MVI   SSCOMN,X'41'       SET UP STKR SEL 2 CMD
001AB4   D2 02 F D21 F E5B    DOSS2C MVC  SSCOMN+1(3),SSTWO  SET UP PUNCH ADDR IN CCW
001ABA   45 B0 F 10E                BAL   R11,ISIO           BR. TO ISSUE START I-O
001ABE   3E01                       DC    X'3E01'
001AC0   0240                 TST240 DC   X'0240'           T E S T   N U M B E R
001AC2   F000                       DC    X'F000'
001AC4   FE48                       DC    AL2(SSADRS-SECNO+REG)
001AC6   91 1C F 005          ANY2  TM    SNSW+1,X'1C'       TEST FOR ANY LOOP REQUESTS
001ACA   47 40 F B5C                BC    SOME,SEE12         BR. IF ANY REQUESTS
001ACE   92 01 F D20          INTERV MVI  SSCOMN,X'01'       SET UP STKR SEL 1 CMD
001AD2   D2 02 F D21 F E58          MVC   SSCOMN+1(3),SSONE  SET UP PUNCH ADDR IN CCW
001AD8   45 B0 F 10E                BAL   R11,ISIO
001ADC   3E01                       DC    X'3E01'
001ADE   0250                 TST250 DC   X'0250'           T E S T   N U M B E R
001AE0   F000                       DC    X'F000'
001AE2   FE48                       DC    AL2(SSADRS-SECNO+REG)
001AE4   91 1C F 005                TM    SNSW+1,X'1C'       TEST FOR ANY LOOP REQUESTS
001AE8   47 40 F B3A                BC    SOME,SEE11         BR. IF ANY REQUESTS
001AEC   92 81 F D20          DOSS3 MVI   SSCOMN,X'81'       SET UP STKR SEL 3 CMD
001AF0   D2 02 F D21 F E5E    DOSS3C MVC  SSCOMN+1(3),SSTHRE SET UP PUNCH ADDR IN CCW
001AF6   45 B0 F 10E                BAL   R11,ISIO
001AFA   3E01                       DC    X'3E01'
001AFC   0260                 TST260 DC   X'0260'           T E S T   N U M B E R
001AFE   F000                       DC    X'F000'
001B00   FE48                       DC    AL2(SSADRS-SECNO+REG)
001B02   91 1C F 005          ANY3  TM    SNSW+1,X'1C'       TEST FOR ANY LOOP REQUESTS
001B06   47 40 F B7E                BC    SOME,SEE13         BR. IF ANY REQUESTS
001B0A   46 00 F A92                BCT   R0,DOSS1           BR. UNTIL 10 PASSES THRU STKR SEL
001B0E   92 40 F 6FC                MVI   PCHAR,C' '         MOVE A BLANK
001B12   D2 4E F 6FD F 6FC          MVC   PCHAR+1(79),PCHAR  BLANK THE REST OF THE PCH AREA.
001B18   92 91 F D20                MVI   SSCOMN,X'91'       MOVE IN A 1400 STKR 3 CMD.
001B1C   95 13 F 003                CLI   SECNO+3,X'13'      SEE IF IN ROUTINE 13.
001B20   47 80 F B28                BC    EQ,BAL11           BR IF YES.
001B24   92 81 F D20                MVI   SSCOMN,X'81'       MOVE IN A 360 STKR 3 CMD.
001B28   45 B0 F 10E          BAL11 BAL   R11,ISIO           BR TO ISSUE START I-O.
001B2C   3E01                       DC    X'3E01'            CTRL SWITCHES
001B2E   0265                 TST265 DC   X'0265'           T E S T   N U M B E R
001B30   F000                       DC    X'F000'            EXP COND. CODE AND SENSE
001B32   FE48                       DC    AL2(SSADRS-SECNO+REG) EXP CSW ADDRESS
001B34   45 40 F C7E               BAL   R4,CCDS            BR TO CHK CDS.
001B38   0A D6                EXIT12 SVC  X'D6'             ROUTINE EXIT
001B3A   91 10 F 005          SEE11 TM    SNSW+1,X'10'       TEST SNS SW 11 FOR STKR SEL 1 LOOP
001B3E   47 80 F AC6                BC    NONE,ANY2          BR. IF NO LOOP ON STKR SEL 1
001B42   91 40 F 004                TM    SNSW,X'40'         TEST SNS SW 1  -SIO TIO LOOP-
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001B46   47 80 F BCA                BC    NONE,CPT1          BR. TO LOOP STKR SEL 1 WITH PRINTOUT
001B4A   92 01 F D20          COMP1 MVI   SSCOMN,X'01'       SET UP TIGHT LOOP ROUTINE TO DO...
001B4E   D2 02 F D21 F E58          MVC   SSCOMN+1(3),SSONE       SIO TIO STKR SEL 1
001B54   45 60 F BAO                BAL   R6,TITELP          BR. TO COMMON TEST NUMBER ROUTINE
001B58   47 FO F AA8                BC    UNC,ANY1           RETURN FOR SNS SW CHECK
001B5C   91 08 F 005          SEE12 TM    SNSW+1,X'08'       TEST SNS SW 12 FOR STKR SEL 2 LOOP
001B60   47 80 F B02                BC    NONE,ANY3          BR. IF NO LOOP ON STKR SEL 2
001B64   91 40 F 004                TM    SNSW,X'40'         TEST SNS SW 1 -SIO TIO LOOP-
001B68   47 80 F BDA                BC    NONE,CPT2          BR. TO LOOP STKR SEL 2 WITH PRINTOUT
001B6C   92 41 F D20          COMP2 MVI   SSCOMN,X'41'       SET UP TIGHT LOOP ROUTINE TO DO...
001B70   D2 02 F D21 F E5B          MVC   SSCOMN+1(3),SSTWO       SIO TIO STKR SEL 2
001B76   45 60 F BAO                BAL   R6,TITELP          BR. TO COMMON TEST NUMBER ROUTINE
001B7A   47 FO F AC6                BC    UNC,ANY2           RETURN FOR SNS SW CHECK
001B7E   91 04 F 005          SEE13 TM    SNSW+1,X'04'       TEST SNS SW 13 FOR STKR SEL 3 LOOP
001B82   47 80 F AA8                BC    NONE,ANY1          BR. IF NO LOOP ON STKR SEL 3
001B86   91 40 F 004                TM    SNSW,X'40'         TEST SNS SW 1 -SIO TIO LOOP-
001B8A   47 80 F BEA                BC    NONE,CPT3          BR. TO LOOP STKR SEL 3 WITH PRINTOUT
001B8E   92 81 F D20          COMP3 MVI   SSCOMN,X'81'       SET UP TIGHT LOOP ROUTINE TO DO...
001B92   D2 02 F D21 F E5E          MVC   SSCOMN+1(3),SSTHRE      SIO TIO STKR SEL 3
001B98   45 60 F BAO                BAL   R6,TITELP          BR. TO COMMON TEST NUMBER ROUTINE
001B9C   47 FO F B02                BC    UNC,ANY3           RETURN FOR SNS SW CHECK
001BA0   41 A0 F D20          TITELP LA   R10,SSCOMN         SET UP CCW ADDRESS
001BA4   45 B0 F 16A                BAL   R11,IHANG
001BA8   3E01                       DC    X'3E01'
001BAA   0270                 TST270 DC   X'0270'           T E S T   N U M B E R
001BAC   F000                       DC    X'F000'
001BAE   FE48                       DC    AL2(SSADRS-SECNO+REG)
001BB0   41 00 0 001                LA    R0,1               REDUCE RTN LOOP COUNTER TO 1
001BB4   07 F6                      BCR   UNC,R6
001BB6   0A DO                SNSMES SVC  X'DO'
001BB8   AO                         DC    X'AO'
001BB9   40                         DC    X'40'
001BBA   FE61                       DC    AL2(MSG1-SECNO+REG)
001BBC   0A DO                      SVC   X'DO'
001BBE   CO                         DC    X'CO'
001BBF   3D                         DC    X'3D'
001BC0   FEA1                       DC    AL2(MSG2-SECNO+REG)
001BC2   50 AD 0 048                ST    R10,HCAW(R13)      STORE CAW
001BC6   47 FO F 55E                BC    UNC,SSRET          RETURN TO MAIN HANDLER
001BCA   95 13 F 003          CPT1  CLI   SECNO+3,X'13'      SEE IF IN RTN 13
001BCE   47 60 F A92                BC    UNEQ,DOSS1         BR. IF NOT RTN 13
001BD2   92 11 F D20                MVI   SSCOMN,X'11'       MOVE IN COMPAT STKR SEL CMD
001BD6   47 FO F A96                BC    UNC,DOSS1C         BR. TO DO STKR SEL COMPAT CMD LOOP
001BDA   95 13 F 003          CPT2  CLI   SECNO+3,X'13'      SEE IF IN RTN 13
001BDE   47 60 F AB0                BC    UNEQ,DOSS2         BR. IF NOT RTN 13
001BE2   92 51 F D20                MVI   SSCOMN,X'51'       MOVE IN COMPAT STKR SEL CMD
001BE6   47 FO F AB4                BC    UNC,DOSS2C         BR. TO DO STKR SEL COMPAT CMD LOOP
001BEA   95 13 F 003          CPT3  CLI   SECNO+3,X'13'      SEE IF IN RTN 13
001BEE   47 60 F AEC                BC    UNEQ,DOSS3         BR. IF NOT RTN 13
001BF2   92 91 F D20                MVI   SSCOMN,X'91'       MOVE IN COMPAT STKR SEL CMD
001BF6   47 FO F AFO                BC    UNC,DOSS3C         BR. TO DO STKR SEL COMPAT CMD LOOP
001BFA   F1F1F1F1F1F1F1F1     STKR1 DC    X'F1F1F1F1F1F1F1F1'
001C02   F2F2F2F2F2F2F2F2           DC    X'F2F2F2F2F2F2F2F2'
001C0A   F3F3F3F3F3F3F3F3           DC    X'F3F3F3F3F3F3F3F3'
001C12                              CNOP  0,4
001C12   07 00                BCR   0,0
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*********************************************************************
* ROUTINE 13- ISSUE A 1400 MODE PUNCH STKR SELECT -STACKER 1- FOLLOWED
*             BY STACKER SELECT -STACKER 2- FOLLOWED BY STACKER SELECT
*             -STACKER 1- FOLLOWED BY STACKER SELECT -STACKER 3-.  THIS
*             SERIES OF COMMANDS WILL GIVE A STACKER PATTERN OF 1-2-1-3
*
*             THE ENTIRE SERIES IS REPEATED -10- TIMES.  BY SETTING THE
*             PROPER SENSE SWITCHES ANY ONE STACKER SELECT COMMAND CAN
*             BE LOOPED EITHER IN A TIGHT SIO-TIO LOOP OR A LOOP THAT
*             INCLUDES ERROR MESSAGE PRINTOUTS.  PUNCHED IN EACH CARD
*             THAT IS STACKER SELECTED IS THE NUMBER OF THE STACKER
*             POCKET THE CARD SHOULD BE FOUND IN.
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001C14   13
001C15   00FFFF
001C18   91 04 F 004
001C1C   47 80 F C68
001C20   91 08 F 0E1
001C24   47 80 F B38
001C28   45 40 F 6B0
001C2C   45 40 F C6A
001C30   92 91 F A93
001C34   92 11 F AB1
001C38   92 51 F ACF
001C3C   92 11 F AED
001C40   92 11 F B4B
001C44   92 51 F B6D
001C48   92 91 F B8F
001C4C   92 12 F AA2
001C50   92 12 F AC0
001C54   92 12 F ADE
001C58   92 12 F AFC
001C5C   92 12 F B2E
001C60   92 12 F BAA
001C64   47 F0 F A84
001C68   0A D6


001C6A   0A D0
001C6C   2428
001C6E   FF25
001C70   0A DA
001C72   9D 00 C 000
001C76   0A D0
001C78   8001
001C7A   FF25
001C7C   07 F4



001C7E   0A D0
001C80   2432
001C82   FF4D
001C84   0A DA
001C86   0A D0
001C88   8001
001C8A   FF4D
001C8C   07 F4



001C90   41 0016FC 0000 004F
001C98   41 0016FC 0000 0051
001CA0   41 0016FC 4000 0050
001CA8   53 0016FC 0000 0050
001CB0   03 0016FC 4000 0001
001CB8   03 0016FC 2000 0001
001CC0   C2 0016FC 0000 004F
001CC8   C2 0016FC 0000 0051
001CD0   41 0016FC 4000 0050
001CD8   41 0016FC 0000 0050
001CE0   41 0016FC 4000 004F
001CE8   41 0016FC 0000 0050
001CF0   41 001710 8000 0014
001CF8   41 001724 8000 0014
001D00   41 001710 8000 0014
001D08   41 0016FC 0000 0014
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*          SENSE SWITCH OPTIONS ARE DESCRIBED IN THE PROGRAM
*          DESCRIPTION AND THE TEST NUMBER WRITE-UP.
*****************************************************************
ROUT13 DC    X'13'              ROUTINE NUMBER
       DC    X'00FFFF'          LAST ROUTINE
       TM    SNSW,X'04'         SEE IF SSW 5 IS ON.
       BC    NONE,EXIT13        BR IF NOT.
       TM    U1OP,X'08'         SEE IF 1400 PUNCH COMPATIBILITY
       BC    NONE,EXIT12        ROUTINE EXIT
       BAL   R4,INIT            BR. TO INITIALIZE
       BAL   R4,RAC             BR TO SET UP STK SELECT.
       MVI   DOSS1+1,X'91'      INSURE 1400 MODE COMMANDS
       MVI   DOSS2+1,X'11'      INSURE 1400 MODE COMMANDS
       MVI   INTERV+1,X'51'     INSURE 1400 MODE COMMANDS
       MVI   DOSS3+1,X'11'      INSURE 1400 MODE COMMANDS
       MVI   COMP1+1,X'11'      INSURE 1400 MODE COMMANDS
       MVI   COMP2+1,X'51'      INSURE 1400 MODE COMMANDS
       MVI   COMP3+1,X'91'      INSURE 1400 MODE COMMANDS
       MVI   TST230,X'12'       MODIFY TEST NUMBER
       MVI   TST240,X'12'       MODIFY TEST NUMBER
       MVI   TST250,X'12'       MODIFY TEST NUMBER
       MVI   TST260,X'12'       MODIFY TEST NUMBER
       MVI   TST265,X'12'       MODIFY TEST NUMBER
       MVI   TST270,X'12'       MODIFY TEST NUMBER
       BC    UNC,RTN13          GO TO RTN 12 TO EXECUTE 1400 CMDS
EXIT13 SVC   X'D6'              ROUTINE EXIT.
*****************************************************************
*     PRINT REMOVE ALL CDS FOR STACKER SELECT TEST
*****************************************************************
RAC    SVC   X'D0'              PRINT -REMOVE CARDS-
       DC    X'2428'
       DC    AL2(DONPRO-SECNO+REG)
       SVC   X'DA'              -HALT-
       TIO   0(R12)             TEST I-O
       SVC   X'D0'              PRINT A BLANK
       DC    X'8001'
       DC    AL2(DONPRO-SECNO+REG)
       BCR   UNC,R4             RETURN.
*****************************************************************
*     PRINT MAKE VISUAL CHK OF CARDS IN STACKERS
*****************************************************************
CCDS   SVC   X'D0'              PRINT -CHK CARDS-
       DC    X'2432'
       DC    AL2(VISUAL-SECNO+REG)
       SVC   X'DA'              -HALT-
       SVC   X'D0'              PRINT A BLANK
       DC    X'8001'
       DC    AL2(VISUAL-SECNO+REG)
       BCR   UNC,R4             RETURN.
*****************************************************************
*                CHANNEL COMMAND WORDS  -CCW-
*****************************************************************
PCSHRT CCW   X'41',PCHAR,X'00',79  SHORT COUNT PUNCH -VARIABLE SIL-
PCLONG CCW   X'41',PCHAR,X'00',81  LONG  COUNT PUNCH -VARIABLE SIL-
CHAINP CCW   X'41',PCHAR,X'40',80  PUNCH COMMAND CHAINED
INVLD  CCW   X'53',PCHAR,X'00',80  INVALID COMMAND
NOPCCW CCW   X'03',PCHAR,X'40',01
CCW    CCW   X'03',PCHAR,X'20',01  COMMON CCW  -VARY OP AND FLAG-
DIARDS CCW   X'C2',PCHAR,X'00',79  DIAG. READ SHORT COUNT -VARIED SIL-
DIARDL CCW   X'C2',PCHAR,X'00',81  DIAG. READ LONG COUNT -VARIED SIL-
CHNPCH CCW   X'41',PCHAR,X'40',80  PUNCH CHAIN VALID
       CCW   X'41',PCHAR,X'00',80
SHRTCH CCW   X'41',PCHAR,X'40',79  PUNCH CHAIN SHORT -VARIABLE COUNT
       CCW   X'41',PCHAR,X'00',80
DTACHN CCW   X'41',PCHAR+20,X'80',20    DATA CHAIN 20 BYTES -VARY COUNT
       CCW   X'41',PCHAR+40,X'80',20    DATA CHAIN 20 BYTES
       CCW   X'41',PCHAR+20,X'80',20    DATA CHAIN 20 BYTES -VARY FLAG
DATA1  CCW   X'41',PCHAR,X'00',20       DATA CHAIN 20 BYTES
```



```
001D10   41 0016FC C000 0028   DTAINV CCW   X'41',PCHAR,X'C0',40      DATA AND CMD CHAIN TO INVALID
001D18   53 001724 0000 0028   DATA2  CCW   X'53',PCHAR+40,X'00',40   DATA AND CMD CHAIN TO INVALID
001D20   01 0016FC 2000 0008   SSCOMN CCW   X'01',PCHAR,X'20',08
                               *
                               *
                               *****************************************************************
                               *     EXPECTED CSW ADDRESS AND EXPECTED CHANNEL STATUS WORD  -CSW-
                               *****************************************************************
001D28   00001C98              NORM   DC    A(PCSHRT+8)
001D2C   08000000                      DC    X'08000000'
001D30   00000000                      DC    XL4'0'
001D34   04000000                      DC    X'04000000'
001D38   00001C98              SHRTCW DC    A(PCSHRT+8)
001D3C   08400000                      DC    X'08400000'
001D40   00000000                      DC    XL4'0'
001D44   04000000                      DC    X'04000000'
001D48   00001CA0              LNGCW  DC    A(PCLONG+8)
001D4C   08400001                      DC    X'08400001'
001D50   00000000                      DC    XL4'0'
001D54   04000000                      DC    X'04000000'
001D58   00001CA0              NOILRL DC    A(PCLONG+8)
001D5C   08000001                      DC    X'08000001'
001D60   00000000                      DC    XL4'0'
001D64   04000000                      DC    X'04000000'
001D68   00001CC8              DIASRT DC    A(DIARDS+8)
001D6C   0C400000                      DC    X'0C400000'
001D70   00001CD0              DIALNG DC    A(DIARDL+8)
001D74   0C400001                      DC    X'0C400001'
001D78   00001CC8              DAILRS DC    A(DIARDS+8)
001D7C   0C000000                      DC    X'0C000000'
001D80   00001CD0              DAILRL DC    A(DIARDL+8)
001D84   0C000001                      DC    X'0C000001'
001D88   00001CB0              UNCK   DC    A(INVLD+8)
001D8C   02000050                      DC    X'02000050'
001D90   00001CC0              NORSET DC    A(CCW+8)
001D94   0C000000                      DC    X'0C000000'
001D98   00000000              NEXT1  DC    XL4'0'
001D9C   0C000000                      DC    X'0C000000'
001DA0   00001CC0              NOPRES DC    A(CCW+8)
001DA4   0C000001                      DC    X'0C000001'
001DA8   00001CE0              VLDCHN DC    A(CHNPCH+16)
001DAC   08000000                      DC    X'08000000'
001DB0   00000000                      DC    XL4'0'
001DB4   04000000                      DC    X'04000000'
001DB8   00001CE8              CHNSRT DC    A(SHRTCH+8)
001DBC   08400000                      DC    X'08400000'
001DC0   00000000                      DC    XL4'0'
001DC4   04000000                      DC    X'04000000'
001DC8   00001CE8              CHNLNG DC    A(SHRTCH+8)
001DCC   08400001                      DC    X'08400001'
001DD0   00000000                      DC    XL4'0'
001DD4   04000000                      DC    X'04000000'
001DD8   00001CF0              ITSELF DC    A(SHRTCH+16)
001DDC   08000000                      DC    X'08000000'
001DE0   00000000                      DC    XL4'0'
001DE4   04000000                      DC    X'04000000'
001DE8   00001D10              NORM1  DC    A(DATA1+8)
001DEC   08000000                      DC    X'08000000'
001DF0   00000000                      DC    XL4'0'
001DF4   04000000                      DC    X'04000000'
001DF8   00001D10              NORM2  DC    A(DATA1+8)
001DFC   08400014                      DC    X'08400014'
001E00   00000000                      DC    XL4'0'
001E04   04000000                      DC    X'04000000'
001E08   00001D08              NORM3  DC    A(DATA1)
001E0C   08400001                      DC    X'08400001'
001E10   00000000                      DC    XL4'0'
001E14   04000000                      DC    X'04000000'
```

```
001E18  00001D20          DTACCW DC    A(DATA2+8)
001E1C  08000000                 DC    X'08000000'
001E20  00000000                 DC    XL4'0'
001E24  04000000                 DC    X'04000000'
001E28  00001690          SNSCSW DC    A(ISENSE+8)
001E2C  0C000000                 DC    X'0C000000'
001E30  00001CF0          NEXT   DC    A(SHRTCH+16)
001E34  08000001                 DC    X'08000001'
001E38  00000000                 DC    XL4'0'
001E3C  04000000                 DC    X'04000000'
001E40  00000000          UCNVLD DC    XL4'0'
001E44  02000000                 DC    X'02000000'
001E48  00001D28          SSADRS DC    A(SSCOMN+8)
001E4C  08000000                 DC    X'08000000'
001E50  00000000                 DC    XL4'0'
001E54  04000000                 DC    X'04000000'
001E58  0016FC            SSONE  DC    AL3(PCHAR)
001E5B  001704            SSTWO  DC    AL3(PCHAR+8)
001E5E  00170C            SSTHRE DC    AL3(PCHAR+16)
                          *
                          *
                          *
                          ********************************************************************************
                          *                              MESSAGES
                          ********************************************************************************
001E61  40E2D5E240E2E640F1 MSG1   DC    C' SNS SW 11 12 OR'
001E6A  F140F1F240D6D9
001E71  40F1F340D6D540E3D6        DC    C' 13 ON TO LOOP S'
001E7A  40D3D6D6D740E2
001E81  E3D2D940E2C5D340F1        DC    C'TKR SEL 1 2 OR 3'
001E8A  40F240D6D940F3
001E91  60E6C9E3C840C5D9D9        DC    C'-WITH ERR STOPS-'
001E9A  40E2E3D6D7E260
001EA1  40E2D5E240E2E640F1 MSG2   DC    C' SNS SW 1 WITH A'
001EAA  40E6C9E3C840C1
001EB1  D5E840D6C640C1C2D6        DC    C'NY OF ABOVE FOR '
001EBA  E5C540C6D6D940
001EC1  E2C9D640E3C9D640D3        DC    C'SIO TIO LOOP-NO '
001ECA  D6D6D760D5D640
001ED1  C5D9D940C3C8C5C3D2        DC    C'ERR CHECKING-'
001EDA  C9D5C760
001EDE  40D4C1D2C540E3C8C5 PCH3   DC    C' MAKE THE PUNCH '
001EE7  40D7E4D5C3C840
001EEE  D6D7C5D9C1E3C9D6D5        DC    C'OPERATIONAL AND '
001EF7  C1D340C1D5C440
001EFE  D9C5C1C4E8                DC    C'READY'
001F03  40D7D3C1C3C540C2D3 PCH4   DC    C' PLACE BLANK CAR'
001F0C  C1D5D240C3C1D9
001F13  C4E240C9D540D7E4D5        DC    C'DS IN PUNCH HOPP'
001F1C  C3C840C8D6D7D7
001F23  C5D9                      DC    C'ER'
001F25  40C4D640D5D6D7D9D6 DONPRO DC    C' DO NOPRO, REMOV'
001F2E  6B40D9C5D4D6E5
001F35  C540C1D3D340C3C4E2        DC    C'E ALL CDS FROM P'
001F3E  40C6D9D6D440D7
001F45  C3C840E2E3D2D9E2          DC    C'CH STKRS'
001F4D  40E2C5C540C9C6    VISUAL  DC    C' SEE IF'
001F54  40C3C4E240D7C3C8C5        DC    C' CDS PCHED WITH '
001F5D  C440E6C9E3C840
001F64  40F140C9D540D7F16B        DC    C' 1 IN P1, 2 IN P'
001F6D  40F240C9D540D7
001F74  F26B40F340C9D540D9        DC    C'2, 3 IN RP3'
001F7D  D7F3
                          *
                          *
                          ********************************************************************************
                          *     EQUATES
                          ********************************************************************************
```



```
000000  NEVER  EQU  0
000007  NCCO   EQU  7
00000F  UNC    EQU  15
000008  NONE   EQU  8
000004  SOME   EQU  4
000001  ALL    EQU  1
000005  ANY    EQU  5
000008  CCO    EQU  8
000004  CC1    EQU  4
000002  CC2    EQU  2
000001  CC3    EQU  1
00000A  CCO2   EQU  10
000006  CC12   EQU  6
000008  EQ     EQU  8
000004  LO     EQU  4
000002  HI     EQU  2
000006  UNEQ   EQU  6
00000C  EQLO   EQU  12
00000A  EQHI   EQU  10
000080  LOGOUT EQU  X'80'
000181  SYSMOD EQU  X'181'
00F000  REG    EQU  X'F000'
00005A  WHAT   EQU  90
000000  R0     EQU  0
000001  R1     EQU  1
000002  R2     EQU  2
000003  R3     EQU  3
000004  R4     EQU  4
000005  R5     EQU  5
000006  R6     EQU  6
000007  R7     EQU  7
000008  R8     EQU  8
000009  R9     EQU  9
00000A  R10    EQU  10
00000B  R11    EQU  11
00000C  R12    EQU  12
00000D  R13    EQU  13
00000E  R14    EQU  14
00000F  R15    EQU  15
000198  WT     EQU  408
000040  HCSW   EQU  64
000048  HCAW   EQU  72
0001A0  DMSSW  EQU  X'01A0'
        END    ROUT01
```

2540 PUNCH FUNCTION TESTS - SECTION 2 F821

POST ASSEMBLY DATA.

REFERENCES TO DEFINED SYMBOLS.

1	8	EQ	136C,	14EE,	14F6,	17B0,	1B20		
1	2	HI							
1	4	LO							
1	0	R0	1A84,	1B0A,	1BB0				
1	1	R1	1182,	1186,	1192,	17A2,	17AE,	17B8,	17E4
1	2	R2	17A0,	17A0,	17AA,	17AE			
1	3	R3	17A6,	17AA,	17B4				
1	4	R4	16D8,	1788,	179C,	1850,	18AC,	1910,	1964
			1980,	1988,	19D4,	19F8,	1A1C,	1A48,	1A4C
			1B34,	1C28,	1C2C,	1C7C,	1C8C		
1	5	R5	1562,	16EA					
1	6	R6	1B54,	1B76,	1B98,	1BB4			
1	7	R7							
1	8	R8	1128,	12D4,	12D8,	133C,	1340,	135E,	135E
			1362,	13A8,	13AC,	145E,	1462,	1466,	1466
			146A,	1574					
1	9	R9	1128,	1210,	1214,	1220,	1276,	12CC,	12D0
			12EC,	1404,	1432,	1474,	148C,	14A4,	14BC
			1574						
1	198	WT	1182,	1210,	12CC				
1	1	ALL	1146,	11A8,	11F0,	1208,	1240,	1298,	12B8
			12F8,	1304,	1380,	13C8,	1542,	1562,	16C8
			18B4						
1	5	ANY	155A						
4	1048	CAW							
1	8	CC0	118E,	11BA					
1	4	CC1	11BE,	12E8					
1	2	CC2	11C2						
1	1	CC3							
8	1CB8	CCW	16CC,	16D0,	16D4,	17B8,	17BC,	17D4,	1924
			1934,	1948,	194C,	1D90,	1DA0		
8	1040	CSW							
2	100A	ICM							
4	1182	IHI	1166,	1176					
2	10E4	ISW	1196,	1196,	119C,	11E0,	1200,	120C,	1218
			1228,	1238,	123C,	124A,	127A,	1288,	1294
			129C,	12AC,	12BC,	12F4,	1300,	1314,	1334
			1356,	1370,	137C,	1478,	14A8,	14C6,	152E
			1536,	155E,	16C4,	16E6,	16EE		
4	1570	IUP	1568						
1	A	R10	1124,	1132,	13E2,	13FE,	1408,	1410,	1410
			1552,	16D4,	1858,	186C,	1880,	1894,	18BC
			18D0,	18E4,	18F8,	1914,	1924,	1944,	1968
			198C,	19A0,	19BC,	19E0,	1A04,	1A28,	1A88
			1BA0,	1BC2					
1	B	R11	111E,	1124,	1142,	11A4,	11E4,	11F4,	1204
			128C,	12A4,	1318,	1322,	132C,	133C,	134E
			1394,	13AC,	13AE,	13C0,	13C0,	13C4,	1434
			1450,	145E,	1490,	14C0,	153E,	1564,	156C
			156C,	1570,	1570,	1578,	178C,	17C8,	17D8
			185C,	1870,	1884,	1898,	18C0,	18D4,	18E8
			18FC,	1918,	1928,	1938,	1950,	196C,	1990
			19A4,	19C0,	19E4,	1A08,	1A2C,	1A9C,	1ABA
			1AD8,	1AF6,	1B28,	1BA4			
1	C	R12	115A,	116A,	117A,	118A,	11B6,	1230,	12DC
			12E4,	16BC,	16C0,	177A,	1C72		
1	D	R13	1132,	1136,	1136,	11DA,	12D8,	130C,	1552
			16B0,	16B0,	16BA,	1BC2			
1	E	R14	113C,	113C,	1210,	12CC,	14FA,	1502,	16B2
1	F	R15	1244,	1252,	1282,	16BA			
2	1C6A	RAC	1A4C,	1C2C					

2540 PUNCH FUNCTION TESTS - SECTION 2 F821

1	F000	REG	1264,	13A6,	13BE,	13D8,	13F2,	1430,	143E
			1444,	14DA,	14E8,	152C,	154A,	1550,	16E4
			176A,	1770,	1776,	17D2,	17E2,	1866,	187A
			188E,	18A2,	18CA,	18DE,	18F2,	1906,	1922
			1932,	1942,	195A,	1976,	199A,	19AE,	19CA
			19EE,	1A12,	1A36,	1AA6,	1AC4,	1AE2,	1B00
			1B32,	1BAE,	1BBA,	1BC0,	1C6E,	1C7A,	1C82
			1C8A						
4	17AA	RIP	17B4						
1	F	UNC	10F6,	110A,	115E,	117E,	11CA,	11D2,	11F8
			122C,	124E,	127E,	12A0,	12F0,	12FC,	1308
			1414,	1432,	153A,	1578,	16D8,	16F2,	177E
			1B58,	1B7A,	1B9C,	1BB4,	1BC6,	1BD6,	1BE6
			1BF6,	1C64,	1C7C,	1C8C			
4	1AA8	ANY1	1B58,	1B82					
4	1AC6	ANY2	1B3E,	1B7A					
4	1B02	ANY3	1B60,	1B9C					
1	A	CC02							
1	6	CC12							
2	1C7E	CCDS	1B34						
4	1BCA	CPT1	1B46						
4	1BDA	CPT2	1B68						
4	1BEA	CPT3	1B8A						
1	A	EQHI							
1	C	EQLO							
4	118A	GREG	1192						
1	48	HCAW	1132,	12D8,	1552,	1BC2			
1	40	HCSW	1136,	1136,	11DA,	1244,	1252,	1282,	130C
4	17E4	HOHO	17B0,	17C0					
16	174C	HUNG	16E4						
3	15FF	IACT	1270,	1480,	14B0				
6	1322	IBSN	12B0,	12C0,	12C8,	12F0			
12	15D3	ICAW	13E2,	13EA,	13EC,	13F2			
3	15E2	ICCW	13F4						
1	142F	ICNT	126C,	13FA,	144C				
3	15DF	ICSW	1266,	1446					
4	14A8	IDID	1494						
3	1602	IEXP	1458,	1498					
4	10E6	IHIO							
2	16B0	INIT	1788,	179C,	1850,	18AC,	1910,	1964,	1980
			19B8,	19D4,	19F8,	1A1C,	1A48,	1C28	
4	1200	INOW	1146,	11CA,	11D2,	11E8,	11F0,	11F8	
4	128C	INT3	124E						
4	11D6	IONE	11BE						
6	14C0	IPAS	14AC						
4	12A4	ISEN	1208,	122C,	1290,	1298			
4	110E	ISIO	17C8,	17D8,	185C,	1870,	1884,	1898,	18C0
			18D4,	18E8,	18FC,	1918,	1928,	1938,	1950
			196C,	1990,	19A4,	19C0,	19E4,	1A08,	1A2C
			1A9C,	1ABA,	1AD8,	1AF6,	1B28		
6	1282	ISV2	1240						
4	12EC	ITIC	1310						
4	10FA	ITIO	178C						
4	11CE	ITWO	11C2						
6	1252	IUIO	1234						
6	1196	JOHN	114E,	118E					
16	1E61	MSG1	1BBA						
16	1EA1	MSG2	1BC0						
1	1693	MSK1	121C						
1	1694	MSK2	1224						
1	7	NCCO	116E,	12E0,	1310				
2	17CC	NEIL	17C4						
4	1E30	NEXT							
1	100D	NIOU							
1	8	NONE	114E,	1156,	1166,	1176,	11E8,	1290,	12A8
			12B0,	12C0,	12C8,	1330,	1338,	1352,	135A
			1388,	140C,	1454,	147C,	1494,	14AC,	14CA
			1532,	1568,	1686,	17C0,	1A44,	1B3E,	1B46

			1B60, 1B68, 1B82, 1B8A, 1C1C, 1C24
4	1D28	NORM	188E
16	1EDE	PCH3	1776
16	1F03	PCH4	176A, 1770
1	1695	RTSV	112C, 16DA
1	100C	SDMF	
4	1004	SNSW	114A, 1152, 1162, 1172, 1384, 1556, 1A40
			1AA8, 1AC6, 1AE4, 1B02, 1B3A, 1B42, 1B5C
			1B64, 1B7E, 1B86, 1C18
1	4	SOME	1AAC, 1ACA, 1AE8, 1B06
3	105D	SRET	
1	10E1	U1OP	18B0, 1C20
4	1D88	UNCK	1922
1	6	UNEQ	1234, 131E, 1328, 134A, 13DE, 14FE, 1BCE
			1BDE, 1BEE
1	5A	WHAT	
1	1588	WORK	1252, 13FE, 141C, 141E, 1420, 1426, 146E
			146E, 1486, 149E, 149E, 1486, 1502, 150C
			150E, 1510, 1516, 151C, 1522
4	17A6	AGAIN	17E4
4	1B28	BAL11	1B20
4	16C4	BLOOP	16F2
4	1B4A	COMP1	1A60, 1C40
4	1B6C	COMP2	1A64, 1C44
4	1B8E	COMP3	1A68, 1C48
8	1D08	DATA1	1DE8, 1DF8, 1E08
8	1D18	DATA2	1E18
1	1A0	DMSSW	
4	1A92	DOSS1	1A50, 1B0A, 1BCE, 1C30
4	1AB0	DOSS2	1A54, 1BDE, 1C34
4	1AEC	DOSS3	1A5C, 1BEE, 1C3C
1	100E	FLAG1	
1	100F	FLAG2	
4	1132	GOMAN	177E
16	15E5	IBLAH	1266, 1270, 13F4, 1420, 1426, 1430, 1446
			1458, 1480, 1498, 14B0
2	1418	ICOUT	1276, 1404, 1474, 148C, 14A4, 14BC
8	1676	ICSW1	11DA, 11EC, 1244, 12B4, 1344, 1344, 1486
8	167E	ICSW2	1282, 12C4, 1366, 1366, 14B6
4	152E	ICUIO	14FE
4	1478	IDIDI	1454
4	116A	IHANG	117E, 1BA4
16	15C3	ILINK	13AE, 13B6, 13B8, 13BE, 1550
4	130C	ILOKE	12E8
4	115A	ILOOP	10F2, 10FE, 1112
4	1370	INDER	12E0, 12F8, 1304, 131E, 1328, 1338, 134A
			135A
5	1010	INPSW	
8	1CA8	INVLD	1D88
3	1690	IOADR	13D0
6	1446	IOCSW	13C8
16	161B	IOLOG	1510, 1516, 151C, 1522, 152C
16	1640	IOPT1	10EA, 1102, 1116, 154A
4	14FA	IPASS	14CA, 14EE
8	1580	ISAVE	1128, 1574
4	11B6	ISSUE	10E6, 10FA, 110E, 11A8, 13DA, 1690
4	1152	ITRY1	115E, 116E, 155A
4	1162	ITRY2	1156
11	1696	IUNEX	125E, 1264
4	1210	IWAIT	12A0, 153A
4	11FC	IZERO	11BA
4	1D48	LNGCW	187A
4	16F8	MOD50	16C0
1	0	NEVER	
4	1D98	NEXT1	1932
4	1DE8	NORM1	19EE
4	1DF8	NORM2	1A12
4	1E08	NORM3	1A36

1	16FC	PCHAR	11AC, 11B0, 11B0, 1A8C, 1B0E, 1B12, 1B12
			1C90, 1C98, 1CA0, 1CA8, 1CB0, 1CB8, 1CC0
			1CC8, 1CD0, 1CD8, 1CE0, 1CE8, 1CF0, 1CF8
			1D00, 1D08, 1D10, 1D18, 1D20, 1E58, 1E5B
			1E5E
4	1A84	RTN13	1C64
4	1000	SECNO	112C, 125C, 125E, 1264, 139E, 13A0, 13A6
			13B6, 13B8, 13BE, 13D0, 13D2, 13D8, 13EA
			13EC, 13F2, 141C, 141E, 1430, 143E, 1444
			14D2, 14D4, 14DA, 14E0, 14E2, 14E8, 150C
			150E, 152C, 154A, 1550, 16DA, 16E4, 176A
			1770, 1776, 1785, 1799, 17D2, 17E2, 184D
			1866, 187A, 188E, 18A2, 18A9, 18CA, 18DE
			18F2, 1906, 190D, 1922, 1932, 1942, 195A
			1961, 1976, 197D, 199A, 19AE, 19B5, 19CA
			19D1, 19EE, 19F5, 1A12, 1A19, 1A36, 1A3D
			1AA6, 1AC4, 1AE2, 1B00, 1B1C, 1B32, 1BAE
			1BBA, 1BC0, 1BCA, 1BDA, 1BEA, 1C6E, 1C7A
			1C82, 1C8A
4	1B3A	SEE11	1AAC, 1AE8
4	1B5C	SEE12	1ACA
4	1B7E	SEE13	1B06
3	1E58	SSONE	1A96, 1AD2, 1B4E
4	155E	SSRET	1BC6
3	1E5B	SSTWO	1AB4, 1B70
8	1BFA	STKR1	1A8C
1	10E0	UNIT1	168C
8	1CA0	CHAINP	1914
4	1DC8	CHNLNG	19AE
8	1CD0	CHNPCH	1968, 1DA8
4	1DB8	CHNSRT	199A
4	1D80	DAILRL	1906
4	1D78	DAILRS	18F2
4	1D70	DIALNG	18DE
8	1CC8	DIARDL	18CC, 18D0, 18F4, 18F8, 1D70, 1D80
8	1CC0	DIARDS	18B8, 18BC, 18E0, 18E4, 1D68, 1D78
4	1D68	DIASRT	18CA
16	1F25	DONPRO	1C6E, 1C7A
6	1A96	DOSS1C	1BD6
6	1AB4	DOSS2C	1BE6
6	1AF0	DOSS3C	1BF6
4	1E18	DTACCW	19CA
8	1CF0	DTACHN	19D8, 19DC, 19E0, 19FC, 1A00, 1A04, 1A20
			1A24, 1A28
8	1D10	DTAINV	19BC
2	1908	EXIT04	18B4
2	1B38	EXIT12	1A44, 1C24
2	1C68	EXIT13	1C1C
5	1058	EXNPSW	
8	1018	EXOPSW	
6	16DA	HANGUP	16C8
11	1610	IACSNS	1318, 14E0, 14E2, 14E8, 14F2, 1688
10	15AA	IACTCC	11A0, 11C6, 11CE, 11D6, 11FC, 1322, 1444
6	1434	ICCOUT	13DE, 140C
6	1344	ICCSW1	1340
6	1366	ICCSW2	1362
6	146E	ICHNG1	1462
6	149E	ICHNG2	146A
6	13FE	ICWOUT	1414
4	12CC	IDOSNS	12A8, 12B8, 16EA
4	1374	IDUNCK	12FC, 1308, 136C
10	15A0	IEXPCC	1434, 143E
11	1605	IEXSNS	14C0, 14D2, 14D4, 14DA, 14EA
6	111E	IEYEOH	10F6, 110A
1	13A4	IFLAG1	1374, 138C
1	1548	IFLAG2	1378, 1390
4	1564	ILEAVE	1388
6	1502	ILOGED	127E

```
   4  1490 IMORST  147C
   4  12F4 INOEX1  1330
   4  1300 INOEX2  1352
   4  1ACE INTERV  1A58,  1C38
  15  1584 IOADDR  10EE,  1106,  111A,  13D2,  13D8
   4  1078 IONPSW
   8  1038 IOOPSW  1230,  125C
   4  153E IOPOUT  1532
   6  1394 IOUTIT  1380
   4  1230 IRETRN  107C
   8  1688 ISENSE  12D4,  1E28
   8  16A8 ISLAVE  1124
   4  12E4 ITIOLP  12EC
   4  1DD8 ITSELF
   9  1637 ITSTNO  111E,  1394,  139E,  13A0,  13A6
   1    80 LOGOUT  113C,  113C,  1502
   8  1070 MCNPSW
   8  1030 MCOPSW
   4  16BC NITWIT  16B6
   4  1D58 NOILRL  18A2
   8  1CB0 NOPCCW  1944
   4  1DA0 NOPRES  195A
   4  1D90 NORSET  17E2,  1942
   8  1C98 PCLONG  1868,  186C,  1890,  1894,  1D48,  1D58
   8  1C90 PCSHRT  1854,  1858,  187C,  1880,  1D28,  1D38
   4  1843 PFRFTR
   8  1068 PGNPSW
   8  1028 PGOPSW
   1  1784 ROUT01  1015,  1F7F
   1  1798 ROUT02  1785
   1  184C ROUT03  1799
   1  18A8 ROUT04  184D
   1  190C ROUT05  18A9
   1  1960 ROUT06  190D
   1  197C ROUT07  1961
   1  1984 ROUT08  197D
   1  19D0 ROUT09  19B5
   1  19F4 ROUT10  19D1
   1  1A18 ROUT11  19F5
   1  1A3C ROUT12  1A19
   1  1C14 ROUT13  1A3D
   8  1CE0 SHRTCH  1984,  1988,  198C,  199C,  19A0,  1DB8,  1DC8
                   1DD8,  1E30
   4  1D38 SHRTCW  1866
   4  1E28 SNSCSW
   2  1BB6 SNSMES  1542
   4  1E48 SSADRS  1AA6,  1AC4,  1AE2,  1B00,  1B32,  1BAE
   8  1D20 SSCOMN  1A88,  1A92,  1A96,  1AB0,  1AB4,  1ACE,  1AD2
                   1AEC,  1AF0,  1B18,  1B24,  1B4A,  1B4E,  1B6C
                   1B70,  1B8E,  1B92,  1BA0,  1BD2,  1BE2,  1BF2
                   1E48
   3  1E5E SSTHRE  1AF0,  1B92
   8  1060 SVNPSW
   8  1020 SVOPSW
   1   181 SYSMOD  14FA
   2  1766 TELHIM  14F6
   4  1BA0 TITELP  1B54,  1B76,  1B98
   2  1AA2 TST230  1A6C,  1C4C
   2  1AC0 TST240  1A70,  1C50
   2  1ADE TST250  1A74,  1C54
   2  1AFC TST260  1A78,  1C58
   2  1B2E TST265  1A80,  1C5C
   2  18AA TST270  1A7C,  1C60
   2  10E2 U1ADDR
   4  1E40 UCNVLD  17D2
   4  17EA VALCOM  17AA
   7  1F4D VISUAL  1C82,  1C8A
   4  1DA8 VLDCHN  1976
```


1. 1000 XF8213

NO ERROR DETECTED IN ABOVE ASSEMBLY

PERIODS CORRESPOND TO BLANK COLUMNS.

COLS. 1 THROUGH 20

```
BESD.....AA..AAXF82
9          YQ  Y9
           99  9

BTXT.AAA..A8..AA8/AA
9    YQY  Y9  Y9 9QY
     999  9   9  Z9

BTXT.AA8..A8..AAAAAA
9    YQ9  Y9  Y9YYYY
     99   9   9 9999

BTXT.AA0..AA..AAAAAA
9    YQ+  YQ  Y9YYYY
     99-  99  9 9999

BTXT.AAS..A8..AABAAA
9    YQ8  Y9  Y90YYY
     99   9   9  9 9

BTXT.AJQ..A8..AA6JBS
9    Y99  Y9  Y9 8-
     9    9   9

BTXT.AJ+..A8..AA1FAA
9    Y9   Y9  Y9 —-Y
     9    9   9

BTXT.AJH..A8..AAACEA
9    Y90  Y9  Y9Y9QY
     9    9   9 9  9

BTXT.AJ0..A8..AA10GJ
9    Y9+  Y9  Y9  ZY
     9    9   9   9

BTXT.AJ8..A8..AAG02A
9    Y9   Y9  Y9Z  Y
     9    9   9    9

BTXT.AKA..A8..AAA002
9    Y9Q  Y9  Y98+ 8
     9 Z  9   9    9

BTXT.AKQ..A8..AA5W5G
9    Y9Z  Y9  Y9   Q
     9    9   9    9

BTXT.AKJ..A8..AAG02A
9    Y9Y  Y9  Y9Z  Q
     9    9   9    9

BTXT.AKQ..A8..AA+EAH
9    Y9   Y9  Y9 YYZ
     9    9   9  9

BTXT.ALA..A8..AAG02M
9    Y9Q  Y9  Y9Z+ Y
     9 9  9   9  - 9

BTXT.ALH..A8..AA6FG-
9    Y9Z  Y9  Y9 RZ
     9    9   9  0
```

COLS. 21 THROUGH 40

```
13..AAAA.AG7.........
    YYQY Y88
    9999 99

AAAAAAAAAAOAADAAAAPD
YYYYYYYYY9+Y99YYYY90
999999999  9  9999

AAAAAAAAAAAAAAAAAAAA
YYYYYYYYY9YYYYYYYYYY
999999999 9999999999

AAAAADAAAAKA.........
YYYY99YYYY9Q
9999  9999 Z

AA8FIFBH6JBH50BF1KG0
YY-Q 0-  8-  +-Q 8Z
99   -

50KA64ABAL6QAI5AKA6E
 + 9 8Q9QY 0Q0 Y Y -
     90         9

ODGA1KDAOAG01BA.ODGA
 9ZY ZQY+YZ  R-  9ZY
       9 9

0AGA1FFA1BPAOUOUFAOU
+YZY -ZQ Y 9     -Y
         9  9

1FB35PGO2AB25PGO2AB1
 Y-  YZ  Y-  YZ  Y-
 9       9       9

B05PD7OUA.AAGA2MFAOU
-  Y-8  - QYZQ 0-Q
          09 9   9

G-2BD7OUA.OUGA2BKG6F
Z  R-8  -   ZQ 0 9 R
            9     0

BK4XKB5D5GEA4QFBOUGO
-8 8 9 Q QZQ 9-9  Z
 9 9   Z Z

ABAAGA2DA.OUGA3SAB62
-9QYZY Y-    ZY 9-9 8
  09   9

DAOAGO3OEAOAG.3DFA2U
QY+YZ+ +QY+YZ  8ZQ
 9 9 - - 9 9   9

FDOUNA6NAEG-3ONA5PAD
-9   Y 9Q9Z  + Y YQ9
     9 0    - 9 0

3OADAAGA3AAJOUGA3OAH
 +-9QYZY Y-Y  ZY +ZO
 -  09   9 9    -
```

COLS. 41 THROUGH 60

```
.................840

AAAAAAAAAAAAAAAAAAAA
YYYYYYYYYYYYYYYYYYYY
99999999999999999999

AAAAAAAAADAAAAAAAAAA
YYYYYYYYY9YYYYYYYYYY
999999999 9999999999

....................

1OBE1FBE1KBT6JBT5OGO
 8-Q O-Q 8-  8-  +Z
 9   -

OC+NAHPGO.O.PCSASAAA
 9 YYZ 9- -  88Y8Y-Y
   9        9

1BEAOAGO1BA.ODGA1BDA
 OQY+YZ+ R-  9ZY OQY
   9 9 -        9

BX5PAAAAGA1FB.6DKF6E
-  Y-9Q9ZQ O-  Q 8 Q
     0 9 -   Z  Z

5PKG6FO.F.OUAAAAGA2A
 Y 9 R- -   -YQ9ZY Y
      0         0  9

HFAHHAACFAOUAA6CFA2J
RQ9-OQY9-Y  YY -ZQ Y
            9     9  9

O.F.OUGO2DKG5HO.BEAC
 -   Z  Y 9 O  8QY9
                999

5BKG66O.FJOUAAAAGA2M
 9 9 8  -Y  -QQYZY O
        9   909

GA2DAJOUGA3SAB6BGA3S
ZQ Y-Y  ZY 9-9 OZY 9
 9 9 9

GO3SA.OUGA3OGO3DAJOU
Z  9-   ZQ +Z  R-Y
        9 -   0 9

G-3OAHAAGA24A.OUGA3O
Z  +-9QYZY  -   ZY +
   -  09            -

AH.A3+NG6666GA3DFAOU
Y9 Y - 9 8 8ZY R-9
9              0
```

COLS. 61 THROUGH 80

```
194.130498..82130001

AAAAAAAAAAAA82130002
YYYYYYYYYYY
999999999999

AAAAAAAAAAAA82130003
YYYYYYYYYYY
999999999999

.............82130004

1OBD1FBD1KBS82130005
 8-Q O-Q 8-
 9   -

AAGA2AAOODGA82130006
QYZQ Y-+ 9ZY
09 9 9

OAGO1+HOAHHA82130007
+YZ  -R89-OQ
 9    9  9

6DDAOAGA1DG.82130008
 QQY+YZY QZ
 Z 9 9   Z

AH62GA2AF.AA82130009
-9 8ZQ Y-  QY
        9 9  09

AA6DD7OUGO2M82130010
YY --8  Z  O
 9

A1FCBOMC6FKB82130011
Y89Q8-Z8 - 9
99  9  9

AHOUGA2MFHOU82130012
-9  ZQ O-9
        9

HFAHHAABAA6H82130013
RQ9-OQY9ZY O
            9

GA3OGO3DED0D82130014
ZQ +Z  R-8-Z
 9 -   0 9

HCAF.A3HNG6F82130015
ZYY9 Y Z 9 R
 9       0

BM3MBO5HAAOU82130016
-Z O-+ Z-9
```

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```
BTXT.ALA..A8..AAGA3D
9    Y9Y  Y9  Y9ZQ -
     9    9   9  9

BTXT.ALH..A8..AAEHBO
9    Y9O  Y9  Y99 8-
     9 -  9   9  9

BTXT.ALO..A8..AAJC5L
9    Y9   Y9  Y9Y8
     9    9   9  9

BTXT.AMY..A8..AA535A
9    Y99  Y9  Y9   Q
     9    9   9

BTXT.AM-..A8..AAAF.A
9    Y9   Y9  Y9Y9 Y
     9    9   9  9

BTXT.AMH..A8..AAKB5D
9    Y9-  Y9  Y9 9 Q
     9    9   9    Z

BTXT.AMO..A8..AAAAFB
9    Y9-  Y9  Y9Y998
     9    9   9  9  9

BTXT.ANH..A8..AABEAD
9    Y99  Y9  Y98QY8
     9    9   9 9999

BTXT.AN...A8..AAAAGA
9    Y9   Y9  Y9Q9ZQ
     9    9   9 0  9

BTXT.ANH..AA..AAGCGA
9    Y9R  YQ  Y99Q9Y
     9 0  99  9  Z 9

BTXT.ANJ..AU..AA.CC.
9    Y9Y  Y9  Y9
     9    9   9

BTXT.ANC..AJ..AA.ADR
9    Y9   Y9  Y9
     9    9   9

BTXT.ANL..A8..AA.CAW
9    Y9   Y9  Y9
     9    9   9

BTXT.AOC..A8..AAX.EX
9    Y98  Y9  Y9
     9 9  9   9

BTXT.AOC..A8..AAT.SS
9    Y9Z  Y9  Y9
     9    9   9

BTXT.AO3..A8..AAAAAA
9    Y98  Y9  Y9YYYY
     9    9   9 9999

BTXT.AOC..A8..AA.JFG
9    Y9O  Y9  Y9 Z-Z
     9 -  9   9
```

```
AAODGA5MBU3MBA5HKA64
-9 9ZY Z-9 O-Y Z 9 8
                   9

JA5CACADAAAAGA4FBEAC
YQ  ZQY9-YQYZQ Z8QY9
 9  O9   O9 9  999

KB5W5SBO4XKG5HJAEA4Q
 9    -9 8 9 OYYZQ 9
        9    9

BOJK5VG9KA5NADBOJB5J
8-Y8  9  Y OQ98-Y8 Y
9 9     9 O 9  9

4BAHAH.A4KKG5H5HEA4Q
 RZOY9 Y O 9 O OZQ 9
 O  9

6BKG5H5HEA4QAJOUGA4O
 9 9 O OZQ 9-Y  ZY +
           9

FBBOJC6EBEAAFNFNBOJC
988-Y8 98QY999998-Y8
 99  9  999    9  9

EHEHKA6J5HKE6T5BKE6S
9090 9 Y O 9 9 Y 9 8
       9         9

CFBO066.BOJA5C+NAHAO
QO8-+9  8-Y9   YYZ-+
Z-9     9      9

GAGAAAAAAAAA.........
9Y9YYYYYYYYY
 9 999999999

.X.EXP.CC..X.ACT.ADR

.XXXXXX.LINKA.......
                Y
                9

.XXXXXX.CSWCCW.CSW.X

P.SNS.XX.ACT.LOG.XX.

.O.ON.FOR.LOOP.ON.XI

AAAAAAAAADAONAAAAAJF
YYYYYYYYY9Y99YYY9Y9O
999999999 9  999 9 -

A6DQGHOOSDO68AAOUGA6
Y Q9QR+ 8R+  -Y  ZQ
 O 9              9
```

```
ABBEABF4F4BOMA67AAAD
Q98QY998988-Z8 9ZYY9
O 999  9 99  9    9

FAEIBOJG5DED1FG-44+J
9Q9O8-Y8 O-Q OZ  9 Y
   -9  9 -   -

AOJDGA44AKAHGO3FBEAH
-+Y9ZY 9ZYY9Z  Q8QY9
          9    Z999

BOJB5KKB5W5GBK4XAHAA
8-Y8 Y 9   Q-8 8-9QY
9  9       9 9 9 O9

A.OUGA4AKB5D5GKG5H6F
-   ZY Q 9 Q Q 9 O R
           Z Z   O

KB5D5GKG5H66EA4QKA6B
 9 Q Q 9 O 8ZQ 9 Y 8
   Z Z           9 9

6AE46BGA4BE46NGA7OEA
 Q-  8ZY Q-  9ZY Z-Q
 9   9   Z       Z

5BKE615BBOJM6LABOUGA
 - 9 9 Q8-Y8 8-9  ZY
         9 9 9

ODG+1BAAOUGNAHAAGA5O
 9Z  R-Y  99-9QYZY +
             O9   -

.....................

.XXXXXX.XIOA........
          Y
          9

.....................

XXXXXX.XXXXXXXX.EXP

XXXXXX.XXXXXX.XXXXXX

OT.SS.1.ON.FOR.TIO.S
 8

FAA.UIO.XXXXXXAGAGAG
Q9Y             Y9Y9Y9
Z 9             9 9 9

B8CDHBJDDAJDHG4KAOC6
Q-9QO-YQQZYQO9  Y 9
9  Z- 9ZO  Z-   9
```

```
LH+A5HBEACEI82130017
8O Q  8QY99
9- O  999

5QBEACEREQB082130018
  8QY99 9 8-
  999     9

EHEHKG5K5HKG82130019
9O9O 9 Y O 9
       9

GA4HKB5D6BHC82130020
ZY R 9 Q 9ZY
  O   Z

EA4QADAAGA4Q82130021
ZQ 9-9QYZY O
     09

AEADOUGA4BBE82130022
Q9-9  ZY Q8Q
O     Z99

JAG-5WKC5HSA82130023
ZOZ  8 8 O8Y
       9 9

56DEOUGO2AAA82130024
 8-Q  Z  Q-9
 9 Z    9

ACABACAFHI5A82130025
ZQY9ZQY9-O Y
 09  09

.....................82130026

.....................82130027

.....................82130028

ACTEXP.SNS.X82130029

.TST.XXXX.SE82130030

IO.LOOPAAAAA82130031
       YYYYY
       99999

AAAAAAAAALEA82130032
YYYYYYYYY8Q-
99999999999

EBOMK7DFAOUE82130033
-8-Z8 8-9  Z
 9 9
```

DATE 05MAY65 10AUG65 15NOV65 15JUN67
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```
BTXT.AOL..AJ..AA+2DB   AOUG06DGAAA7G.......   ....................   ...........82130034
9    Y9Y  Y9  Y9  Y-   Y  Z    9YYY8Q
     9 9  9   9   9    9        9999Z

BTXT.APD..A8..AA.PRE   VIOUS.HANG.UP.DETECT   EDBOAAGCBOUSGCBOAVFF   BBEAOAGO12GA82130035
9    Y98  Y9  Y9                                8-Y9Q98-99Q98-Y9QQ   8QQY+YZ  99Y
     9    9   9                                 9  Z 9   Z 9   Z9    99 9 9     9

BTXT.APD..A8..AAAAGH   E.6AEAOBAAAAOABDBAHD   E.6ALSAAAGAAA/CT7ZJK   GA7UFA7KBADH82130036
9    Y90  Y9  Y99Y9-   Z  QZQ QYYYQ Y8 9Y98   Z  Q89ZQYQZQY Z9  89   ZY  ZQ YZQQO
     9    9   9  9        0 0 Z9999 99  9      09  99Z Z9      9        Z   9Z-

BTXT.APD..A8..AAAGDH   GA7UB87DEA1F8AAJ1AF.   BFDHEA1FYAAAOAEAFA7O   BOACDEAEJMNJ82130037
9    Y9Q  Y9  Y9-8QO   ZY  -9 YZQ 89YYY YQ    - QOZQ 89YYQ YQQZQ O   8 9999889998
     9 0  9   9  9Z-            9 0 9  99  Z    Z- 0 9.99Z 9Z  9     9       99   9

BTXT.AP4..A8..AAN/UV   /V14515ADEAEADEJN/MN   /VADE15ADEIEADEIEJMN   RNADEIEDFFMO82130038
9    Y9   Y9  Y98999   8899988ZZZ88RRR88 ZZ   88RRR880000Y----Q000   OYOOOOQ  Y
     9    9   9 9      99   99                 000                     ----0  9

BTXT.AQU..A8..AAFUWO   46FHQY8HHQHHHQHHQY8B   BKBSK2BACAHQE.6ABADD   AJDAEA1F6AA.82130039
9    Y98  Y9  Y9Q  Y     Q9999ZRZRO-OO        Y Q Y QY9Y90Z  Q-YQ-   ZYQQZQ 88YY
     9 9  9   9 9  9     Z         O   -      9 9 9 Z9 9      O 9Z     Z  0 9999

BTXT.AQM..A8..AAOAE8   BADDAJDHEA1F6AA+OAEH   BJDDAJDAEA1F6AA-OAEY   BJDDAJDHEA1F82130040
9    Y9Z  Y9  Y9 YQ9   -YQQZYQ-ZQ 88YY  YQZ   -YQ-ZYQQZQ 88YY  YQ9   -YQQZYQ-ZQ 8
     9    9   9  9Z     9Z   Z  0 9999  9Z     9Z   Z  0 9999  9Z     9Z   Z  0 9

BTXT.AQD..A8..AA6AAO   OAEHBOGADAADE.6AAJOJ   GA9HBADDAJDOEA1FSAAA   OAEQBADDAJDH82130041
9    Y9Q  Y9  Y98YY+    YQR8 9Y9Y88Z  Q-Y Z   ZQ 9-YQ ZYQ+ZQ 88YYY    YQZ-YQYZYQ
     9    9   9 999-    9Z 9  9 999   0 9      9   9Z   Z  0 9999     9Z  9Z9  Z

BTXT.AQM..A8..AAEA1F   SAAAOAEOBJDDAJDOEA1F   SAAAOAEHBJDDAJDHEA1F   SAAAOAEABOGA82130042
9    Y9   Y9  Y9ZQ 8   8YYQ YQ+-YQ ZYQ+ZQ 8   8Y9Y YQR-YQYZYQ ZQ 8   8Y9Q YQY8 9Y
     9    9   9  0 9   999  9Z- 9Z   Z  0 9   99 9 9ZO 9Z9  Z  0 9   99 9 9Z 9  9

BTXT.AJD..A8..AAEAA-   E.6AAJDJEA1FYAAJOAEH   AJDHEA1FYAAA1AEHBFDH   EA1FYAA.OAEA82130043
9    Y88  Y9  Y99Y8    Z  QZYQYZQ 89Y9Y YQO   ZYQOZQ 89Y9Q YQ-- QO   ZQ 89Y9  YQQ
     999  9   9  99       0  Z  0 9 9 9  Z      Z- 0 9 9 Z  Z   Z-    0 9 9   9Z

BTXT.AJD..A8..AAAJDA   BCDHBADDEA1FYAA+OAEJ   BOGAFAA4E.6AAJDOEA1F   6AA-OAEQBOGA82130044
9    Y8Z  Y9  Y9ZYQQ   -9QO-YQQZQ 89Y9  YQY   8 9Y9Y88Z  QZYQ-ZQ 8   8Y9  YQO8 9Y
     99   9   9   ZO     Z- 9ZO 0 9 9   9Z    9  9 99    0  Z  0 9   99   9Z 9  9

BTXT.AJ4..A8..AAGAAD   E.6AB.DUBGDXAJDSEA1F   4AAOOAEHBADXAJDSEA1F   4AAAOAEHBOGA82130045
9    Y88  Y9  Y99Y80   Z  Q- Q -8Q ZYQ8ZQ 8   8Y9+ YQO-RQ ZYQ8ZQ 8   8Y9Y YQ 8 9Y
     99   9   9  99-      0  Z   Z   Z  0 9   99 - 9Z-  Z   Z  0 9   99   9Z 9  9

BTXT.AJD..A8..AAHAAO   E.6AAJEAEA1F4AAAOAFQ   BOGAAAA4E.6ABMD7BAED   AJDOEA1F4ABA82130046
9    Y80  Y9  Y99Y8-   Z  QZYQQZQ 88Y9Q YQ9   8 9Y8Y8 Z  Q-9Q -YQ9   ZYQ ZQ 88Y9Y
     99-  9   9  99       0  Z9 0 999   9Z    9  9999    0  Z   Z     Z  0 999 9

BTXT.AJM..A8..AAOAEY   BOGAAABQE.6ABYD7BAED   AJDOEA1F4ABAOAE8BOGA   JAB4E.6AB/D782130047
9    Y8Y  Y9  Y9 YQ    8 9YQY89Z  Q-9Q -YQ9   ZYQ ZQ 88Y9Q YQ 8 9Y   9Y88Z  Q-8Q
     999  9   9  9Z    9  9999    O  Z   Z     Z  0 999 9 9Z 9  9     999   0 9Z

BTXT.AKU..A8..AABJED   AJDOEA1F4ABJOAFHBOGA   KADMADODGAC8E.6AE.D+   BABCBABABABG82130048
9    Y89  Y9  Y9-YQ9   ZYQ ZQ 88Y9Y YQ98 9Y   9Y89-9 9ZYQ9Z  QZ Q-   -9Q--ZQO-9QY
     99   9   9   Z      Z  0 999 9 9Z 9  9    99        Z    O  Z    Z   Z-  Z9

BTXT.AKM..A8..AABABN   BJCCBACVBACGBBBKBBBO   BBBFBBBDBBCKBBCWAAAB   AJEJKP6DCBBA82130049
9    Y88  Y9  Y9-OQY   -9Q8-RQ8--QY-9QO-9Q+   -9QQ-9QQ-9QY-9Q8ZYY8   ZYQY 9 QQQ-9
     99   9   9   Z9     Z   Z   Z   Z   Z     Z9  ZZ  Z   Z9 999     Z9   ZZZ

BTXT.AKD..A8..AAEJKB   E/FHEA1F6ABAOAFHAMOE   G.C2BAEJKBE/FLEA1F6A   B.OAFHAMOEG.82130050
9    Y8-  Y9  Y9QY 9   Q9QRZQ 8899Q YQZ-8 9   Z Q8-ZQY 9Q9Q8ZQ 889   9  YQZ-8 9Z
     99   9   9 Z9     Z Z  0 99  Z 9Z  9      Z9  Z9  Z Z  0 99.      9Z  9
```



```
BTXT.AKD..A8..AACMBA   EJKBE/FHEA1F6AB+OAFH   AMOEG.C2BAEJKBE/FOEA   1F6AB-OAFHAM82130051
9    Y8Y  Y9  Y9Q8-9   QY 9Q9QRZQ 8899  YQZ   -8 9Z Q8-OQY 9Q9Q8ZQ    8899  YQZ-8
     999  9   9 Z      Z9  Z Z  0 99    9Z     9   Z9  Z9  Z Z  O    99    9Z  9

BTXT.ALD..A8..AAOEG.   C6FABBB.6DKF6E6DBAEJ   ELOCGACYBAEJEA1F6ABN   OAFHE.D6BOAA82130052
9    Y89  Y9  Y9 9Z    Q8ZYQ--  Q 8 Q Q--QY   -9 9ZYQ9-OQYZQ 8899Z    YQZZ Q88  -Q
     99   9   9        Z  9Z    Z   Z Z  Z9          Z   Z9 0 99     9Z   Z 9  9

BTXT.AL4..A8..AAOEGA   BFA.ODGACBBAEJKBE/FH   E-CJGOBQAHOEGACBA.OD   GACBBAEJKBE/82130053
9    Y88  Y9  Y9 9ZY   Q -   9ZYQY-9QY 9Q9QR   Z QYZ QO-9 9ZYQ9-  9   ZYQQ-ZQY 9Q9
     999  9   9        Z         Z9  Z9  Z Z     Z   Z         Z      Z9  Z9  Z

BTXT.ALD..A8..AAFLE-   CJGOBFADOEGABQA.ODGA   CKBAEJKBE/FOE-CJGOCB   AJEJEA1+6ABO82130054
9    Y8R  Y9  Y9Q8Z    QYZ Q -9 9ZYQO-  9ZY   QY-OQY 9Q9Q8Z QYZ Q9   ZYQYZQ -899+
     990  9   9 Z      Z   Z         Z        Z9  Z9  Z Z   Z   Z      Z9 0  9  -

BTXT.ALM..A8..AAOAFH   AAAAG6BOJ.F/BOO5FJ+N   AHGO5OELOCG-BBBJEJGO   BFELOCG-BABA82130055
9    Y8Y  Y9  Y9 YQZ   ZYY99 8-Y Q 8-+8QO Y   YZZ  8-9 9Z Q--9QYZ    Q--9 9Z QQ-R
     99   9   9  9Z     99   9   Z 9  9Z      9            Z   Z9    Z         ZO

BTXT.ALU..A8..AAEJGO   BDELOCG-BMBAEJGOBO11   11111122222222333333   33GALAGGADOD82130056
9    Y8   Y9  Y9QYZ    QO-9 9Z QY--QYZ Q                               9Y9YQQ-9 9
     99   9   9 Z9     Z-       Z9  Z9  Z                               9 9ZZ

BTXT.AMM..A8..AAGADQ   AHOJGAC8E.6AE.D+BABC   BJBABABGBJBNBJCCBACV   BACGBKBKBKBO82130057
9    Y88  Y9  Y9ZYQZ   -9 ZZYQ9Z  QZ Q---Q-   -9QO-RQY-9QY-9Q8-RQ8   --QY-9QO-9Q+
     999  9   9   Z            Z    O  Z  Z     Z-  Z9  Z9  Z   Z       Z   Z   Z

BTXT.AMD..A8..AABKBF   BKBDBKCWBKCKGOBDBOBO   UYGVBBEAOABOAAGVG4BO   U2GEBBBOAAGE82130058
9    Y8R  Y9  Y9-9QQ   -9QQ-9Q8-9QYZ QO8 8-   99Q98QQY+Y8-Y9Q99 8-   99Q88Q8-Y9Q8
     99   9   9   Z9     ZZ  Z9  Z   Z 9 9      Z 99 9 99   Z   9      Z 999   Z

BTXT.AMD..A8..AAG4AA   AAODAAAGAAODAAAAAAOD   .AA+CAODAAA+CAOD.AAA   CAODJAAABAOD82130059
9    Y8Y  Y9  Y99 YY   ZY9QYYY8ZY9QYYYRZY9Q    YY RY9QYYY 9Y9Q YY9   9Y9QYYY9 Y9Q
     99   9   9   99    9 Z999  9 Z999  9 Z    99  9 Z999  9 Z 99     9 Z999  9 Z

BTXT.AMD..A8..AAAAAG   BAODAAAAAAOD.AA+AAOD   AAA+AAOD.AAGAAODAAA+   AAPAAAAMAAPU82130060
9    Y8   Y9  Y9YYY8    Y9QYYYRZY9Q YY ZY9Q   YYY ZY9Q YY8ZY9QYYY    ZY9QYYY9ZY99
     99   9   9 999     9 Z999  9 Z 99  9 Z   999  9 Z 99  9 Z999     9 9 99  9

BTXT.AMD..A8..AAAAAM   AAPAAAAMAAODAAAMAAOD   OAAYCAPUAAAYAAODJAAH   AAMHHAAAAAAA82130061
9    Y8Q  Y9  Y9YYY9   ZY9QYYY9ZY9QYYY9ZY9Q   +YY9RY99YYY99Y9QYYY9   YY8-9YYYYYYY
     99Z  9   9  99     9 9 99  9 Z999  9 Z    99  9  999  9 Z999    999  9999999

BTXT.AN4..A8..AADAAA   AAMHH.AAAAAADAAAAAMJ   H.AAAAAADAAAAAMJHAAA   AAAADAAAAAMH82130062
9    Y89  Y9  Y99YYY   YY8-9 YYYYYY9YYYYYY8Y   9 Y9YYYY9YYYYY8Y9YY9   YYYY9YYYYY8
     99   9   9  999   999   999999 999999      9 9999 999999  99    9999 999999

BTXT.ANU..A8..AAD.AA   AAMOD.AAAAMHDAAAAAMO   DAAAAAMABAA+AAMODAAA   AAAADAAAAAMO82130063
9    Y88  Y9  Y98 YY   YY8-8 Y9YY8 8YYYYY8-   8YY9YY8Q9YY YY8+8YYY   YYYY8YYYYY8+
     99   9   9 9 99   999 9 9 999 9999999    999 999O 99 999 9999   99999999999

BTXT.ANM..A8..AADAAA   AAMSHAAAAAAADAAAAAMY   H.AAAAAADAAAAAMYH.AA   AAAADAAAAAMO82130064
9    Y80  Y9  Y98YY9   YY889YYYYYYY9YYYYY8     9 YYYYYY9YYYYY8 9 Y9   YYYY9YYYYY8
     99   9   9 999    999  9999999 999999       999999 999999   9    9999 999999

BTXT.AND..A8..AAHAAA   AAAADAAAAANAHAAAAAAA   DAAAAANAH.AMAAAADAAA   AANHH.AAAAAA82130065
9    Y8Q  Y9  Y99YYY   YYYY9YYYYY8Q9YYYYYYY   9YYYYY8Q9 Y9YYYY9YYY   YY899 Y9YYYY
     999  9   9  999   9999 9999999 9999999     9999999  9 9999 999   999    9 9999

BTXT.AOM..A8..AADAAA   AANJHAAAAAAADAAAAAOA   DAAAAAMOHAAAAAAADAAA   AAAABAAAAANY82130066
9    Y89  Y9  Y99YYY   YY8Y9YYYYYYY9YYYYY9Q   8YYYYY8 9YY9YYYY9YYY   YYYY9YYYYY89
     99   9   9  999   9999 9999999 99999     9999999  99 9999 999   9999 999999

BTXT.AOD..A8..AAHAAA   AAAADAAAAODAPDAPD.SN   S.SW.11.12.OR.13.ON.   TO.LOOP.STKR82130067
9    Y88  Y9  Y99YYY   YYYY9YYYY9QY99Y98
     99   9   9  999   9999 9999 Z9  9 9
```

F821 2540 PCH FUNCTION SEC 2

```
BTXT.AOD..A8..AA.SEL     .1.2.OR.3-WITH.ERR.S     TOPS-.SNS.SW.1.WITH.     ANY.OF.ABOVE82130068
9    Y80  Y9  Y9
     99   9   9

BTXT.AOD..A8..AA.FOR     .SIO.TIO.LOOP-NO.ERR     .CHECKING-.MAKE.THE.     PUNCH.OPERAT82130069
9    Y8Q  Y9  Y9
     990  9   9

BTXT.AO4..A8..AAIONA     L.AND.READY.PLACE.BL     ANK.CARDS.IN.PUNCH.H     OPPER.DO.NOP82130070
9    Y8   Y9  Y9
     99   9   9

BTXT.APU..A8..AAROT.     REMOVE.ALL.CDS.FROM.     PCH.STKRS.SEE.IF.CDS     .PCHED.WITH.82130071
9    Y88  Y9  Y9  8
     999  9   9

BTXT.APM..AL..AA.1.I     N.P1T.2.IN.P2T.3.IN.     RP3...............       ............82130072
9    Y8Z  Y8  Y9              8         8
     99   99  9

BRLD......A8....AAAA     AAANEAA4AAOIAAOAAAMA     AAMIAAMJAAMRAAMAAAMI     AAMAAAMIHAMJ82130073
9         Y9    Y9Y9     8YQ98YQ88Y9O8Y9Q8Y8-     8Y8-8Y8O8Y8O8Y8O8Y8O     8Y8 8Y8 9Y8
          9     9 9      999 999 99  99  999      999 999 999 999-999-     999 999  99

BRLD......A8....AAAA     AAMRAAMJAAMZAAM1AAM9     AANAAANAAANJAANJAAN/     EANYEAN8DANH82130074
9         Y9    Y9Y9     8Y8 8Y8Z8Y8 8Y8 8Y8      8Y898Y888Y898Y888Y89     8Y898Y898Y8Z
          9     9 9      999 999 999 999 999      999 9999999 9999999      999 999 999

BRLD......A8....AAAA     EANHEANQEANQEANHEANA     EANHEANAEANJEANQEANH     EANHEANQDANY82130075
9         Y9    Y9Y9     8Y8R8Y8Z8Y8+8Y8R8Y8Y     8Y8O8Y8Q8Y8Y8Y8O8Y8O     8Y8 8Y8 8Y8
          9     9 9      999 999 999-9990999     999 999 999 999 999-     999 999 999

BRLD......AY....AAAA     EAN8EAOHEAOQEAOYEAOA     EAOHAAOHAAOLHAOO....     ............82130076
9         Y9    Y9Y9     8Y8 8Y898Y898Y898Y8Q     8Y8Z8Y8R8Y889Y88
          9     9 9      999 999 999 999 999Z     999 999 999  99

BEND.APD......AA....     ....................     ....................     ............82130077
9    Y90      Y9
     9        9

BLDT..............        ....................     ....................     ............82130078
9
```

0 0 0

```
8220   TITLE
*********************************************************************
*                                                                   *
* MODIFICATIONS                                                     *
*                                                                   *
* REVISION LEVEL 0.  INITIAL RELEASE OF THE PROGRAM.                *
*     EXPANSION TO THIS SECTION WAS THE RESULT OF THE TESTING ADDED *
*     TO SECTIONS 820 AND 821.                                      *
*     1.  THIS SECTION IS THE RIPPLE PUNCH TEST, WHICH WAS FORMERLY *
*         LOCATED IN SECTION F821 VERSION 2.                        *
*     2. THE PROGRAM INCLUDES TEST NUMBERS AND THE COMMON ERROR     *
*        ERROR MESSAGE FORMAT.                                      *
*                                                                   *
* E.C. PREREQUISITES                                                *
*     MACHINE . . . NONE                                            *
*     PROGRAM . . . NONE                                            *
*                                                                   *
* USE DESCRIPTION F820* AT EC 130498, DATED 15 JUN 67  OR LATER.    *
*                                                                   *
*********************************************************************
XF8220 START 4096
001000       USING *,15
*
*
*********************************************************************
*                        TEST NUMBER DESCRIPTION
*********************************************************************
*********************************************************************
* TEST      DESCRIPTION
*
*
*                    **************
*                      ROUTINE 01
*                    **************
*
* 0010 - OPERATION ATTEMPTED
*
*       A WRITE, FEED, AND STACKER SELECT P1 COMMAND -01- WAS ISSUED
*       TO THE PUNCH. THE I-O ROUTINE AFTER ISSUING THE WRITE COMMAND,
*       AUTOMATICALLY ISSUED A CHECK READ -C2- TO READ BACK WHAT WAS
*       SENT TO THE PUNCH BUFFER, AND ALSO ISSUED A DIAGNOSTIC CHECK
*       READ COMMAND  -C6- TO ENABLE CHECKING THE TRANSLATOR, BUFFER
*       ADDRESS REGISTER, BUFFER PARITY, AND THE X UPPER AND LOWER
*       CHECK PLANES SET BY THE PREVIOUS CARD.
*
*       EXPECTED RESPONSE
*
*       CONDITION CODE 0 WITH CHANNEL AND DEVICE END SEPARATELY IN
*       TWO CSWS.
*       IF MESSAGES ARE ISSUED THAT INDICATE THE DIAGNOSTIC COMMANDS
*       HAVE FAILED, ALLOW THE PROGRAM TO CONTINUE TO ENABLE THE NEXT
*       TEST MESSAGE TO DISPLAY THE STATUS AND CONDITION CODE, THE
*       INFORMATION THAT PRECEDED THE COMMAND FAILURE MESSAGE SHOULD
*       ALSO BE AN AID IN DETERMINING THE CAUSE OF THE ERROR.
*
*
*       POSSIBLE ERROR CAUSES
*
*       1. CARD FEED SKEW COULD BE WRONG DUE TO SOME MALFUNCTION IN
*          THE CARD FEED PATH.  IF THE DATA PRESENTED IN THE MESSAGE
*          DOES NOT INDICATE A DEFINITE PATTERN, THIS IS THE MOST
*          LIKELY CAUSE OF THE PROBLEM.
*       2. ERRORS IN PUNCHING OR THE CHECK CIRCUITRY MAY OCCUR.
*       3. BUFFER PARITY, DATA TRANSLATION, OR THE BUFFER ADDRESS
*          REGISTER COULD BE IN ERROR.
```



```
*
*
*                    **************
*                      ROUTINE 02
*                    **************
*
* 0020 - OPERATION ATTEMPTED
*
*       ISSUE A READ NO FEED COMMAND -C2- TO THE READER. THE READ
*       DATA IS COMPARED TO EXPECTED DATA AND ERRORS ARE INDICATED
*       IF ACTUAL AND EXPECTED DATA ARE NOT EQUAL. TWO DIAGNOSTIC
*       CHECK READ COMMANDS ARE ATTEMPTED. THE DIAGNOSTIC CHECK
*       READ DATA IS TESTED COLUMN BY COLUMN FOR ANY ERRORS.
*       THE FOLLOWING HEADING WILL BE OUTPUT AFTER THE INITIAL
*       INFORMATION MESSAGE WHICH IS EXPLAINED IN THE DESCRIPTION
*       UNDER -STATUS MESSAGES-.
*
*
*       DATA ERROR MESSAGE EXPLANATION
*
*       -READ ERROR
*       -CARD IN PRESTKR STA
*       -    EXPECTED SHD                BUF
*       -COL PUNCHES  RD  RD XU XL PAR ADR TRAN
*          I    I     I   I  I  I  I   I    I
*          I    I     I   I  I  I  I   I    I
*          I    I     I   I  I  I  I   I    I---READER TRANSLATE CHK.
*          I    I     I   I  I  I  I   I
*          I    I     I   I  I  I  I   I---READ BUFFER ADDRESS CHECK.
*          I    I     I   I  I  I  I
*          I    I     I   I  I  I  I---READ BUFFER PARITY CHECK.
*          I    I     I   I  I  I
*          I    I     I   I  I  I---X LOWER CHECK PLANE.
*          I    I     I   I  I
*          I    I     I   I  I---X UPPER CHECK PLANE.
*          I    I     I   I
*          I    I     I   I---DATA BYTE READ FROM THE READER.
*          I    I     I
*          I    I     I---EXPECTED DATA BYTE.
*          I    I
*          I    I---HOLE PUNCHES EXPECTED TO BE IN THIS COLUMN.
*          I
*          I---COLUMN OF CARD WHERE ERROR WAS DETECTED.
*
*       NOTE-  THE INDICATION FOR XU, XL, PAR, BUF ADR, AND TRAN
*              WILL BE AS FOLLOWS-
*              0 IF NO ERROR.
*              1 IF ERROR.
*
*
*       POSSIBLE ERROR CAUSES
*
*       1.  IT IS POSSIBLE UNDER LOOPING CONDITIONS FOR THE PROGRAM
*           TO LOSE TRACK OF THE DETAIL CARD SEQUENCE. IF ALL 80 COLS
*           INDICATE AN ERROR IN THE DATA BYTES IT IS POSSIBLE THAT
*           THIS IS THE CAUSE.  THE WAY TO DISTINGUISH BETWEEN A
*           MACHINE FAILURE AND A SEQUENCE PROBLEM IS TO VISUALLY
*           SCAN THE DATA BYTE READ FROM THE READER FOR EACH CARD
*           COLUMN, IF THE DATA IN EACH SUCCESSIVE COLUMN IS
*           INCREMENTED BY 1 THE READ DATA IS GOOD.
*       2.  ANY OTHER ERRORS INDICATED SHOULD BE VALID MACHINE ERRORS
*           WHICH THE PROGRAM ERROR MESSAGE SHOULD GIVE SUFFICIENT
*           INFORMATION ON TO POINT TO THE MACHINE PROBLEM.
*       3.  X LOWER OR X UPPER INDICATIONS THAT DO NOT INDICATE A
*           DEFINITE PATTERN OF TROUBLE MAY BE DUE TO A READER
*           SKEW PROBLEM.
*
*
```

```
*      X UPPER - X LOWER FAILURE CHART
*
*
*      THIS CHART IS ONLY VALID IF THERE IS AT LEAST ONE PUNCH IN THE
*      ERROR COLUMN AND THERE IS NOT A PARITY ERROR OR DOUBLE FAILURE
*      IN ONE POSITION OF THE BUFFER.  MORE THAN ONE ERROR SHOULD BE
*      ANALYZED TO HELP LOCALIZE THE PROBLEM.
*
*-----------------------------------------------------------------------
* DATA REG I XU  I XL  I                                               I
*  STATUS  I BIT I BIT I             SUSPECTED FAILURE                 I
*----------I-----I-----I-----------------------------------------------I
* DATA REG I ON  ION ORI  2821 PROBLEM- XU PLANE FAILED TO RESET OR    I
* CORRECT  I     I OFF I                PICKED BITS AFTER RESET.       I
*----------I-----I-----I-----------------------------------------------I
* DATA REG I ON  ION ORI A- 2540 PROBLEM -NO RD2 PULSES                I
* BLANK    I     I OFF I B- 2821 PROBLEM -ADDR REG FAILURE             I
*----------I-----I-----I-----------------------------------------------I
* CORRECT  I OFF I OFF I 2821 PROBLEM - FALSE READ CHECKS              I
* OR NOT   I     I     I NOTE - COULD BE A MULTIPLE PROBLEM, BUT FALSEI
* CORRECT  I     I     I        READ CHECKS SHOULD BE FIXED FIRST.     I
*----------I-----I-----I-----------------------------------------------I
* DATA REG I OFF I ON  I A- 2540 PROBLEM -MISSING RD2 PULSES.          I
* INCORRECTI     I     I B- 2821 PROBLEM - ADDR REG FAILURE            I
*----------I-----I-----I-----------------------------------------------I
* DATA REG I OFF I ON  I A- 2540 PROBLEM -MISSING OR EXTRA RD1 PULSES I
* CORRECT  I     I     I B- 2821 PROBLEM -ADDR REG FAILURE             I
*          I     I     I C- 2821 PROBLEM -XL OR YL PLANE FAILURE.      I
*-----------------------------------------------------------------------
*
*
*      THIS CHART IS ONLY VALID IF THERE ARE NO PUNCHES IN THE ERROR
*      COLUMN, AND THERE IS NOT A PARITY ERROR OR DOUBLE FAILURE IN
*      ONE POSITION OF THE BUFFER. MORE THAN ONE ERROR SHOULD BE
*      ANALYZED TO HELP LOCALIZE THE PROBLEM.
*
*-----------------------------------------------------------------------
* DATA REG I XU  I XL  I                                               I
*  STATUS  I BIT I BIT I             SUSPECTED FAILURE                 I
*----------I-----I-----I-----------------------------------------------I
* DATA REG I ON  I ON  I A- 2540 PROBLEM -PICKED UP AN ODD NUMBER OF   I
*  BLANK   I     I     I                RD1 PULSES.                    I
*          I     I     I B- 2821 PROBLEM -ADDR REG FAILURE             I
*----------I-----I-----I-----------------------------------------------I
* DATA REG I OFF I ON  I 2821 PROBLEM -XL OR YL PLANE PICKED UP A BIT.I
* BLANK    I     I     I                                               I
*----------I-----I-----I-----------------------------------------------I
* DATA REG I ON  ION ORI 2821 PROBLEM -FAILING TO RESET XU PLANE.      I
* NOT BLNK I     I OFF I NOTE- THIS IS A MULTIPLE PROBLEM, BUT FAILUREI
*          I     I     I        TO RESET XU SHOULD BE FIXED FIRST.     I
*----------I-----I-----I-----------------------------------------------I
* DATA REG I OFF I ON  I 2540 PROBLEM -PICK UP AN ODD NUMBER OF RD2    I
* NOT BLNK I     I     I                PULSES.                        I
*----------I-----I-----I-----------------------------------------------I
* BLNK OR  I OFF I OFF I 2821 PROBLEM - FALSE READ CHECKS              I
* NOT BLNK I     I     I                                               I
*----------I-----I-----I-----------------------------------------------I
* DATA REG I ON  I OFF I A- 2540 PROBLEM -PICKED UP EVEN NUMBER OF     I
*  BLANK   I     I     I                RD1 PULSES.                    I
*          I     I     I B- 2821 PROBLEM -ADDR REG FAILURE             I
*          I     I     I C- 2821 PROBLEM -XU OR YU PLANES PICKED A BITI
*-----------------------------------------------------------------------
*
*
*        EXPECTED RESPONSE
*
*        CONDITION CODE 0 WITH CHANNEL AND DEVICE ENDS RETURNED IN THE
*        SAME CSW BECAUSE NO FEED CYCLE OCCURS.
```



```
                                 *        READ DATA SHOULD BE EQUAL TO EXPECTED DATA.
                                 *        DIAGNOSTIC READ DATA SHOULD RETURN WITH 80 BYTES ALL ZERO.
                                 *
                                 *
                                 * 0030 - OPERATION ATTEMPTED
                                 *
                                 *        A FEED, STACKER SELECT R1 -23- IS ISSUED TO THE READER.
                                 *
                                 *        EXPECTED RESPONSE
                                 *
                                 *        CONDITION CODE 1 -COMMAND IMMEDIATE WITH CHANNEL AND DEVICE
                                 *        ENDS IN TWO SEPARATE CSWS. SENSE IS ISSUED IF UNIT CHECK IS
                                 *        DETECTED DURING THE FEED COMMAND.
                                 *
                                 *
                                 ***********************************************************************
                                 *******************                                *******************
                                 * SECTION PREFACE *********************************** SECTION PREFACE *
                                 *******************                                *******************
001000  F8220000                 SECNO  DC    XL4'F8220000'        PROGRAM,SECTION AND REVISION NOS.  *
001004  00000000                 SNSW   DC    XL4'00'              SECTION SENSE SWITCHES             *
001008  0000                            DC    XL2'00'                                                 *
00100A  0000                     ICM    DC    XL2'00'              INTERRUPTION CONDITION MASK        *
00100C  00                       SDMF   DC    XL1'00'              SECTION DM FLAGS                   *
00100D  02                       NIOU   DC    XL1'02'              NUMBER OF UNIT TABLE ENTRIES.
00100E  C0                       FLAG1  DC    X'C0'                EXCLUSIVE CPU                      *
00100F  00                       FLAG2  DC    X'00'                I/O INT ARE ERR, EXT INT TO PROG   *
001010  0104000000               INPSW  DC    X'0104000000'        DISABLED, SPVSR STATE, NO PGM MASK *
001015  001C6C                          DC    AL3(ROUT01)          ADR OF 1ST ROUTINE PREFIX          *
001018  0000000000000000         EXOPSW DC    XL8'0'               SECTION OLD EXTERNAL PSW           *
001020  0000000000000000         SVOPSW DC    XL8'00'              CLEAR ALL OLD PSWS                 *
001028  0000000000000000         PGOPSW DC    XL8'00'              PROGRAM OLD PSW                    *
001030  0000000000000000         MCOPSW DC    XL8'00'              MACHINE CHECK OLD PSW              *
001038  0000000000000000         IOOPSW DC    XL8'00'              I/O OLD PSW                        *
001040  0000000000000000         CSW    DC    XL8'00'              CHANNEL STATUS WORD                *
001048  00000000                 CAW    DC    XL4'00'              CAW                                *
00104C  000000000000000000              DC    XL12'00'             RESERVED FOR DM USE                *
001055  000000
001058  0004000000               EXNPSW DC    X'0004000000'        EXTERNAL NEW PSW                   *
00105D  000000                   SRET   DC    XL3'0'               ADR OF EXT INTRPT ROUTINE          *
001060  0000000000000000         SVNPSW DC    XL8'00'              SUPERVISOR NEW PSW                 *
001068  0000000000000000         PGNPSW DC    XL8'00'              PROGRAM NEW PSW                    *
001070  0000000000000000         MCNPSW DC    XL8'00'              MACHINE CHECK NEW PSW              *
001078  01040000                 IONPSW DC    XL4'01040000'        I/O NEW PSW                        *
00107C  000011DA                        DC    AL4(IRETRN)          ADDRESS OF I/O INTRPT ROUTINE      *
001080                                  DS    96C                  96 BYTE REG DUMP AREA FOR DM USE   *
0010E0  82                       UNIT1  DC    X'82'                UNIT TYPE - 2540 PUNCH.            *
0010E1  00                       U1OP   DC    X'00'                OPTIONAL FEATURES BYTE             *
0010E2  8000                     U1ADDR DC    X'8000'              FLAGS AND CHAN/UNIT ADDRESS        *
0010E4  81                       UNIT2  DC    X'81'                UNIT TYPE - 2540 READER
0010E5  00                       U2OP   DC    X'00'                OPTIONAL FEATURES
0010E6  8000                     U2ADDR DC    X'8000'              FLAGS AND CHAN/UNIT ADDRESS.
                                 ***********************************************************************
                                 *                  2540 PUNCH OPTIONAL FEATURES ASSIGNMENT
                                 ***********************************************************************
                                 * UNITITYPE I OPTIONAL FEATURE DIGIT 1   I  OPTIONAL FEATURE DIGIT 2
                                 ******I*****I***************************I*****************************
                                 *     I     IBIT 0  BIT 1  BIT 2  BIT 3  I BIT 4  BIT 5  BIT 6  BIT 7
                                 *     I     IHEX 8  HEX 4  HEX 2  HEX 1  I HEX 8  HEX 4  HEX 2  HEX 1
                                 *2540 I 82  I       CARD   PUNCH  51 COL I 1400                 2 CHAN
                                 *PUNCHI     I       IMAGE  FEED   FEAT.  I COMPAT               SW. ON
                                 *     I     I              READ          I FEAT.                2821
                                 ******I*****I***************************I*****************************
                                 ***********************************************************************
                                 *                  2540 PUNCH DIAGNOSTIC CHECK READ BYTE
                                 ***********************************************************************
                                 *     BIT MEANING
                                 *      0    NOT USED
```

```
*       1    NOT USED
*       2    NOT USED
*       3    X UPPER CHECK PLANE
*       4    X LOWER CHECK PLANE
*       5    BUFFER PARITY CHECK
*       6    PUNCH TRANSLATE CHECK
*       7    PUNCH BUFFER ADDRESS CHECK
*************************************************************************
*                    2540 PUNCH SENSE BYTE
*************************************************************************
*      BIT   MEANING
*       0    COMMAND REJECT - INVALID COMMAND ISSUED TO THE PUNCH
*       1    INTERVENTION REQUIRED
*       2    BUS OUT CHECK - PARITY ERROR
*       3    EQUIPMENT CHECK - TRANSLATE CHECK, ADDRESS CHECK,
*            DATA REGISTER PARITY ERROR, OR A HOLE COUNT ERROR.
*       4    DATA CHECK
*       5    OVERRUN - NOT USED
*       6    UNUSUAL COMMAND SEQUENCE
*       7    NOT USED
*************************************************************************
*                    2540 PUNCH STATUS BYTE
*************************************************************************
*      BIT   MEANING
*       0    ATTENTION - NOT USED FOR THE 2540 PUNCH
*       1    STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
*       2    CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
*       3    DEVICE BUSY
*       4    CHANNEL END
*       5    DEVICE END
*       6    UNIT CHECK
*       7    UNIT EXCEPTION - NOT USED FOR THE 2540 PUNCH
*************************************************************************
*                         PARAMETERS USED TO ENTER
*                         THE I-O HANDLER ROUTINE
*************************************************************************
*      BAL   R11,ISIO              LINK TO I-O HANDLER
*      DC    XL2'0000'             CONTROL SWITCHES
*      DC    X'0014'               TEST NO. IN DEC EXPRESSED IN HEX
*      DC    X'F0'                 EXPECTED COND. CODE
*      DC    X'00'                 EXPECTED SENSE DATA
*      DC    AL2(ADR-BASE+REG)     ADDR. OF EXPECTED CSW IF NEEDED
*************************************************************************
*************************************************************************
*                         I-O HANDLER CONTROL SWITCHES
*                         2 BYTE PARAMETER FOLLOWING BAL
*************************************************************************
* SWITCH     DESCRIPTION
*   0  ----  OFF - ISSUE AN I-O COMMAND
*            ON  - DO NOT ISSUE AN I-O COMMAND
*   1  ----  OFF - ENABLE
*            ON  - DO NOT ENABLE
*   2  ----  OFF - EXPECT NO INTERRUPT
*            ON  - EXPECT AN INTERRUPT
*   3  ----  OFF - DO NOT EXPECT 2 INTERRUPTS
*            ON  - EXPECT 2 INTERRUPTS
*   4  ----  OFF - EXPECT NO CSWS
*            ON  - EXPECT A CSW
*   5  ----  OFF - DO NOT EXPECT 2 CSWS
*            ON  - EXPECT 2 CSWS
*   6  ----  OFF - ALWAYS TRY TO ISSUE SENSE
*            ON  - SENSE ON UNIT CHECK ONLY
*   8  ----  OFF - DO NOT ISSUE 2 DIAGNOSTIC CHECK READ START I-O CMDS
*            ON  - ALWAYS ISSUE 2 DIAGNOSTIC CHECK READ COMMANDS
*
*************************************************************************
ISW    DC    XL2'0'
*************************************************************************
```

0010E8 0000


```
*                         SWITCHES USED BY I-O HANDLER
*************************************************************************
* SWITCH     DESCRIPTION
*   0  ----  OFF - NO HANGUP ON INTERFACE
*            ON  - HANGUP OCCURRED
*   1  ----  OFF - NO CSWS STORED
*            ON  - ONE CSW STORED
*   2  ----  OFF - SECOND CSW NOT RECEIVED
*            ON  - SECOND CSW RECEIVED
*   3  ----  OFF - DID NOT ENABLE
*            ON  - ENABLED ONCE
*   4  ----  OFF - DID NOT ENABLE TWICE
*            ON  - ENABLED TWICE
*   5  ----  OFF - NO SENSE DATA RECEIVED
*            ON  - SENSE DATA RECEIVED
*   6  ----  OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*            ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*   7  ----  OFF - NO ERROR DETECTED
*            ON  - AN ERROR WAS DETECTED
*   14 ----  OFF - DO NOT PRINT CARD DATA
*            ON  - PRINT CARD DATA
*************************************************************************
*                    REGISTERS USED IN I-O HANDLER
*************************************************************************
*      REG          COMMENTS
*       5    USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
*            PREVIOUS HANGUP ON INTERFACE DETECTED.
*
*       8    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       9    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       10   MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
*
*       11   MUST BE USED AS LINK REG TO THIS ROUTINE
*
*       12   MUST CONTAIN DEVICE ADDRESS
*
*************************************************************************
0010EA 0000    DATSW  DC    XL2'00'              DATA CONTROL SWITCHES.
*************************************************************************
* EXPLANATION OF START I-O DATA SWITCHES
*
* SWITCH     DESCRIPTION
*   0  ----  1ST AREA MAIN START I-O DATA.
*   1  ----  1ST AREA DIAGNOSTIC READ DATA.
*   2  ----  1ST AREA 1ST DIAGNOSTIC CHECK READ DATA.
*   4  ----  2ND AREA MAIN START I-O DATA.
*   5  ----  2ND AREA DIAGNOSTIC READ DATA.
*   6  ----  2ND AREA 1ST DIAGNOSTIC CHECK READ DATA.
*   8  ----  ERROR IN PRESENT START I-O
*   9  ----  ERROR IN PREVIOUS START I-O
*   10 ----  PRINT PRESENT DATA
*   11 ----  PRINT PREVIOUS DATA
*************************************************************************
*                          * I-O HANDLER SUB-ROUTINE *
*************************************************************************
0010EC D2 01 F 93C B 002  ISIO   MVC   ITSTNO+5(2),2(R11)   SAVE TEST NUMBER
0010F2 90 09 F 860               STM   R0,R9,ISAVE         SAVE WORK REGISTERS.
0010F6 D7 07 D 040 D 040  CONP   XC    HCSW(8,R13),HCSW(R13) ZERO THE CSW AREA.
0010FC D7 08 E 080 E 080         XC    LOGOUT(12,R14),LOGOUT(R14)
*************************************************************************
*                              SENSE SWITCH LOOPS
*************************************************************************
001102 91 40 F 004        ILOOP  TM    SNSW,X'40'          DESIRED TO LOOP PREVIOUS SIO.
001106 47 10 F 146               BC    ALL,SULP            BR IF YES.
00110A 50 AD 0 048               ST    R10,HCAW(R13)       STORE CMD ADDRESS.
00110E 91 80 F 004               TM    SNSW,X'80'          DESIRED TO LOOP PRESENT SIO.
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001112   47 80 F 15E            BC    NONE,JOHN          BR IF NO.
001116   9D 00 C 000   IHANG    TIO   0(R12)             TEST I-O
00111A   47 70 F 12E           BC    NCCO,IHI           BR IF NOT AVAILABLE.
00111E   91 C0 F 004           TM    SNSW,X'C0'         SEE IF SSW 0 OR 1 ON.
001122   47 80 F 12E           BC    NONE,IHI           BR IF NO.
001126   9C 00 C 000           SIO   0(R12)             START I-O
00112A   47 F0 F 116           BC    UNC,IHANG          BR TO TEST I-O.
00112E   58 9E 0 198   IHI     L     R9,WT(R14)         PICK UP DM WAIT FACTOR.
001132   88 90 0 003           SRL   R9,3               CUT IT DOWN TO 1.25 SECS.
001136   9D 00 C 000   GREG    TIO   0(R12)             TEST I-O TO DEVICE.
00113A   47 80 F 102           BC    CCO,ILOOP          BR IF AVAILABLE.
00113E   46 90 F 136           BCT   R9,GREG            LOOP UNTIL TIME OUT.
001142   47 F0 F 102           BC    UNC,ILOOP          BR TO TRY AGAIN.
001146   41 70 F DC0   SULP     LA    R7,WRT1            PICK UP 1ST AREA CCW ADDRESS.
00114A   91 80 F C4E           TM    KEYSW,X'80'        SEE IF 2ND AREA CURRENT.
00114E   47 10 F 156           BC    ALL,STCD           BR IF YES.
001152   41 70 F DC8           LA    R7,WRT2            PICK UP 2ND AREA CCW ADDRESS.
001156   50 7D 0 048   STCD     ST    R7,HCAW(R13)       STORE THE CMD ADDRESS.
00115A   47 F0 F 116           BC    UNC,IHANG          BR. UNCONDITIONAL
*********************************************************************************
*       EXECUTE START I-O HERE
*********************************************************************************
00115E   D7 01 F 0E8 F 0E8   JOHN   XC    ISW(2),ISW         ZERO THE I-O HANDLER SWITCHES.
001164   96 80 F 0E8           OI    ISW,X'80'          TURN ON THE HANG SWITCH.
001168   94 00 F C4D           NI    CRSW,X'00'         ZERO DIAG MSG SW.
00116C   94 00 F C4C           NI    HDSW,X'00'         ZERO THE HEADING SWITCH.
001170   92 00 F 915           MVI   IACSNS+5,X'00'     ZERO THE ACTUAL SENSE DATA.
001174   9C 00 C 000   ISSUE    SIO   0(R12)             I-O COMMAND- SIO, TIO, OR HIO
001178   47 80 F 1A6           BC    CCO,IZERO          BR. IF COND. CODE 0
00117C   47 40 F 194           BC    CC1,IONE           BR. IF COND. CODE 1
001180   47 20 F 18C           BC    CC2,ITWO           BR. IF COND. CODE 2
001184   92 F3 F 8AF           MVI   IACTCC+5,X'F3'     INDICATE COND. CODE 3
001188   47 F0 F 1AA           BC    UNC,INOW           BR. UNCONDITIONAL
00118C   92 F2 F 8AF   ITWO     MVI   IACTCC+5,X'F2'     INDICATE COND. CODE 2
001190   47 F0 F 1AA           BC    UNC,INOW           BR. UNCONDITIONAL
001194   92 F1 F 8AF   IONE     MVI   IACTCC+5,X'F1'     INDICATE COND. CODE 1
001198   D2 07 F 888 D 040          MVC   ICSW1(8),HCSW(R13) SAVE CSW
00119E   96 40 F 0E8           OI    ISW,X'40'          INDICATE 1 CSW
0011A2   47 F0 F 1AA           BC    UNC,INOW           BR. UNCONDITIONAL
0011A6   92 F0 F 8AF   IZERO    MVI   IACTCC+5,X'F0'     INDICATE COND. CODE 0
0011AA   94 7F F 0E8   INOW     NI    ISW,X'7F'          TURN OFF HANG UP SWITCH
0011AE   91 40 B 000           TM    0(R11),X'40'       CHECK CONTROL SWITCH FOR NO ENABLE
0011B2   47 10 F 24E           BC    ALL,ISEN           BR. IF ON
0011B6   96 10 F 0E8           OI    ISW,X'10'          INDICATE ENABLED ONCE
0011BA   58 9E 0 198   IWAIT    L     R9,WT(R14)         LOAD DM WAIT FACTOR
0011BE   88 90 0 003           SRL   R9,3               ADJUST
0011C2   96 80 F 0E8           OI    ISW,X'80'          TURN ON HANG UP SW
0011C6   80 00 F A42           SSM   MSK1               ENABLE
0011CA   46 90 F 1CA           BCT   R9,*               WAIT
0011CE   80 00 F A43           SSM   MSK2               DISABLE
0011D2   94 7F F 0E8           NI    ISW,X'7F'          TURN OFF HANG SW
0011D6   47 F0 F 24E           BC    UNC,ISEN           BR. UNCONDITIONAL
*********************************************************************************
*                          ALL I-O INTERRUPTS RETURN HERE
*********************************************************************************
0011DA   49 C0 F 03A   IRETRN CH    R12,IOOPSW+2       COMPARE FOR CURRENT I-O ADDRESS
0011DE   47 60 F 1FC           BC    UNEQ,IUIO          BR. IF UNEQUAL
0011E2   94 7F F 0E8           NI    ISW,X'7F'          RESET HANG UP SW
0011E6   91 40 F 0E8           TM    ISW,X'40'
0011EA   47 10 F 22C           BC    ALL,ISV2           BR. IF 1 CSW ALREADY STORED
0011EE   D2 07 F 888 F 040     MVC   ICSW1(8),HCSW(R15) SAVE CSW 1
0011F4   96 40 F 0E8           OI    ISW,X'40'          INDICATE 1 CSW STORED
0011F8   47 F0 F 236           BC    UNC,INT3           BR. UNCONDITIONAL
0011FC   D2 07 F A00 F 040   IUIO    MVC   WORK(8),HCSW(R15)
001202   0A DD                      SVC   X'DD'              CONVERT ADDRESS
001204   0002                       DC    AL2(2)             2 BYTES OF I-O OLD PSW.
001206   003A                       DC    AL2(IIOOPSW+2-SECNO)  FROM HERE.
001208   0A55                       DC    AL2(IUNEX+17-SECNO)   TO HERE
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00120A   0A D0                      SVC   X'D0'              PRINT UNEXPECTED INTERRUPT DEVICE
00120C   64                         DC    X'64'              ADDRESS
00120D   15                         DC    X'15'
00120E   FA44                       DC    AL2(IUNEX-SECNO+REG)
001210   D2 02 F 8E6 F 8DF          MVC   IBLAH+1(3),ICSW    MOVE -CSW- TO MESSAGE
001216   92 1A F 439                MVI   ICNT,X'1A'         ADJUST COUNT
00121A   D2 02 F 8FC F 8FF          MVC   IBLAH+23(3),IACT   MOVE -ACT- TO MESSAGE
001220   45 90 F 422                BAL   R9,ICOUT           BR. TO OUTPUT CSW
001224   96 02 F 0E8                OI    ISW,X'02'          INDICATE UIO
001228   47 F0 F 4FC                BC    UNC,ILOGED         BR. UNCONDITIONAL
00122C   D2 07 F 890 F 040   ISV2   MVC   ICSW2(8),HCSW(R15)  SAVE CSW 2
001232   96 20 F 0E8                OI    ISW,X'20'          INDICATE 2 CSWS STORED
001236   91 10 B 000        INT3    TM    0(R11),X'10'       CHECK CTRL SW FOR 2 INTR EXPECTED
00123A   47 80 F 24E                BC    NONE,ISEN          BR. IF NOT
00123E   91 08 F 0E8                TM    ISW,X'08'
001242   47 10 F 24E                BC    ALL,ISEN           BR. IF ALREADY ENABLED TWICE
001246   96 08 F 0E8                OI    ISW,X'08'          INDICATE ENABLED TWICE
00124A   47 F0 F 1BA                BC    UNC,IWAIT
00124E   91 02 B 000        ISEN    TM    0(R11),X'02'       CHECK CONTROL SWITCH FOR SNS ON UC
001252   47 80 F 276                BC    NONE,IDOSNS        BR. IF OFF TO ISSUE SENSE
001256   91 40 F 0E8                TM    ISW,X'40'          SEE IF 1ST CSW IN.
00125A   47 80 F 2A4                BC    NONE,IFUR          BR IF NONE.
00125E   91 02 F 88C                TM    ICSW1+4,X'02'      CHECK FOR UNIT CHECK
001262   47 10 F 276                BC    ALL,IDOSNS         IF YES BR. TO ISSUE SENSE
001266   91 20 F 0E8                TM    ISW,X'20'          CHECK FOR SECOND CSW
00126A   47 80 F 2A4                BC    NONE,IFUR          BR IF NONE.
00126E   91 02 F 894                TM    ICSW2+4,X'02'      CHECK FOR UNIT CHECK
001272   47 80 F 2A4                BC    NONE,IFUR          BR IF NONE.
001276   41 80 F 858        IDOSNS  LA    R8,ISENSE          LOAD SENSE COMMAND ADDR.
00127A   45 70 F 664                BAL   R7,ISTRT           BR TO AUX START I-O.
00127E   91 40 F 915                TM    IACSNS+5,X'40'     SEE IF INTERVENTION REQUIRED.
001282   47 10 F 64E                BC    ALL,RRM            BR IF YES.
001286   91 80 F 0E9                TM    ISW+1,X'80'        CHK FOR DATA RECEIVED
00128A   47 80 F 2A4                BC    NONE,IFUR          BR IF NOT.
00128E   96 04 F 0E8                OI    ISW,X'04'          INDICATE SENSE RECIEVED
001292   94 7F F 0E9                NI    ISW+1,X'7F'        TURN OFF DATA RECEIVED.
001296   D5 00 F 915 B 005           CLC   IACSNS+5(1),5(R11) COMPARE FOR EXPECTED SENSE
00129C   47 80 F 2A4                BC    EQ,IFUR            BR IF EQUAL.
0012A0   96 01 F 0E8                OI    ISW,X'01'          INDICATE AN ERROR.
0012A4   41 80 F DB8        IFUR    LA    R8,CHRD2           PUT ADDR OF 2ND CHECK RD INTO 8.
0012A8   91 80 F C4E                TM    KEYSW,X'80'        SEE IF 2ND DATA AREA IS CURRENT
0012AC   47 10 F 2B4                BC    ALL,IASIO2         BR IF YES.
0012B0   41 80 F DB0                LA    R8,CHRD1           PUT ADDR OF 1ST CHECK READ INTO 8.
0012B4   45 70 F 664        IASIO2  BAL   R7,ISTRT           BR TO AUXILIARY START I-O.
0012B8   91 80 F 0E9                TM    ISW+1,X'80'        SEE IF DATA RECEIVED
0012BC   47 80 F 2FC                BC    NONE,ISCR          BR IF NOT.
0012C0   91 80 F C4E                TM    KEYSW,X'80'        SEE IF 2ND DATA AREA IS CURRENT
0012C4   47 80 F 2D4                BC    NONE,SB2           BR IF NO.
0012C8   96 02 F 0EA                OI    DATSW,X'02'        TURN ON BIT 6 OF DATA SWITCHES.
0012CC   94 7F F 0E9        RRS2    NI    ISW+1,X'7F'        TURN OFF DATA RECEIVED SWITCH.
0012D0   47 F0 F 2FC                BC    UNC,ISCR           BR TO READ BACK PUNCH BUFFER.
0012D4   96 20 F 0EA        SB2     OI    DATSW,X'20'        TURN ON BIT 2 OF DATA SWITCHES.
0012D8   47 F0 F 2CC                BC    UNC,RRS2           BR TO RESET COMMON DATA RECEIVED SW.
0012DC   96 04 F 0EA        TO5     OI    DATSW,X'04'        TURN ON 2ND AREA DATA RECEIVED SW.
0012E0   47 F0 F 324                BC    UNC,RRS1           RETURN TO MAIN LINE.
0012E4   91 40 F 0E8        INOEX1  TM    ISW,X'40'
0012E8   47 10 F 382                BC    ALL,INDER          BR. IF CSW STORED
0012EC   47 F0 F 386                BC    UNC,IDUNCK         BR. UNCONDITIONAL
0012F0   91 20 F 0E8        INOEX2  TM    ISW,X'20'
0012F4   47 10 F 382                BC    ALL,INDER          BR. IF CSW 2 STORED
0012F8   47 F0 F 386                BC    UNC,IDUNCK         BR. UNCONDITIONAL
0012FC   41 80 F DA8        ISCR    LA    R8,DGRD2           PUT ADDR OF 2ND DIAG RD CCW INTO 8.
001300   91 80 F C4E                TM    KEYSW,X'80'        SEE IF 2ND DATA AREA IS CURRENT.
001304   47 10 F 30C                BC    ALL,IASIO1         BR IF YES.
001308   41 80 F DA0                LA    R8,DGRD1           PUT ADDR OF 1ST DIAG RD CCW INTO 8.
00130C   45 70 F 664        IASIO1  BAL   R7,ISTRT           BR TO AUXILIARY START I-O.
001310   91 80 F 0E9                TM    ISW+1,X'80'        SEE IF DATA RECEIVED.
001314   47 80 F 328                BC    NONE,BTCD          BR IF NOT.
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001318   91 80 F C4E            TM    KEYSW,X'80'      SEE IF 2ND DATA AREA IS CURRENT
00131C   47 10 F 2DC            BC    ALL,TO5          BR IF YES.
001320   96 40 F 0EA            OI    DATSW,X'40'      TURN ON 1ST AREA DATA RECEIVED SW.
001324   94 7F F 0E9    RRS1    NI    ISW+1,X'7F'      RESET COMMON DATA RECEIVED SW.
001328   91 10 F 915    BTCD    TM    IACSNS+5,X'10'   SEE IF EQUIPMENT CHECK IN SENSE DATA
00132C   47 80 F 334            BC    NONE,IBSN        BR IF NOT.
001330   45 80 F 5BB            BAL   R8,SUCP          BR TO SET UP COMPARE PARAMETERS.
001334   D5 00 F 8AF B 004 IBSN  CLC   IACTCC+5(1),4(R11) COMPARE FOR EXPECTED COND. CODE
00133A   47 60 F 382            BC    UNEQ,INDER       BR. IF UNEQUAL
00133E   91 08 B 000            TM    0(R11),X'08'
001342   47 80 F 2E4            BC    NONE,INDEX1      BR. IF NO CSW EXPECTED
001346   91 40 F 0E8            TM    ISW,X'40'
00134A   47 80 F 382            BC    NONE,INDER       BR. IF NO CSW RECIEVED
00134E   48 8B 0 006            LH    R8,6(R11)        LOAD CSW ADDR
001352   40 80 F 35A            STH   R8,ICCSW1+4      STORE IN COMPARE INSTR.
001356   D5 07 F 888 F 888 ICCSW1 CLC  ICSW1(8),ICSW1   COMPARE FOR EXPECTED CSW
00135C   47 60 F 382            BC    UNEQ,INDER       BR. IF UNEQUAL
001360   91 04 B 000            TM    0(R11),X'04'
001364   47 80 F 2F0            BC    NONE,INDEX2      BR. IF NO CSW 2 EXPECTED
001368   91 20 F 0E8            TM    ISW,X'20'
00136C   47 80 F 382            BC    NONE,INDER       BR. IF NO CSW 2 RECIEVED
001370   41 88 0 008            LA    R8,8(R8)         UPDATE TO SECOND CSW
001374   40 80 F 37C            STH   R8,ICCSW2+4
001378   D5 07 F 890 F 890 ICCSW2 CLC  ICSW2(8),ICSW2   COMPARE FOR EXPECTED CSW 2
00137E   47 80 F 386            BC    EQ,IDUNCK        BR. IF EQUAL
001382   96 01 F 0E8    INDER   OI    ISW,X'01'        INDICATE AN ERROR
001386   92 64 F 3B6    IDUNCK  MVI   IFLAG1,X'64'     SET UP FOR ERROR PRINTOUT
00138A   92 C0 F 586            MVI   IFLAG2,X'C0'
00138E   91 01 F 0E8            TM    ISW,X'01'        CHECK FOR A DETECTED ERROR
001392   47 10 F 3A6            BC    ALL,IOUTIT       BR. IF ERROR DETECTED
001396   91 01 F 004            TM    SNSW,X'01'       CHECK SECTION SENSE SWITCH 7
00139A   47 80 F 5A2            BC    NONE,ILEAVE      BR. IF OFF
00139E   92 24 F 3B6            MVI   IFLAG1,X'24'     SET UP FOR CORRECT PRINTOUT
0013A2   92 80 F 586            MVI   IFLAG2,X'80'
0013A6   D2 01 F 93C B 002 IOUTIT MVC  ITSTNO+5(2),2(R11) MOVE TEST NUMBER TO PRINT
0013AC   0A DD                  SVC   X'DD'            CONVERT TEST NUMBER
0013AE   0002                   DC    AL2(2)
0013B0   093C                   DC    AL2(ITSTNO+5-SECNO)
0013B2   093C                   DC    AL2(ITSTNO+5-SECNO)
0013B4   0A D0                  SVC   X'D0'            PRINT TEST NUMBER
0013B6   64             IFLAG1  DC    X'64'
0013B7   09                     DC    X'09'
0013B8   F937                   DC    AL2(ITSTNO-SECNO+REG)
0013BA   41 80 0 004            LA    R8,4             ADJUST LINK ADDRESS FOR PRINTOUT
0013BE   1B 88                  SR    R11,R8
0013C0   50 80 F 8C8            ST    R11,ILINK+5
0013C4   0A DD                  SVC   X'DD'            CONVERT LINK ADDRESS
0013C6   0003                   DC    AL2(3)
0013C8   08C9                   DC    AL2(ILINK+6-SECNO)
0013CA   08C8                   DC    AL2(ILINK+5-SECNO)
0013CC   0A D0                  SVC   X'D0'            PRINT LINK ADDRESS
0013CE   A0                     DC    X'A0'
0013CF   10                     DC    X'10'
0013D0   F8C3                   DC    AL2(ILINK-SECNO+REG)
0013D2   41 BB 0 004            LA    R11,4(R11)
0013D6   91 80 B 000            TM    0(R11),X'80'
0013DA   47 10 F 450            BC    ALL,IOCSW        BR. IF NO I-O COMMAND ISSUED
0013DE   0A DD                  SVC   X'DD'            CONVERT I-O ADDRESS
0013E0   0003                   DC    AL2(3)
0013E2   0A3F                   DC    AL2(IOADR-SECNO)
0013E4   08B9                   DC    AL2(IOADDR+5-SECNO)
0013E6   0A D0                  SVC   X'D0'            PRINT I-O ADDRESS
0013E8   A0                     DC    X'A0'
0013E9   0F                     DC    X'0F'
0013EA   F8B4                   DC    AL2(IOADDR-SECNO+REG)
0013EC   50 A0 F 8D8            ST    R10,ICAW+5       STORE CCW ADDR.
0013F0   0A DD                  SVC   X'DD'            CONVERT CAW
0013F2   0003                   DC    AL2(3)
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0013F4   08D9                   DC    AL2(ICAW+6-SECNO)
0013F6   08D8                   DC    AL2(ICAW+5-SECNO)
0013F8   0A D0                  SVC   X'D0'            PRINT CAW
0013FA   A0                     DC    X'A0'
0013FB   0B                     DC    X'0B'
0013FC   F8D3                   DC    AL2(ICAW-SECNO+REG)
0013FE   D2 02 F 8E6 F 8E2      MVC   IBLAH+1(3),ICCW  MOVE -CCW- TO MESSAGE
001404   92 16 F 439            MVI   ICNT,X'16'       ADJUST COUNT
001408   D2 07 F A00 A 000 ICWOUT MVC  WORK(8),0(R10)  MOVE CCW TO WORK AREA
00140E   45 90 F 422            BAL   R9,ICOUT         BR. TO OUTPUT CCW
001412   91 C0 A 004            TM    4(R10),X'C0'     CHECK FOR ANY CHAIN FLAGS
001416   47 80 F 43E            BC    NONE,ICCOUT      BR. IF NONE
00141A   41 AA 0 008            LA    R10,8(R10)       UPDATE TO NEXT CCW
00141E   47 F0 F 408            BC    UNC,ICWOUT       BR. UNCONDITIONAL
001422   0A DD          ICOUT   SVC   X'DD'            CONVERT
001424   0008                    DC    AL2(8)
001426   0A00                    DC    AL2(WORK-SECNO)
001428   0A00                    DC    AL2(WORK-SECNO)
00142A   D2 07 F 8EA F A00      MVC   IBLAH+5(8),WORK  MOVE TO MESSAGE
001430   D2 07 F 8F3 F A08      MVC   IBLAH+14(8),WORK+8
001436   0A D0                  SVC   X'D0'            PRINT
001438   A0                     DC    X'A0'
001439   1A             ICNT    DC    X'1A'
00143A   F8E5                   DC    AL2(IBLAH-SECNO+REG)
00143C   07 F9                 BCR   UNC,R9           RETURN VIA REG 9
00143E   D2 00 F 8A5 B 004 ICCOUT MVC  IEXPCC+5(1),4(R11) MOVE EXP CC TO MESSAGE
001444   0A D0                  SVC   X'D0'            PRINT EXPECTED COND. CODE
001446   A0                     DC    X'A0'
001447   0A                     DC    X'0A'
001448   F8A0                   DC    AL2(IEXPCC-SECNO+REG)
00144A   0A D0                  SVC   X'D0'            PRINT ACTUAL COND. CODE
00144C   A0                     DC    X'A0'
00144D   0A                     DC    X'0A'
00144E   F8AA                   DC    AL2(IACTCC-SECNO+REG)
001450   D2 02 F 8E6 F 8DF IOCSW MVC   IBLAH+1(3),ICSW  MOVE -CSW- TO MESSAGE
001456   92 1A F 439            MVI   ICNT,X'1A'       ADJUST COUNT
00145A   91 08 B 000            TM    0(R11),X'08'
00145E   47 80 F 482            BC    NONE,IDIDI       BR. IF NO CSW EXPECTED
001462   D2 02 F 8FC F 902      MVC   IBLAH+23(3),IEXP MOVE -EXP- TO MESSAGE
001468   48 8B 0 006            LH    R8,6(R11)
00146C   40 80 F 47C            STH   R8,ICHNG1+4
001470   41 88 0 008            LA    R8,8(R8)
001474   40 80 F 4AC            STH   R8,ICHNG2+4
001478   D2 07 F A00 F A00 ICHNG1 MVC  WORK(8),WORK    MOVE EXPECTED CSW TO WORK AREA
00147E   45 90 F 422            BAL   R9,ICOUT         BR. TO OUTPUT EXPECTED CSW
001482   91 40 F 0E8    IDIDI   TM    ISW,X'40'
001486   47 80 F 49A            BC    NONE,IMORST      BR. IF NO CSW STORED
00148A   D2 02 F 8FC F 8FF      MVC   IBLAH+23(3),IACT MOVE -ACT- TO MESSAGE
001490   D2 07 F A00 F 888      MVC   WORK(8),ICSW1    MOVE ACTUAL CSW TO WORK AREA
001496   45 90 F 422            BAL   R9,ICOUT         BR. TO OUTPUT ACTUAL CSW
00149A   91 04 B 000    IMORST  TM    0(R11),X'04'
00149E   47 80 F 4B2            BC    NONE,IDID        BR. IF NOT EXPECTING 2 CSWS
0014A2   D2 02 F 8FC F 902      MVC   IBLAH+23(3),IEXP MOVE -EXP- TO MESSAGE
0014A8   D2 07 F A00 F A00 ICHNG2 MVC  WORK(8),WORK    MOVE EXPECTED CSW TO WORK AREA
0014AE   45 90 F 422            BAL   R9,ICOUT         BR. TO OUTPUT EXPECTED CSW 2
0014B2   91 20 F 0E8    IDID    TM    ISW,X'20'
0014B6   47 80 F 4CA            BC    NONE,IPAS        BR. IF NO SECOND CSW STORED
0014BA   D2 02 F 8FC F 8FF      MVC   IBLAH+23(3),IACT MOVE -ACT- TO MESSAGE
0014C0   D2 07 F A00 F 890      MVC   WORK(8),ICSW2    MOVE CSW TO WORK AREA
0014C6   45 90 F 422            BAL   R9,ICOUT
0014CA   D2 00 F 90A B 005 IPAS MVC   IEXSNS+5(1),5(R11) MOVE EXP SENSE TO MESSAGE
0014D0   91 04 F 0E8            TM    ISW,X'04'
0014D4   47 80 F 4F4            BC    NONE,IPASS       BR. IF NO SENSE DATA RECIEVED
0014D8   0A DD                  SVC   X'DD'            CONVERT EXPECTED SENSE
0014DA   0001                   DC    AL2(1)
0014DC   090A                   DC    AL2(IEXSNS+5-SECNO)
0014DE   090A                   DC    AL2(IEXSNS+5-SECNO)
0014E0   0A D0                  SVC   X'D0'            PRINT EXPECTED SENSE
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0014E2    A0                              DC    X'A0'
0014E3    0B                              DC    X'0B'
0014E4    F905                            DC    AL2(IEXSNS-SECNO+REG)
0014E6    0A DD                           SVC   X'DD'
0014E8    0001                            DC    AL2(1)
0014EA    0915                            DC    AL2(IACSNS+5-SECNO)
0014EC    0915                            DC    AL2(IACSNS+5-SECNO)
0014EE    0A D0                           SVC   X'D0'          PRINT ACTUAL SENSE DATA
0014F0    A0                              DC    X'A0'
0014F1    0B                              DC    X'0B'
0014F2    F910                            DC    AL2(IACSNS-SECNO+REG)
0014F4    95 30 E 181         IPASS       CLI   SYSMOD(R14),X'30'  CHECK FOR MODEL 30.
0014F8    47 60 F 528                     BC    UNEQ,ICD       BR. IF NOT
0014FC    D2 0B F A00 E 080   ILOGED      MVC   WORK(12),LOGOUT(R14)  MOVE LOG OUT TO WORK AREA
001502    0A DD                           SVC   X'DD'          CONVERT
001504    000C                            DC    AL2(12)
001506    0A00                            DC    AL2(WORK-SECNO)
001508    0A00                            DC    AL2(WORK-SECNO)
00150A    D2 01 F 920 F A00               MVC   IOLOG+5(2),WORK  MOVE LOG OUT TO MESSAGE
001510    D2 05 F 923 F A02               MVC   IOLOG+8(6),WORK+2
001516    D2 05 F 92A F A0A               MVC   IOLOG+15(6),WORK+10
00151C    D2 05 F 931 F A12               MVC   IOLOG+22(6),WORK+18
001522    0A D0                           SVC   X'D0'          PRINT LOG OUT
001524    A0                              DC    X'A0'
001525    1C                              DC    X'1C'
001526    F91B                            DC    AL2(IOLOG-SECNO+REG)
001528    91 02 F 0E8         ICD         TM    ISW,X'02'      SEE IF UIO.
00152C    47 80 F 538                     BC    NONE,IBCD      BR IF NO
001530    94 FD F 0E8                     NI    ISW,X'FD'      RESET UIO SWITCH
001534    47 F0 F 1BA                     BC    UNC,IWAIT      BR. UNCONDITIONAL
001538    96 02 F 0E9         IBCD        OI    ISW+1,X'02'    TURN ON PRINT SW.
00153C    91 80 F 0EB                     TM    DATSW+1,X'80'  SEE IF ERROR IN PRESENT DATA.
001540    47 80 F 554                     BC    NONE,SIPP      BR IF NO.
001544    96 20 F 0EB                     OI    DATSW+1,X'20'  TURN ON PRINT PRESENT DATA SW.
001548    45 80 F 588                     BAL   R8,SUCP        BR TO SET UP COMPARE PARAMETERS.
00154C    94 7F F C4C                     NI    HDSW,X'7F'     TURN OFF HEADING SWITCH.
001550    94 DF F 0EB                     NI    DATSW+1,X'DF'  RESET PRINT 1ST DATA SW.
001554    91 40 F 0EB         SIPP        TM    DATSW+1,X'40'  SEE IF ERROR IN PREVIOUS CD.
001558    47 80 F 584                     BC    NONE,IOPOUT    BR IF NOT.
00155C    96 10 F 0EB                     OI    DATSW+1,X'10'  TURN ON PRINT PREVIOUS DATA SW.
001560    41 30 F A68                     LA    R3,PCH1        PUT ADDR OF PCH DATA INTO 3.
001564    41 40 F B58                     LA    R4,CRD2        PUT ADDR OF CHK READ DATA INTO 4.
001568    41 70 F BA8                     LA    R7,RD1         PUT ADDR OF RD DATA INTO 7.
00156C    91 80 F C4E                     TM    KEYSW,X'80'    SEE IF 2ND AREA CURRENT.
001570    47 10 F 580                     BC    ALL,CTD        BR IF YES.
001574    41 30 F AB8                     LA    R3,PCH2        PUT ADDR OF PCH DATA INTO 3.
001578    41 40 F B08                     LA    R4,CRD1        PUT ADDR OF CHK READ DATA INTO 4.
00157C    41 70 F BF8                     LA    R7,RD2         PUT ADDR OF RD DATA INTO 7.
001580    45 10 F 5DE         CTD         BAL   R1,ICDT        BR TO CHK DATA.
001584    0A D0               IOPOUT      SVC   X'D0'          PRINT LOOP OPTIONS
001586    C0                  IFLAG2      DC    X'C0'
001587    45                              DC    X'45'
001588    F940                            DC    AL2(IOPT1-SECNO+REG)
00158A    0A D0                           SVC   X'D0'          SPACE A LINE
00158C    A0                              DC    X'A0'
00158D    01                              DC    X'01'
00158E    F8C3                            DC    AL2(ILINK-SECNO+REG)
001590    50 AD 0 048                     ST    R10,HCAW(R13)  STORE CAW
001594    91 C0 F 004                     TM    SNSW,X'C0'     CHECK SECTION SENSE SWITCH 0 AND 1
001598    47 50 F 102                     BC    ANY,ILOOP      BR. IF ANY ON
00159C    91 80 F 0E8                     TM    ISW,X'80'
0015A0    07 15                           BCR   ALL,R5         RETURN VIA REG 5 IF HANG UP
0015A2    91 08 B 000         ILEAVE      TM    0(R11),X'08'
0015A6    47 80 F 5AE                     BC    NONE,IUP       BR. IF NO CSW EXPECTED
0015AA    41 BB 0 002                     LA    R11,2(R11)     UPDATE LINK ADDRESS FOR RETURN
0015AE    41 BB 0 006         IUP         LA    R11,6(R11)
0015B2    98 09 F 860                     LM    R0,R9,ISAVE    RESTORE WORKING REGS.
0015B6    07 FB                           BCR   UNC,R11        RETURN VIA REG 11
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*****************************************************************
*     SET UP PARAMETERS FOR DATA COMPARE HERE.
*****************************************************************
0015B8    41 30 F A68         SUCP    LA    R3,PCH1          PUT ADDR OF 1ST AREA DATA INTO 3.
0015BC    41 40 F B08                 LA    R4,CRD1          PUT ADDR OF CHK READ DATA INTO REG 4
0015C0    41 70 F BA8                 LA    R7,RD1           PUT ADDR OF READ DATA INTO REG 7.
0015C4    91 80 F C4E                 TM    KEYSW,X'80'      SEE IF 2ND DATA AREA CURRENT.
0015C8    47 80 F 5D8                 BC    NONE,SU1P        BR IF NOT.
0015CC    41 30 F AB8                 LA    R3,PCH2          PUT ADDR OF EXP DATA INTO REG 3.
0015D0    41 40 F B58                 LA    R4,CRD2          PUT ADDR OF CHK READ DATA INTO REG 4
0015D4    41 70 F BF8                 LA    R7,RD2           PUT ADDR OF READ DATA INTO REG 7.
0015D8    45 10 F 5DE         SU1P    BAL   R1,ICDT          BR TO COMPARE DATA.
0015DC    07 F8                       BCR   UNC,R8           RETURN
*****************************************************************
*     DATA COMPARE ROUTINE
*****************************************************************
0015DE    41 20 0 001         ICDT    LA    R2,1             PUT 1 IN REG 2.
0015E2    D5 00 3 000 7 000   CODA    CLC   0(1,R3),0(R7)    SEE IF DATA AS EXPECTED.
0015E8    47 60 F 616                 BC    UNEQ,ERPRS       BR IF NO.
0015EC    91 07 4 000                 TM    0(R4),X'07'      SEE IF ADDR, TRANS, OR PARITY CHKS.
0015F0    47 50 F 616                 BC    ANY,ERPRS        BR IF YES.
0015F4    91 18 4 000         TXS     TM    0(R4),X'18'      SEE IF XU OR XL.
0015F8    47 50 F 632                 BC    ANY,ERPRE        BR IF YES.
0015FC    41 22 0 001         UPD     LA    R2,1(R2)         ADD 1 TO REG 2.
001600    41 33 0 001                 LA    R3,1(R3)         ADD 1 TO REG 3.
001604    41 44 0 001                 LA    R4,1(R4)         ADD 1 TO REG 4.
001608    41 77 0 001                 LA    R7,1(R7)         ADD 1 TO REG 7.
00160C    55 20 F A60                 CL    R2,ATE1          SEE IF 80 COLUMNS HANDLED.
001610    47 60 F 5E2                 BC    UNEQ,CODA        BR IF NO.
001614    07 F1                       BCR   UNC,R1           RETURN.
001616    96 80 F 0EB         ERPRS   OI    DATSW+1,X'80'    TURN ON ERROR IN PRESENT CD SW.
00161A    91 10 F 0EB                 TM    DATSW+1,X'10'    SEE IF PRINTING PREVIOUS DATA.
00161E    47 10 F 5F4                 BC    ALL,TXS          BR IF YES.
001622    91 02 F 0E9                 TM    ISW+1,X'02'      SEE IF PRINT SW ON.
001626    47 10 F 69E                 BC    ALL,IGOP         BR IF YES.
00162A    96 01 F 0E8                 OI    ISW,X'01'        INDICATE AN ERROR.
00162E    47 F0 F 5F4                 BC    UNC,TXS          BR TO TEST PREVIOUS DATA.
001632    96 40 F 0EB         ERPRE   OI    DATSW+1,X'40'    TURN ON ERROR IN PREVIOUS CD SW.
001636    91 20 F 0EB                 TM    DATSW+1,X'20'    SEE IF PRINTING PRESENT DATA.
00163A    47 10 F 5FC                 BC    ALL,UPD          BR IF YES.
00163E    91 02 F 0E9                 TM    ISW+1,X'02'      SEE IF PRINT SW ON.
001642    47 10 F 69E                 BC    ALL,IGOP         BR IF YES.
001646    96 01 F 0E8                 OI    ISW,X'01'        TURN ON ERROR SW.
00164A    47 F0 F 5FC                 BC    UNC,UPD          BR TO UPDATE.
*****************************************************************
*     INTERVENTION REQUIRED ROUTINE
*****************************************************************
00164E    0A D0               RRM     SVC   X'D0'            PRINT -MAKE DEVICE READY-
001650    240D                        DC    X'240D'
001652    FA32                        DC    AL2(MDR-SECNO+REG)
001654    0A DA                       SVC   X'DA'            HALT
001656    9D 00 C 000                 TIO   0(R12)           TEST I-O
00165A    0A D0                       SVC   X'D0'            PRINT A BLANK.
00165C    8001                        DC    X'8001'
00165E    FA32                        DC    AL2(MDR-SECNO+REG)
001660    47 F0 F 0F6                 BC    UNC,CONP         BR TO CONTINUE.
*****************************************************************
*     AUXILIARY START I-O ROUTINE
*****************************************************************
001664    58 9E 0 198         ISTRT   L     R9,WT(R14)       LOAD DM WAIT FACTOR.
001668    88 90 0 002                 SRL   R9,2             CUT IT DOWN TO 2.5 SECS.
00166C    50 8D 0 048                 ST    R8,HCAW(R13)     STORE IN CAW
001670    9C 00 C 000                 SIO   0(R12)           START I-O
001674    47 70 F 694                 BC    NCCO,IBACK
001678    9D 00 C 000         ITIOLP  TIO   0(R12)           TEST I-O
00167C    47 40 F 686                 BC    CC1,ILOKE        BR. IF CSW STORED
001680    46 90 F 678         ITIC    BCT   R9,ITIOLP
001684    07 F7                       BCR   UNC,R7           RETURN.
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001686   91 04 D 044          ILOKE  TM    HCSW+4(R13),X'04'    CHECK FOR DEVICE END.
00168A   47 80 F 680                BC    NONE,ITIC           BR IF NOT IN YET.
00168E   96 80 F 0E9                OI    ISW+1,X'80'         INDICATE THE DATA RECEIVED.
001692   07 F7                      BCR   UNC,R7              RETURN.
001694   91 40 F 915          IBACK  TM    IACSNS+5,X'40'      SEE IF INTERVENTION REQUIRED.
001698   47 10 F 0F6                BC    ALL,CONP            BR IF YES.
00169C   07 F7                      BCR   UNC,R7              RETURN.
                              ********************************************************************************
                              *      DATA PRINTOUT ROUTINE
                              ********************************************************************************
00169E   92 40 F A00          IGOP   MVI   GOODY,C' '          MOVE A BLANK TO MESSAGE AREA.
0016A2   D2 24 F A01 F A00           MVC   GOODY+1(37),GOODY   BLANK THE REST.
0016A8   D2 0A F 996 F 9AC           MVC   HD1A+9(11),STK1     MOVE WORD STKR P1 TO MSG.
0016AE   91 20 F 0E8                 TM    DATSW+1,X'20'       SEE IF PRINTING PRESENT DATA
0016B2   47 80 F 6E8                 BC    NONE,CMI            BR IF NOT.
0016B6   D2 0A F 996 F 9A1           MVC   HD1A+9(11),PRES     MOVE WORD PRESTK TO MSG.
0016BC   91 80 F C4E                 TM    KEYSW,X'80'         SEE IF 2ND AREA CURRENT.
0016C0   47 10 F 6F0                 BC    ALL,TF              BR IF YES.
0016C4   91 20 F 0EA          C1CR   TM    DATSW,X'20'         SEE IF 1ST AREA CHK RD WORKED.
0016C8   47 50 F 6F8                 BC    ANY,COPT            BR IF YES.
0016CC   91 80 F C4D          TPNC   TM    CRSW,X'80'          SEE IF MSG ALREADY PRINTED.
0016D0   47 10 F 748                 BC    ALL,NTC             BR IF IT WAS.
0016D4   D2 01 F FB6 F E0A           MVC   XX(2),C6            MOVE DIAG CHK RD CMD TO MSG.
0016DA   0A D0                       SVC   X'D0'               PRINT -2 CHK RDS FAILED-
0016DC   A013                        DC    X'A013'
0016DE   FFAC                        DC    AL2(DCA-SECNO+REG)
0016E0   96 80 F C4D                 OI    CRSW,X'80'          TURN ON PRINT SW.
0016E4   47 F0 F 748                 BC    UNC,NTC             BR TO CONTINUE.
0016E8   91 80 F C4E          CMI    TM    KEYSW,X'80'         SEE IF 2ND AREA CURRENT.
0016EC   47 10 F 6C4                 BC    ALL,C1CR            BR IF YES.
0016F0   91 02 F 0EA          TF     TM    DATSW,X'02'         SEE IF 2ND AREA CHK RD WORKED.
0016F4   47 80 F 6CC                 BC    NONE,TPNC           BR IF NO.
0016F8   92 F0 F A16          COPT   MVI   GOODY+22,C'0'       MOVE ZERO INTO PRINT AREA.
0016FC   91 10 4 000                 TM    0(R4),X'10'         SEE IF XU ON IN DIAG CHK READ BYTE.
001700   47 80 F 708                 BC    NONE,NXU            BR IF NOT ON.
001704   92 F1 F A16                 MVI   GOODY+22,C'1'       MOVE ONE INTO PRINT AREA.
001708   92 F0 F A19          NXU    MVI   GOODY+25,C'0'       PUT ZERO INTO PRINT AREA.
00170C   91 08 4 000                 TM    0(R4),X'08'         SEE IF XL ON IN DIAG CHK DATA.
001710   47 80 F 718                 BC    NONE,NXL            BR IF NOT ON.
001714   92 F1 F A19                 MVI   GOODY+25,C'1'       MOVE ONE INTO PRINTOUT
001718   92 F0 F A1C          NXL    MVI   GOODY+28,C'0'       MOVE ZERO INTO PRINTOUT.
00171C   91 04 4 000                 TM    0(R4),X'04'         SEE IF BUFFER PARITY ON IN CHK DATA.
001720   47 80 F 728                 BC    NONE,NBP            BR IF NOT ON.
001724   92 F1 F A1C                 MVI   GOODY+28,C'1'       MOVE A ONE INTO PRINTOUT.
001728   92 F0 F A20          NBP    MVI   GOODY+32,C'0'       MOVE A ZERO INTO PRINTOUT.
00172C   91 01 4 000                 TM    0(R4),X'01'         SEE IF ADDR CHK IN CHK DATA
001730   47 80 F 738                 BC    NONE,NAC            BR IF NOT.
001734   92 F1 F A20                 MVI   GOODY+32,C'1'       MOVE A ONE INTO THE PRINTOUT.
001738   92 F0 F A25          NAC    MVI   GOODY+37,C'0'       MOVE A ZERO INTO PRINTOUT.
00173C   91 02 4 000                 TM    0(R4),X'02'         SEE IF TRANSLATE CHK
001740   47 80 F 748                 BC    NONE,NTC            BR IF NO.
001744   92 F1 F A25                 MVI   GOODY+37,C'1'       MOVE A ONE INTO PRINTOUT.
001748   90 04 F DD8          NTC    STM   R0,R4,TWENTY        SAVE REGS 0 THRU 4.
00174C   91 20 F 0EB                 TM    DATSW+1,X'20'       SEE IF PRINTING PRESENT DATA.
001750   47 80 F 780                 BC    NONE,C2A            BR IF NOT.
001754   91 80 F C4E                 TM    KEYSW,X'80'         SEE IF 2ND AREA CURRENT.
001758   47 80 F 78C                 BC    NONE,C1A            BR IF NOT.
00175C   91 04 F 0EA          TSRD   TM    DATSW,X'04'         SEE IF 2ND AREA READ WORKED.
001760   47 50 F 794                 BC    ANY,CPRT            BR IF YES.
001764   91 40 F C4D          IFM    TM    CRSW,X'40'          SEE IF MSG PRINTED BEFORE
001768   47 10 F 84C                 BC    ALL,RSRG            BR IF YES.
00176C   D2 01 F FB6 F E08           MVC   XX(2),C2            MOVE DIAG RD CMD TO MSG.
001772   0A D0                       SVC   X'D0'               PRINT DIAGNOSTIC READ FAILED.
001774   A013                        DC    X'A013'
001776   FFAC                        DC    AL2(DCA-SECNO+REG)
001778   96 40 F C4D                 OI    CRSW,X'40'          TURN ON MSG SW.
00177C   47 F0 F 84C                 BC    UNC,RSRG            BR TO UPDATE.
001780   91 80 F C4E          C2A    TM    KEYSW,X'80'         SEE IF 2ND AREA CURRENT.
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001784   47 10 F 78C                 BC    ALL,C1A             BR IF YES.
001788   47 F0 F 75C                 BC    UNC,TSRD            BR IF NO.
00178C   91 40 F 0EA          C1A    TM    DATSW,X'40'         SEE IF 1ST AREA RD OK.
001790   47 80 F 764                 BC    NONE,IFM            BR IF NOT.
001794   91 80 F C4C          CPRT   TM    HDSW,X'80'          SEE IF HEADING ALREADY PRINTED.
001798   47 10 F 7BE                 BC    ALL,IPDA            BR IF YES.
00179C   0A D0                       SVC   X'D0'               PRINT 1ST HDR.
00179E   A008                        DC    X'A008'
0017A0   F985                        DC    AL2(HD1-SECNO+REG)
0017A2   0A D0                       SVC   X'D0'               PRINT CARD LOCATION IN READER.
0017A4   A014                        DC    X'A014'
0017A6   F98D                        DC    AL2(HD1A-SECNO+REG)
0017A8   0A D0                       SVC   X'D0'               PRINT A BLANK.
0017AA   A001                        DC    X'A001'
0017AC   F987                        DC    AL2(BIG-SECNO+REG)
0017AE   0A D0                       SVC   X'D0'               PRINT HEADING 3.
0017B0   A022                        DC    X'A022'
0017B2   F987                        DC    AL2(BIG-SECNO+REG)
0017B4   0A D0                       SVC   X'D0'               PRINT HEADING 4.
0017B6   A027                        DC    X'A027'
0017B8   F9D9                        DC    AL2(BEAUTY-SECNO+REG)
0017BA   96 80 F C4C                 OI    HDSW,X'80'          TURN ON THE HEADING SW.
0017BE   D2 00 F C4F 3 000    IPDA   MVC   ICODAT(1),0(R3)     MOVE EXP DATA TO WORK AREA.
0017C4   18 42                       LR    R4,R2               PUT THE COLUMN NO. INTO REG 4.
0017C6   4E 40 F 898                 CVD   R4,DBWD             CONV IT TO DECIMAL.
0017CA   F3 11 F A02 F 89E           UNPK  GOODY+2(2),DBWD+6(2) PUT IT INTO PRINT AREA.
0017D0   96 F0 F A03                 OI    GOODY+3,X'F0'       COVER SIGN UP FOR PRINTING.
0017D4   D2 00 F 898 7 000           MVC   DBWD(1),0(R7)       MOVE ACTUAL DATA TO CONVERT AREA.
0017DA   0A DD                       SVC   X'DD'               CONVERT FROM HEX TO BINARY.
0017DC   0001                        DC    AL2(01)             1 BYTE.
0017DE   0898                        DC    AL2(DBWD-SECNO)     FROM HERE.
0017E0   0A12                        DC    AL2(GOODY+18-SECNO) TO HERE
0017E2   0A DD                       SVC   X'DD'               CONVERT FROM HEX TO BINARY.
0017E4   0001                        DC    AL2(01)             1 BYTE.
0017E6   0C4F                        DC    AL2(ICODAT-SECNO)   FROM HERE
0017E8   0A0E                        DC    AL2(GOODY+14-SECNO) TO HERE
0017EA   1B 11                       SR    R1,R1               ZERO REG 1
0017EC   1B 22                       SR    R2,R2               ZERO REG 2.
0017EE   1B 33                       SR    R3,R3               ZERO REG 3.
0017F0   41 40 0 002                 LA    R4,2                LOAD DIVISOR
0017F4   43 30 F C4F                 IC    R3,ICODAT           PICK UP HEX CHARACTER
0017F8   18 13                       LR    R1,R3               SAVE HEX CHARACTER
0017FA   1D 24                       DR    R2,R4               DIVIDE HEX CHARACTER BY 2
0017FC   1A 31                       AR    R3,R1               ADD DIVIDEND TO CHARACTER
0017FE   43 13 F E0C                 IC    R1,HOLES(R3)        PICK UP FIRST BYTE
001802   89 10 0 008                 SLL   R1,8                SHIFT
001806   43 13 F E0D                 IC    R1,HOLES+1(R3)      PICK UP SECOND BYTE
00180A   41 30 0 0FF                 LA    R3,255              LOAD MASK
00180E   14 23                       NR    R2,R3               AND WITH REMAINDER
001810   47 50 F 818                 BC    ANY,*+8             BR. IF THERE WAS A REMAINDER
001814   88 10 0 004                 SRL   R1,4                SHIFT OFF UNUSED 4 BITS
001818   50 10 F 898                 ST    R1,DBWD             SAVE REG 1.
00181C   41 40 0 006                 LA    R4,6                SET UP FOR 6 POSSIBLE PUNCHES
001820   41 30 0 00C                 LA    R3,12               SET UP TO CHECK 12 PUNCHES
001824   41 00 0 001                 LA    R0,1                LOAD MASK
001828   43 23 F A25          PIK    IC    R2,PUNCHS-1(R3)     PICK UP PRINTABLE CHARACTER
00182C   58 10 F 898                 L     R1,DBWD             RESTORE REG 1.
001830   14 10                       NR    R1,R0               TEST FOR PUNCH
001832   47 80 F 83E                 BC    NONE,NXT            BR. IF NONE
001836   42 24 F A05                 STC   R2,GOODY+5(R4)      STORE PRINTABLE CHARACTER
00183A   46 40 F 83E                 BCT   R4,**+4             DECREMENT PRINT AREA INDEX
00183E   89 00 0 001          NXT    SLL   R0,1                SHIFT MASK FOR NEXT BIT
001842   46 30 F 828                 BCT   R3,PIK              BR. UNTIL 12 CHECKED
001846   0A D0                PRGD   SVC   X'D0'               PRINT THE DATA.
001848   8026                        DC    X'8026'
00184A   FA00                        DC    AL2(GOODY-SECNO+REG)
00184C   98 04 F DD8          RSRG   LM    R0,R4,TWENTY        RESTORE REGS.
001850   47 F0 F 5FC                 BC    UNC,UPD             BR TO CONTINUE DATA OUTPUT.
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                                ************************************************************************
                                *      I-O HANDLER WORK AREA.
                                ************************************************************************
001858   04 001915 0000 0001    ISENSE CCW   X'04',IACSNS+5,X'00',1
001860   00000000               ISAVE  DC    10F'0'
001864   00000000
001868   00000000
00186C   00000000
001870   00000000
001874   00000000
001878   00000000
00187C   00000000
001880   00000000
001884   00000000
001888   0000000000000000       ICSW1  DC    XL8'0'
001890   0000000000000000       ICSW2  DC    XL8'0'
001898   +00.00000000000000     DBWD   DC    D'0'
0018A0   40C3C34040E740C5E7     IEXPCC DC    C' CC  X EXP'
0018A9   D7
0018AA   40C3C34040E740C1C3     IACTCC DC    C' CC  X ACT'
0018B3   E3
0018B4   40C1C4D940E7E7E7E7     IOADDR DC    C' ADR XXXXXX SIO'
0018BD   E7E740E2C9D6
0018C3   00                            DC    X'00'
0018C4                                 CNOP  0,4
                    0018C3             ORG   *-1
0018C3   40C1C4D940E7E7E7E7     ILINK  DC    C' ADR XXXXXX LINK'
0018CC   E7E740D3C9D5D2
0018D3   00                            DC    X'00'
0018D4                                 CNOP  0,4
                    0018D3             ORG   *-1
0018D3   40C3C1E640E7E7E7E7     ICAW   DC    C' CAW XXXXXX '
0018DC   E7E740
0018DF   C3E2E6                 ICSW   DC    C'CSW'
0018E2   C3C3E6                 ICCW   DC    C'CCW'
0018E5   40C3E2E640E7E7E7E7     IBLAH  DC    C' CSW XXXXXXXX XX'
0018EE   E7E7E7E740E7E7
0018F5   E7E7E7E7E7E740C5E7             DC    C'XXXXXX EXP'
0018FE   D7
0018FF   C1C3E3                 IACT   DC    C'ACT'
001902   C5E7D7                 IEXP   DC    C'EXP'
001905   40E2D5E240E7E740C5     IEXSNS DC    C' SNS XX EXP'
00190E   E7D7
001910   40E2D5E240E7E740C1     IACSNS DC    C' SNS XX ACT'
001919   C3E3
00191B   40D3D6C740E7E740E7     IOLOG  DC    C' LOG XX XXXXXX X'
001924   E7E7E7E7E740E7
00192B   E7E7E7E7E740E7E7E7             DC    C'XXXXX XXXXXX'
001934   E7E7E7
001937   40E3E2E340E7E7E7E7     ITSTNO DC    C' TST XXXX'
001940   40E2C5E340E2E240F0     IOPT1  DC    C' SET SS 0 ON FOR'
001949   40D6D540C6D6D9
001950   40D3D6D6D740D6D540             DC    C' LOOP ON PRESTKR'
001959   D7D9C5E2E3D2D9
001960   40C3C440D6D940E2E2             DC    C' CD OR SS 1 ON F'
001969   40F140D6D540C6
001970   D6D940D3D6D6D740D6             DC    C'OR LOOP ON STACK'
001979   D540E2E3C1C3D2
001980   C5C440C3C4                     DC    C'ED CD'
001985   40D7C3C840C5D9D9       HD1    DC    C' PCH ERR'
00198D   40C3C1D9C440C9D540     HD1A   DC    C' CARD IN '
001996   D7D9C5E2E3D2D940E2             DC    C'PRESTKR STA'
00199F   E3C1
0019A1   D7D9C5E2E3D2D940E2     PRES   DC    C'PRESTKR STA'
0019AA   E3C1
0019AC   E2E3C1C3D2C5D940D7     STK1   DC    C'STACKER P1.'
0019B5   F14B
0019B7   404040404040C5E7D7C5   BIG    DC    C'     EXPECTED SH'
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0019C0   C3E3C5C440E2C8
0019C7   C44040404040404040             DC    C'D              B'
0019D0   4040404040C2
0019D7   E4C6                           DC    C'UF'
0019D9   40C3D6D340D7E4D5C3     BEAUTY DC    C' COL PUNCHES  RD'
0019E2   C8C5E24040D9C4
0019E9   4040D9C440E7E440E7             DC    C'  RD XU XL PAR A'
0019F2   D340D7C1D940C1
0019F9   C4D940E3D9C1D5                 DC    C'DR TRAN'
001A00   4040404040404040     GOODY  DC    C'                '
001A09   40404040404040
001A10   4040404040404040              DC    C'                '
001A19   40404040404040
001A20   4040404040                    DC    C'      '
001A26   E3C5F0F1F2F3F4F5F6    PUNCHS DC    C'TE0123456789'
001A2F   F7F8F9
001A32   40D4C1D2C540D7C3C8    MDR    DC    C' MAKE PCH RDY'
001A3B   40D9C4E8
001A3F   001174                IOADR  DC    AL3(ISSUE)
001A42   FE                    MSK1   DC    X'FE'
001A43   01                    MSK2   DC    X'01'
001A44   40E4C9D640C6D9D6D4    IUNEX  DC    C' UIO FROM DEVICE'
001A4D   40C4C5E5C9C3C5
001A54   40E7E7E7E7                    DC    C' XXXX'
                                ************************************************************************
                                *      AUXILIARY WORK AREA.
                                ************************************************************************
001A5C   00000000              PCH    DC    F'0'
001A60   00000051              ATE1   DC    F'81'
001A64   00003FFF              MOD50  DC    X'00003FFF'
001A68                         PCH1   DS    80C
001AB8                         PCH2   DS    80C
001B08                         CRD1   DS    80C
001B58                         CRD2   DS    80C
001BA8                         RD1    DS    80C
001BF8                         RD2    DS    80C
001C48   0F00                  RESET1 DC    X'0F00'
001C4A   F000                  RESET2 DC    X'F000'
001C4C   00                    HDSW   DC    X'00'
001C4D   00                    CRSW   DC    X'00'
001C4E   00                    KEYSW  DC    X'00'
001C4F   00                    ICODAT DC    X'00'
001C50   00                    GENDAT DC    X'00'
001C51   40D7D9C5E5C9D6E4E2    HUNG   DC    C' PREVIOUS HANG U'
001C5A   40C8C1D5C740E4
001C61   D740C4C5E3C5C3E3C5            DC    C'P DETECTED'
001C6A   C4
001C6C                                 CNOP  0,4
                                ************************************************************************
                                * ROUTINE 01 - THIS ROUTINE IS THE PUNCH RIPPLE TEST. 39 CARDS ARE
                                *              PUNCHED AND THE OPERATION IS FULLY TESTED. EACH ROW ON
                                *              A CARD IS INDIVIDUALLY PUNCHED, STARTING WITH ROW 12
                                *              IN THE FIRST CARD AND ADVANCING A ROW IN EACH SUCCESIVE
                                *              CARD UNTIL ALL NINES ARE PUNCHED IN THE TWELFTH CARD.
                                *              THE NEXT 27 CARDS CONTAIN A RIPPLE PATTERN OF THE EBCDIC
                                *              CARD CODE.
                                ************************************************************************
001C6C   01                    ROUT01 DC    X'01'             ROUTINE NUMBER
001C6D   00                           DC    X'00'             ROUTINE FLAGS -NONE-
001C6E   FFFE                         DC    X'FFFE'           OVERLAY FOLLOWS.
001C70   18 DD                 INIT   SR    R13,R13           ZERO REG 13
001C72   91 40 E 196                  TM    406(R14),X'40'    CHECK FOR FORCED PROBLEM STATE
001C76   47 80 F C7C                  BC    NONE,NITWIT       BR. IF NOT
001C7A   18 DF                        LR    R13,R15           SET UP FOR PROBLEM STATE
001C7C   58 C0 F 0E0          NITWIT L     R12,UNIT1         PICK UP THE PUNCH UNIT TABLE.
001C80   54 C0 F A64                  N     R12,MOD50         SAVE ONLY THE PUNCH ADDR.
001C84   50 C0 F A5C                  ST    R12,PCH           SAVE IT
001C88   91 80 F 0E8          BLOOP  TM    ISW,X'80'         CHECK FOR HANG UP
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001C8C   47 10 F D2E              BC    ALL,HANGUP          BR. IF DETECTED
001C90   0A D0                    SVC   X'D0'               TELL OPERATOR TO REMOVE CDS
001C92   2419                     DC    X'2419'                   FROM STACKERS.
001C94   FF8F                     DC    AL2(RCFP-SECNO+REG)
001C96   0A D0                    SVC   X'D0'               PRINT MAKE DEVICE RDY.
001C98   A00D                     DC    X'A00D'
001C9A   FA32                     DC    AL2(MDR-SECNO+REG)
001C9C   0A DA                    SVC   X'DA'               -HALT-
001C9E   9D 00 C 000              TIO   0(R12)              TEST I-O
001CA2   0A D0                    SVC   X'D0'               PRINT A BLANK.
001CA4   8001                     DC    X'8001'
001CA6   FF8F                     DC    AL2(RCFP-SECNO+REG)
001CA8   41 60 0 027              LA    R6,39               PUT 39 INTO REG 6.
001CAC   92 00 F C4E              MVI   KEYSW,X'00'         INITIALIZE TO 1ST DATA AREA.
001CB0   92 00 F C50              MVI   GENDAT,X'00'        ZERO INITIAL EBCDIC CHARACTER.
001CB4   D2 0B F DF8 F DEC        MVC   PARAM(12),ROW       INITIALIZE PARAMETERS.
001CBA   45 40 F D44        PSIO  BAL   R4,INDAT            BR TO GENERATE DATA.
001CBE   58 C0 F A5C              L     R12,PCH             PUT PUNCH ADDR INTO REG 12.
001CC2   41 A0 F DC0              LA    R10,WRT1            PUT CMD ADDR INTO REG 10.
001CC6   D2 01 F CE8 F E04        MVC   ORIG(2),FIR         MOVE ADDR OF EXP CSW INTO PARAMS.
001CCC   91 80 F C4E              TM    KEYSW,X'80'         SEE IF 2ND AREA SHOULD BE USED.
001CD0   47 80 F CDE              BC    NONE,BAL            BR IF NO.
001CD4   41 A0 F DC8              LA    R10,WRT2            PUT 2ND AREA CMD ADDR. INTO REG 10.
001CD8   D2 01 F CE8 F E06        MVC   ORIG(2),SEC         MOVE ADDR OF EXP CSW INTO PARAMS.
001CDE   45 80 F 0EC        BAL   BAL   R11,ISIO            BR TO ISSUE START I-O.
001CE2   3E00                     DC    X'3E00'             CTRL SWITCHES
001CE4   0010                     DC    X'0010'             T E S T   N U M B E R
001CE6   F000                     DC    X'F000'             EXP COND. CODE AND SENSE.
001CE8   FF8C               ORIG  DC    AL2(EXP1-SECNO+REG) EXP CSW ADDR.
001CEA   91 80 F C4E              TM    KEYSW,X'80'         SEE IF 2ND AREA USED LAST
001CEE   47 10 F D20              BC    ALL,SUFA            BR IF IT WAS
001CF2   96 80 F C4E              OI    KEYSW,X'80'         TURN ON THE SW IF NOT ON.
001CF6   D4 01 F 0EA F C4A        NC    DATSW(2),RESET2     RESET AREA 2 CONTROL.
001CFC   46 60 F CBA        COP   BCT   R6,PSIO             BR UNTIL ALL CARDS PUNCHED.
001D00   41 A0 F DC8              LA    R10,WRT2            PUT CMD ADDR INTO REG 10.
001D04   58 C0 F A5C              L     R12,PCH             PUT PCH ADDR INTO REG 12.
001D08   92 40 F AB8              MVI   PCH2,C' '           PUT A BLANK INTO DATA AREA.
001D0C   D2 4E F AB9 F AB8        MVC   PCH2+1(79),PCH2     BLANK OUT THE REST.
001D12   45 B0 F 0EC              BAL   R11,ISIO            BR TO ISSUE START I-O
001D16   3E00                     DC    X'3E00'             CTRL SWITCHES
001D18   0010                     DC    X'0010'             T E S T   N U M B E R
001D1A   F000                     DC    X'F000'             EXP COND CODE AND SENSE.
001D1C   FF9C                     DC    AL2(EXP2-SECNO+REG) EXP CSW ADDR.
001D1E   0A D6              EXTP  SVC   X'D6'               ROUTINE EXIT
001D20   D4 01 F 0EA F C48  SUFA  NC    DATSW(2),RESET1     RESET AREA 1 CONTROL.
001D26   94 7F F C4E              NI    KEYSW,X'7F'         TURN OFF 2ND AREA POINTER.
001D2A   47 F0 F CFC              BC    UNC,COP             BR TO CONTINUE
001D2E   0A D0              HANGUP SVC  X'D0'               PRINT
001D30   64                       DC    X'64'               -PREVIOUS HANGUP DETECTED-
001D31   1A                       DC    X'1A'
001D32   FC51                     DC    AL2(HUNG-SECNO+REG)
001D34   96 01 F 0E8              OI    ISW,X'01'           TURN ON ERROR SWITCH.
001D38   45 50 F 276              BAL   R5,IDOSNS           BR. TO OUTPUT AVAILABLE INFO
001D3C   92 00 F 0E8              MVI   ISW,X'00'           RESET HANGUP SWITCH
001D40   47 F0 F C88              BC    UNC,BLOOP
                  ********************************************************************
                  *       GENERATE PUNCH DATA HERE
                  ********************************************************************
001D44   41 80 F A68        INDAT LA    R8,PCH1             PICK UP 1ST PCH AREA ADDR.
001D48   91 80 F C4E              TM    KEYSW,X'80'         SEE IF 2ND AREA AVAILABLE.
001D4C   47 80 F D54              BC    NONE,LA5            BR IF NOT.
001D50   41 80 F AB8              LA    R8,PCH2             PICK UP 2ND PCH AREA ADDR.
001D54   50 80 F DD4        LA5   ST    R8,DATAD            SAVE THE BUFFER ADDR.
001D58   55 60 F DD0              CL    R6,TW7              SEE IF REG 6 IS 27.
001D5C   47 20 F D84              BC    HI,LA52             BR IF HIGHER.
001D60   43 70 F C50              IC    R7,GENDAT           PICK UP 1ST EBCDIC CHAR.
001D64   41 50 0 050              LA    R5,80               PUT 80 INTO REG 5.
001D68   42 78 0 000        PIB   STC   R7,0(R8)            STORE THE CHARACTER INTO THE BUFFER.
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001D6C   41 77 0 001              LA    R7,1(R7)            ADD 1 TO THE DATA BYTE
001D70   41 88 0 001              LA    R8,1(R8)            ADD 1 TO BUFFER ADDR.
001D74   46 50 F D68              BCT   R5,PIB              BR UNTIL FULL BUFFER.
001D78   58 80 F DD4              L     R8,DATAD            PICK UP START OF BUFFER ADDR.
001D7C   D2 00 F C50 8 007        MVC   GENDAT(1),7(R8)     MOVE THE 7TH CHAR FOR NXT CARD.
001D82   07 F4                    BCR   UNC,R4              RETURN.
001D84   D2 00 8 000 F DF8  LA52  MVC   0(1,R8),PARAM       MOVE CHARACTER TO PUNCH DATA AREA.
001D8A   D2 4E 8 001 8 000        MVC   1(79,R8),0(R8)      FILL BUFFER WITH SAME CHARACTER.
001D90   D2 0A F DF8 F DF9        MVC   PARAM(11),PARAM+1   SHIFT PARAMETERS OVER.
001D96   D2 00 F E03 8 000        MVC   PARAM+11(1),0(R8)   RESTORE 1ST PARAMETER TO LAST POS.
001D9C   07 F4                    BCR   UNC,R4              RETURN TO MAIN ROUTINE.
                  ********************************************************************
                  *       CCW AREA
                  ********************************************************************
001DA0   C2 001BA8 2000 0050 DGRD1 CCW   X'C2',RD1,X'20',80
001DA8   C2 001BF8 2000 0050 DGRD2 CCW   X'C2',RD2,X'20',80
001DB0   C6 001B08 2000 0050 CHRD1 CCW   X'C6',CRD1,X'20',80
001DB8   C6 001B58 2000 0050 CHRD2 CCW   X'C6',CRD2,X'20',80
001DC0   01 001A68 2000 0050 WRT1  CCW   X'01',PCH1,X'20',80
001DC8   01 001AB8 2000 0050 WRT2  CCW   X'01',PCH2,X'20',80
001DD0   0000001B            TW7   DC    F'27'
001DD4   00000000            DATAD DC    F'0'
001DD8                       TWENTY DS   20C
001DEC   5060F0F1F2F3F4F5F6  ROW   DC    X'5060F0F1F2F3F4F5F6F7F8F9'
001DF5   F7F8F9
001DF8   5060F0F1F2F3F4F5F6  PARAM DC    X'5060F0F1F2F3F4F5F6F7F8F9'
001E01   F7F8F9
001E04   FF8C                FIR   DC    AL2(EXP1-SECNO+REG)   EXP CSW ADDR.
001E06   FF9C                SEC   DC    AL2(EXP2-SECNO+REG)   EXP CSW ADDR.
001E08   C3F2                C2    DC    C'C2'
001E0A   C3F6                C6    DC    C'C6'
                  *                        ***************
                  *                        * HOLES TABLE *
                  *                        ***************
001E0C   B039018818418218    HOLES DC    X'B039018818418218'
001E14   1180980580390388          DC    X'1180980580390388'
001E1C   3843823813808807          DC    X'3843823813808807'
001E24   D035014814414214          DC    X'D035014814414214'
001E2C   1140940540350348          DC    X'1140940540350348'
001E34   3443423413408407          DC    X'3443423413408407'
001E3C   7033012812412212          DC    X'7033012812412212'
001E44   1120920520330328          DC    X'1120920520330328'
001E4C   3243223213208207          DC    X'3243223213208207'
001E54   F031010810410210          DC    X'F031010810410210'
001E5C   1100900500310308          DC    X'1100900500310308'
001E64   3043023013008007          DC    X'3043023013008007'
001E6C   000B01A81A41A21A          DC    X'000B01A81A41A21A'
001E74   11A09A05A0390288          DC    X'11A09A05A0390288'
001E7C   2842822812808A06          DC    X'2842822812808A06'
001E84   800D01C81C41C21C          DC    X'800D01C81C41C21C'
001E8C   11C09C05C0350248          DC    X'11C09C05C0350248'
001E94   2442422412408406          DC    X'2442422412408406'
001E9C   4003006816416216          DC    X'4003006816416216'
001EA4   1160960560330200          DC    X'1160960560330200'
001EAC   0242222212208206          DC    X'0242222212208206'
001EB4   E00F01E81E41E21E          DC    X'E00F01E81E41E21E'
001EBC   11E09E05E0310208          DC    X'11E09E05E0310208'
001EC4   2042022012008006          DC    X'2042022012008006'
001ECC   B02B00A80A40A20A          DC    X'B02B00A80A40A20A'
001ED4   10A08A04A02A01A8          DC    X'10A08A04A02A01A8'
001EDC   2A42A22A12A0AA06          DC    X'2A42A22A12A0AA06'
001EE4   D02D00C80C40C20C          DC    X'D02D00C80C40C20C'
001EEC   10C08C04C02C01C8          DC    X'10C08C04C02C01C8'
001EF4   2C42C22C12C0AC06          DC    X'2C42C22C12C0AC06'
001EFC   7027006806406206          DC    X'7027006806406206'
001F04   1060860460260168          DC    X'1060860460260168'
001F0C   2642622612608606          DC    X'2642622612608606'
001F14   F02F00E80E40E20E          DC    X'F02F00E80E40E20E'
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001F1C  10E08E04E02E01E8            DC    X'10E08E04E02E01E8'
001F24  2E42E22E12E0AE06            DC    X'2E42E22E12E0AE06'
001F2C  A009008808408208            DC    X'A009008808408208'
001F34  1080880480280 1A8           DC    X'1080880480280 1A8'
001F3C  3A43A23A13A0BA07            DC    X'3A43A23A13A0BA07'
001F44  6005004804404204            DC    X'6005004804404204'
001F4C  1040840440240 1C8           DC    X'1040840440240 1C8'
001F54  3C43C23C13C0BC07            DC    X'3C43C23C13C0BC07'
001F5C  2827012802402202            DC    X'2827012802402202'
001F64  1020820420220168            DC    X'1020820420220168'
001F6C  3643623613608607            DC    X'3643623613608607'
001F74  2001000800400200            DC    X'2001000800400200'
001F7C  1000800400200 1E8           DC    X'1000800400200 1E8'
001F84  3E43E23E13E0BE07            DC    X'3E43E23E13E0BE07'
                                    ********************************************************************************
                                    *     EXP CSW AREA
                                    ********************************************************************************
001F8C  00001DC8                    EXP1  DC    A(WRT1+8)
001F90  08000000                          DC    X'08000000'
001F94  00000000                          DC    XL4'0'
001F98  04000000                          DC    X'04000000'
001F9C  00001DD0                    EXP2  DC    A(WRT2+8)
001FA0  08000000                          DC    X'08000000'
001FA4  00000000                          DC    XL4'0'
001FA8  04000000                          DC    X'04000000'
                                    ********************************************************************************
                                    *     MESSAGES
                                    ********************************************************************************
001FAC  40C4C9C1C740C3D4C4          DCA   DC    C' DIAG CMD '
001FB5  40
001FB6  C3F640C6C1C9D3C5C4          XX    DC    C'C6 FAILED'
001FBF  40C4D640D5D6D7D9D6          RCFP  DC    C' DO NOPRO,EMPTY '
001FC8  6BC5D4D7E3E840
001FCF  D7C3C840E2E3D2D9E2                DC    C'PCH STKRS'
                                    ********************************************************************************
                                    *     EQUATES
                                    ********************************************************************************
                        000000      NEVER EQU   0
                        000007      NCCO  EQU   7
                        00000F      UNC   EQU   15
                        000008      NONE  EQU   8
                        000004      SOME  EQU   4
                        000001      ALL   EQU   1
                        000005      ANY   EQU   5
                        000008      CCO   EQU   8
                        000004      CC1   EQU   4
                        000002      CC2   EQU   2
                        000001      CC3   EQU   1
                        00000A      CCO2  EQU   10
                        000006      CC12  EQU   6
                        000008      EQ    EQU   8
                        000004      LO    EQU   4
                        000002      HI    EQU   2
                        000006      UNEQ  EQU   6
                        00000C      EQLO  EQU   12
                        00000A      EQHI  EQU   10
                        000080      LOGOUT EQU  X'80'
                        000181      SYSMOD EQU  X'181'
                        00F000      REG   EQU   X'F000'
                        00005A      WHAT  EQU   90
                        001A00      WORK  EQU   GOODY
                        000000      R0    EQU   0
                        000001      R1    EQU   1
                        000002      R2    EQU   2
                        000003      R3    EQU   3
                        000004      R4    EQU   4
                        000005      R5    EQU   5
                        000006      R6    EQU   6
```



```
                        000007      R7    EQU   7
                        000008      R8    EQU   8
                        000009      R9    EQU   9
                        00000A      R10   EQU   10
                        00000B      R11   EQU   11
                        00000C      R12   EQU   12
                        00000D      R13   EQU   13
                        00000E      R14   EQU   14
                        00000F      R15   EQU   15
                        000198      WT    EQU   408
                        000040      HCSW  EQU   64
                        000048      HCAW  EQU   72
                        0001A0      DMSSW EQU   X'01A0'
                        0001B9      DMIOL EQU   X'01B9'
                        0001BC      DMPTR EQU   X'01BC'
                                    END   ROUT01
```

2540 PUNCH FUNCTION TESTS - SECTION 3 F822

POST ASSEMBLY DATA.

REFERENCES TO DEFINED SYMBOLS.

2	1E08	C2	176C
2	1E0A	C6	16D4
1	8	EQ	129C, 137E
1	2	HI	1D5C
1	4	LO	
1	0	R0	10F2, 15B2, 1748, 1824, 1830, 183E, 184C
1	1	R1	1580, 15D8, 1614, 17EA, 17EA, 17F8, 17FC
			17FE, 1802, 1806, 1814, 1818, 182C, 1830
1	2	R2	15DE, 15FC, 15FC, 160C, 17C4, 17EC, 17EC
			17FA, 180E, 1828, 1836
1	3	R3	1560, 1574, 15B8, 15CC, 15E2, 1600, 1600
			17BE, 17EE, 17EE, 17F4, 17F8, 17FC, 17FE
			1806, 180A, 180E, 1820, 1828, 1842
1	4	R4	1564, 1578, 15BC, 15D0, 15EC, 15F4, 1604
			1604, 16FC, 170C, 171C, 172C, 173C, 1748
			17C4, 17C6, 17F0, 17FA, 181C, 1836, 183A
			184C, 1CBA, 1D82, 1D9C
1	5	R5	15A0, 1D38, 1D64, 1D74
1	6	R6	1CA8, 1CFC, 1D58
1	7	R7	1146, 1152, 1156, 127A, 12B4, 130C, 1568
			157C, 15C0, 15D4, 15E2, 1608, 1608, 1684
			1692, 169C, 17D4, 1D60, 1D68, 1D6C, 1D6C
1	8	R8	1276, 12A4, 12B0, 12FC, 1308, 1330, 134E
			1352, 1370, 1370, 1374, 13BA, 13BE, 1468
			146C, 1470, 1470, 1474, 1548, 15DC, 166C
			1D44, 1D50, 1D54, 1D68, 1D70, 1D70, 1D78
			1D7C, 1D84, 1D8A, 1D8A, 1D96
1	9	R9	10F2, 112E, 1132, 113E, 11BA, 118E, 11CA
			1220, 140E, 143C, 147E, 1496, 14AE, 14C6
			15B2, 1664, 1668, 1680
4	16F0	TF	16C0
1	198	WT	112E, 11BA, 1664
9	1FB6	XX	16D4, 176C
1	1	ALL	1106, 114E, 11B2, 11EA, 1242, 1262, 1282
			12AC, 12E8, 12F4, 1304, 131C, 1392, 13DA
			1570, 15A0, 161E, 1626, 163A, 1642, 1698
			16C0, 16D0, 16EC, 1768, 1784, 1798, 1C8C
			1CEE
1	5	ANY	1598, 15F0, 15F8, 16C8, 1760, 1810
4	1CDE	BAL	1CD0
16	19B7	BIG	17AC, 17B2
4	178C	C1A	1758, 1784
4	1780	C2A	1750
4	1048	CAW	
1	8	CC0	113A, 1178
1	4	CC1	117C, 167C
1	2	CC2	1180
1	1	CC3	
4	16E8	CMI	16B2
4	1CFC	COP	1D2A
8	1040	CSW	
4	1580	CTD	1570
10	1FAC	DCA	16DE, 1776
2	1E04	FIR	1CC6
8	1985	HD1	17A0
4	1528	ICD	14F8
2	100A	ICM	
4	1764	IFM	1790
4	112E	IHI	111A, 1122
2	10E8	ISW	115E, 115E, 1164, 119E, 11AA, 11B6, 11C2
			11D2, 11E2, 11E6, 11F4, 1224, 1232, 123E

2540 PUNCH FUNCTION TESTS - SECTION 3 F822

			1246, 1256, 1266, 1286, 128E, 1292, 12A0
			12B8, 12CC, 12E4, 12F0, 1310, 1324, 1346
			1368, 1382, 138E, 1482, 14B2, 14D0, 1528
			1530, 1538, 159C, 1622, 162A, 163E, 1646
			168E, 1C88, 1D34, 1D3C
4	15AE	IUP	15A6
4	1D54	LA5	1D4C
13	1A32	MDR	1652, 165E, 1C9A
4	1738	NAC	1730
4	1728	NBP	1720
4	1748	NTC	16D0, 16E4, 1740
4	1718	NXL	1710
4	183E	NXT	1832
4	1708	NXU	1700
4	1A5C	PCH	1C84, 1CBE, 1D04
4	1D68	PIB	1D74
4	1828	PIK	1842
1	A	R10	110A, 13EC, 1408, 1412, 141A, 141A, 1590
			1CC2, 1CD4, 1D00
1	B	R11	10EC, 11AE, 1236, 124E, 1296, 1334, 133E
			134E, 1360, 13A6, 13BE, 13C0, 13D2, 13D2
			13D6, 143E, 145A, 1468, 149A, 14CA, 15A2
			15AA, 15AA, 15AE, 15AE, 15B6, 1CDE, 1D12
1	C	R12	1116, 1126, 1136, 1174, 11DA, 1656, 1670
			1678, 1C7C, 1C80, 1C84, 1C9E, 1CBE, 1D04
1	D	R13	10F6, 10F6, 110A, 1156, 1198, 1590, 166C
			1686, 1C70, 1C70, 1C7A
1	E	R14	10FC, 10FC, 112E, 11BA, 14F4, 14FC, 1664
			1C72
1	F	R15	11EE, 11FC, 122C, 1C7A
1	1BA8	RD1	1568, 15C0, 1DA0
1	1BF8	RD2	157C, 15D4, 1DA8
1	F000	REG	120E, 13B8, 13D0, 13EA, 13FC, 143A, 1448
			144E, 14E4, 14F2, 1526, 1588, 158E, 1652
			165E, 16DE, 1776, 17A0, 17A6, 17AC, 17B2
			17B8, 184A, 1C94, 1C9A, 1CA6, 1CE8, 1D1C
			1D32, 1E04, 1E06
12	1DEC	ROW	1CB4
2	164E	RRM	1282
4	12D4	SB2	12C4
2	1E06	SEC	1CD8
4	12DC	TO5	131C
4	1DD0	TW7	1D58
4	15F4	TXS	161E, 162E
1	F	UNC	112A, 1142, 115A, 1188, 1190, 11A2, 11D6
			11F8, 1228, 124A, 12D0, 12D8, 12E0, 12EC
			12F8, 141E, 143C, 1534, 15B6, 15DC, 1614
			162E, 164A, 1660, 1684, 1692, 169C, 16E4
			177C, 1788, 1850, 1D2A, 1D40, 1D82, 1D9C
4	15FC	UPD	163A, 164A, 1850
4	1A60	ATE1	160C
4	1328	BTCD	1314
4	16C4	C1CR	16EC
1	A	CC02	
1	6	CC12	
6	15E2	CODA	1610
6	10F6	CONP	1660, 1698
4	16F8	COPT	16C8
4	1794	CPRT	1760
1	1B08	CRD1	1578, 15BC, 1DB0
1	1B58	CRD2	1564, 15D0, 1DB8
1	1C4D	CRSW	1168, 16CC, 16E0, 1764, 1778
8	1898	DBWD	17C6, 17CA, 17D4, 17DE, 1818, 182C
1	A	EQHI	
1	C	EQLO	
4	1F8C	EXP1	1CE8, 1E04
4	1F9C	EXP2	1D1C, 1E06
2	1D1E	EXTP	

4	1136	GREG	113E
1	48	HCAW	110A, 1156, 1590, 166C
1	40	HCSW	10F6, 10F6, 1198, 11EE, 11FC, 122C, 1686
9	198D	HD1A	16A8, 16B6, 17A6
1	1C4C	HDSW	116C, 154C, 1794, 17BA
16	1C51	HUNG	1D32
3	18FF	IACT	121A, 148A, 14BA
4	1538	IBCD	152C
6	1334	IBSN	132C
12	18D3	ICAW	13EC, 13F4, 13F6, 13FC
3	18E2	ICCW	13FE
4	15DE	ICDT	1580, 15D8
1	1439	ICNT	1216, 1404, 1456
3	18DF	ICSW	1210, 1450
4	1482	IDID	149E
3	1902	IEXP	1462, 14A2
4	12A4	IFUR	125A, 126A, 1272, 128A, 129C
4	169E	IGOP	1626, 1642
2	1C70	INIT	
4	11AA	INOW	1188, 1190, 11A2
4	1236	INT3	11F8
4	1194	IONE	117C
6	14CA	IPAS	14B6
6	178E	IPDA	1798
4	12FC	ISCR	128C, 12D0
4	124E	ISEN	11B2, 11D6, 123A, 1242
6	10EC	ISIO	1CDE, 1D12
6	122C	ISV2	11EA
4	1680	ITIC	168A
4	118C	ITWO	1180
6	11FC	IUIO	11DE
6	115E	JOHN	1112
6	1D84	LA52	1D5C
1	1A42	MSK1	11C6
1	1A43	MSK2	11CE
1	7	NCCO	111A, 1674
1	100D	NIOU	
1	8	NONE	1112, 1122, 123A, 1252, 125A, 126A, 1272
			128A, 128C, 12C4, 1314, 132C, 1342, 134A
			1364, 136C, 139A, 1416, 145E, 1486, 149E
			14B6, 14D4, 152C, 1540, 1558, 15A6, 15C8
			168A, 16B2, 16F4, 1700, 1710, 1720, 1730
			1740, 1750, 1758, 1790, 1832, 1C76, 1CD0
			1D4C
2	1CE8	ORIG	1CC6, 1CD8
1	1A68	PCH1	1560, 1588, 1D44, 1DC0
1	1A88	PCH2	1574, 15CC, 1D08, 1D0C, 1D0C, 1D50, 1DC8
11	19A1	PRES	1686
2	1846	PRGD	
4	1CBA	PSIO	1CFC
16	1F8F	RCFP	1C94, 1CA6
4	1324	RRS1	12E0
4	12CC	RRS2	12D8
4	184C	RSRG	1768, 177C
1	100C	SDMF	
4	1554	SIPP	1540
4	1004	SNSW	1102, 110E, 111E, 1396, 1594
1	4	SOME	
3	105D	SRET	
4	1156	STCD	114E
11	19AC	STK1	16A8
4	15D8	SU1P	15C8
4	15B8	SUCP	1330, 1548
6	1D20	SUFA	1CEE
4	1146	SULP	1106
4	16CC	TPNC	16F4
4	175C	TSRD	1788
1	10E1	U1OP	

1	10E5	U2OP	
1	6	UNEQ	11DE, 133A, 135C, 14F8, 15E8, 1610
1	5A	WHAT	
16	1A00	WORK	11FC, 1408, 1426, 1428, 142A, 1430, 1478
			1478, 1490, 14A8, 14A8, 14C0, 14FC, 1506
			1508, 150A, 1510, 1516, 151C
8	1DC0	WRT1	1146, 1CC2, 1F8C
8	1DC8	WRT2	1152, 1CD4, 1D00, 1F9C
4	1C88	BLOOP	1D40
8	1DB0	CHRD1	12B0
8	1DB8	CHRD2	12A4
4	1DD4	DATAD	1D54, 1D78
2	10EA	DATSW	12C8, 12D4, 12DC, 1320, 153C, 1544, 1550
			1554, 155C, 1616, 161A, 1632, 1636, 16AE
			16C4, 16F0, 174C, 175C, 178C, 1CF6, 1D20
8	1DA0	DGRD1	1308
8	1DA8	DGRD2	12FC
1	1B9	DMIOL	
1	1BC	DMPTR	
1	1A0	DMSSW	
4	1632	ERPRE	15F8
4	1616	ERPRS	15E8, 15F0
1	100E	FLAG1	
1	100F	FLAG2	
16	1A00	GOODY	169E, 16A2, 16A2, 16F8, 1704, 1708, 1714
			1718, 1724, 1728, 1734, 1738, 1744, 17CA
			17D0, 17E0, 17E8, 1836, 184A, 1FD8
8	1E0C	HOLES	17FE, 1806
4	1694	IBACK	1674
16	18E5	IBLAH	1210, 121A, 13FE, 142A, 1430, 143A, 1450
			1462, 148A, 14A2, 14BA
2	1422	ICOUT	1220, 140E, 147E, 1496, 14AE, 14C6
8	1888	ICSW1	1198, 11EE, 125E, 1356, 1356, 1490
8	1890	ICSW2	122C, 126E, 1378, 1378, 14C0
4	1482	IDIDI	145E
4	1116	IHANG	112A, 115A
16	18C3	ILINK	13C0, 13C8, 13CA, 13D0, 158E
4	1686	ILOKE	167C
4	1102	ILOOP	113A, 1142, 1598
4	1D44	INDAT	1CBA
4	1382	INDER	12E8, 12F4, 133A, 134A, 135C, 136C
5	1010	INPSW	
3	1A3F	IOADR	13E2
6	1450	IOCSW	13DA
16	191B	IOLOG	150A, 1510, 1516, 151C, 1526
16	1940	IOPT1	1588
4	14F4	IPASS	14D4
4	1860	ISAVE	10F2, 15B2
4	1174	ISSUE	1A3F
4	1664	ISTRT	127A, 12B4, 130C
16	1A44	IUNEX	1208, 120E
4	11BA	IWAIT	124A, 1534
4	11A6	IZERO	1178
1	1C4E	KEYSW	114A, 12A8, 12C0, 1300, 1318, 156C, 15C4
			16BC, 16E8, 1754, 1780, 1CAC, 1CCC, 1CEA
			1CF2, 1D26, 1D48
4	1A64	MOD50	1C80
1	0	NEVER	
12	1DF8	PARAM	1CB4, 1D84, 1D90, 1D90, 1D96
4	1000	SECNO	1206, 1208, 120E, 13B0, 13B2, 13B8, 13C8
			13CA, 13D0, 13E2, 13E4, 13EA, 13F4, 13F6
			13FC, 1426, 1428, 143A, 1448, 144E, 14DC
			14DE, 14E4, 14EA, 14EC, 14F2, 1506, 1508
			1526, 1588, 158E, 1652, 165E, 16DE, 1776
			17A0, 17A6, 17AC, 17B2, 17B8, 17DE, 17E0
			17E6, 17E8, 184A, 1C94, 1C9A, 1CA6, 1CE8
			1D1C, 1D32, 1E04, 1E06
1	10E0	UNIT1	1C7C

2540 PUNCH FUNCTION TESTS - SECTION 3 F822

```
  1   10E4  UNIT2
 16   1909 BEAUTY    17B8
  5   1058 EXNPSW
  8   1018 EXOPSW
  1   1C50 GENDAT    1CB0,   1D60,   1D7C
  2   1D2E HANGUP    1C8C
 11   1910 IACSNS    1170,   127E,   1296,   1328,   14EA,   14EC,   14F2
                     1694,   1858
 10   18AA IACTCC    1184,   118C,   1194,   11A6,   1334,   144E
  4   130C IASIO1    1304
  4   12B4 IASIO2    12AC
  6   143E ICCOUT    1416
  6   1356 ICCSW1    1352
  6   1378 ICCSW2    1374
  6   1478 ICHNG1    146C
  6   14A8 ICHNG2    1474
  1   1C4F ICODAT    17BE,   17E6,   17F4
  6   1408 ICWOUT    141E
  4   1276 IDOSNS    1252,   1262,   1D38
  4   1386 IDUNCK    12EC,   12F8,   137E
 10   18A0 IEXPCC    143E,   1448
 11   1905 IEXSNS    14CA,   14DC,   14DE,   14E4
  1   1386 IFLAG1    1386,   139E
  1   1586 IFLAG2    138A,   13A2
  4   15A2 ILEAVE    139A
  6   14FC ILOGED    1228
  4   149A IMORST    1486
  4   12E4 INDEX1    1342
  4   12F0 INDEX2    1364
 15   18B4 IOADDR    13E4,   13EA
  4   1078 IONPSW
  8   1038 IOOPSW    11DA,   1206
  2   1584 IOPOUT    1558
  6   13A6 IOUTIT    1392
  4   11DA IRETRN    107C
  8   1858 ISENSE    1276
  4   1678 ITIOLP    1680
  9   1937 ITSTNO    10EC,   13A6,   13B0,   13B2,   13B8
  1     80 LOGOUT    10FC,   10FC,   14FC
  8   1070 MCNPSW
  8   1030 MCOPSW
  4   1C7C NITWIT    1C76
  8   1068 PGNPSW
  8   1028 PGOPSW
 12   1A26 PUNCHS    1828
  2   1C48 RESET1    1D20
  2   1C4A RESET2    1CF6
  1   1C6C ROUT01    1015,   1FD8
  8   1060 SVNPSW
  8   1020 SVOPSW
  1    181 SYSMOD    14F4
  1   1DD8 TWENTY    1748,   184C
  2   10E2 U1ADDR
  2   10E6 U2ADDR
  1   1000 XF8220
```

NO ERROR DETECTED IN ABOVE ASSEMBLY

2540 PUNCH FUNCTION TESTS - SECTION 3 F822
2540 PUNCH OVERLAY SECTION

```
                             8220   TITLE   2540 PUNCH OVERLAY SECTION
                             ************************************************************************
                             XF8220 START 4096
                   001000           USING *,15
                             ************************************************************************
                             *******************                                  *******************
                             * SECTION PREFACE ********************************** SECTION PREFACE *
                             *******************                                  *******************
001000                       SECNO  DS     F
001004                       SNSW   DS     F
                   001015           ORG    SECNO+21              ORIGIN INITIAL PSW ADDRESS.
001015   001B10                     DC     AL3(ROUT02)           ADDR OF ROUTINE PREFIX.
                   001038           ORG    SECNO+56
001038                       IOOPSW DS     F
                   00107C           ORG    SECNO+124
00107C   000011DE                   DC     AL4(IRETRN)           I-O RETURN ADDRESS.
                   0010E0           ORG    SECNO+224             ORIGIN AFTER SECTION PREFACE.
0010E0                       UNIT1  DS     F
0010E4                       UNIT2  DS     F
                             ************************************************************************
                             *      OPTIONAL FEATURE BYTE DEFINITION
                             ************************************************************************
                             *  * BIT 0 * BIT 1 * BIT 2 * BIT 3 * BIT 4 * BIT 5 * BIT 6 * BIT 7 *
                             *  * HEX 8 * HEX 4 * HEX 2 * HEX 1 * HEX 8 * HEX 4 * HEX 2 * HEX 1 *
                             *  * ASCII * CARD  *       *  51   * 1400  *       *       * 2821  *
                             *  *       * IMAGE *       * COL RD* COMP  *       *       * 2 CHN *
                             *  *       *       *       *       *       *       *       *  SW.  *
                             ************************************************************************
                             *                     2540 READER SENSE BYTE
                             ************************************************************************
                             *      BIT   MEANING
                             *       0    COMMAND REJECT
                             *       1    INTERVENTION REQUIRED
                             *       2    BUS OUT CHECK
                             *       3    EQUIPMENT CHECK
                             *       4    DATA CHECK - VALIDITY CHECK - INVALID CARD CODE
                             *       5    OVERRUN - NOT USED
                             *       6    UNUSUAL COMMAND SEQUENCE-2 READS WITHOUT INTERVENING FEED
                             *       7    NOT USED
                             ************************************************************************
                             *                 2540 READER STATUS BYTE
                             ************************************************************************
                             *      BIT   MEANING
                             *       0    ATTENTION - 1400 COMPATIBILITY FEATURE ONLY - INDICATES
                             *                        SENSE WAS ISSUED BEFORE 6 MS TIME OUT AFTER
                             *                        A 1400 COMPATIBILITY READ.
                             *       1    STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
                             *       2    CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
                             *       3    DEVICE BUSY
                             *       4    CHANNEL END
                             *       5    DEVICE END
                             *       6    UNIT CHECK
                             *       7    UNIT EXCEPTION - LAST CARD PREVIOUSLY READ, AND END OF
                             *                             FILE WAS ON.
                             ************************************************************************
                             *           2540 READER DIAGNOSTIC CHECK READ BYTE DEFINITION
                             ************************************************************************
                             *      BIT   MEANING
                             *       0    NOT USED
                             *       1    NOT USED
                             *       2    NOT USED
                             *       3    XU CHECK PLANE
                             *       4    XL CHECK PLANE
                             *       5    BUFFER PARITY CHECK
                             *       6    READ TRANSLATE CHECK
                             *       7    READER BUFFER ADDRESS CHECK
```

```
*****************************************************************************
*****************************************************************************
*****************************************************************************
*                        PARAMETERS USED TO ENTER
*                        THE I-O HANDLER ROUTINE
*****************************************************************************
*       BAL   R11,ISIO                LINK TO I-O HANDLER
*       DC    XL2'0000'               CONTROL SWITCHES
*       DC    X'0014'                 TEST NO. IN DEC EXPRESSED IN HEX
*       DC    X'F0'                   EXPECTED COND. CODE
*       DC    X'00'                   EXPECTED SENSE DATA
*       DC    AL2(ADR-BASE+REG)       ADDR. OF EXPECTED CSW IF NEEDED
*****************************************************************************
*****************************************************************************
*                        I-O HANDLER CONTROL SWITCHES
*                        2 BYTE PARAMETER FOLLOWING BAL
*****************************************************************************
* SWITCH      DESCRIPTION
*   0  ----   OFF - ISSUE AN I-O COMMAND
*             ON  - DO NOT ISSUE AN I-O COMMAND
*   1  ----   OFF - ENABLE
*             ON  - DO NOT ENABLE
*   2  ----   OFF - EXPECT NO INTERRUPT
*             ON  - EXPECT AN INTERRUPT
*   3  ----   OFF - DO NOT EXPECT 2 INTERRUPTS
*             ON  - EXPECT 2 INTERRUPTS
*   4  ----   OFF - EXPECT NO CSWS
*             ON  - EXPECT A CSW
*   5  ----   OFF - DO NOT EXPECT 2 CSWS
*             ON  - EXPECT 2 CSWS
*   6  ----   OFF - ALWAYS TRY TO ISSUE SENSE
*             ON  - SENSE ON UNIT CHECK ONLY
*   8  ----   OFF - DO NOT ISSUE 2 DIAGNOSTIC CHECK READ START I-O CMDS
*             ON  - ALWAYS ISSUE 2 DIAGNOSTIC CHECK READ COMMANDS
*
*****************************************************************************
*****************************************************************************
*                        SWITCHES USED BY I-O HANDLER
*****************************************************************************
* SWITCH      DESCRIPTION
*   0  ----   OFF - NO HANGUP ON INTERFACE
*             ON  - HANGUP OCCURRED
*   1  ----   OFF - NO CSWS STORED
*             ON  - ONE CSW STORED
*   2  ----   OFF - SECOND CSW NOT RECEIVED
*             ON  - SECOND CSW RECEIVED
*   3  ----   OFF - DID NOT ENABLE
*             ON  - ENABLED ONCE
*   4  ----   OFF - DID NOT ENABLE TWICE
*             ON  - ENABLED TWICE
*   5  ----   OFF - NO SENSE DATA RECEIVED
*             ON  - SENSE DATA RECEIVED
*   6  ----   OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*             ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*   7  ----   OFF - NO ERROR DETECTED
*             ON  - AN ERROR WAS DETECTED
*****************************************************************************
*                        REGISTERS USED IN I-O HANDLER
*****************************************************************************
*      REG          COMMENTS
*       5    USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
*            PREVIOUS HANGUP ON INTERFACE DETECTED.
*
*       8    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       9    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       10   MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
*
*       11   MUST BE USED AS LINK REG TO THIS ROUTINE
*
*       12   MUST CONTAIN DEVICE ADDRESS
*
*****************************************************************************
0010E8   0000                 ISW    DC    XL2'0'
*****************************************************************************
*****************************************************************************
*                              * I-O HANDLER SUB-ROUTINE *
*****************************************************************************
0010EA   D2 01 F 854 B 002    ISIO   MVC   ITSTNO+5(2),2(R11)   SAVE TEST NUMBER
0010F0   90 09 F 760                 STM   R0,R9,ISAVE          SAVE WORK REGISTERS.
0010F4   D2 00 F 961 F 003           MVC   RTSV(1),SECNO+3      SAVE RT NO. FOR HANGUP.
0010FA   50 AD 0 048          CONP   ST    R10,HCAW(R13)       STORE CMD ADDRESS.
0010FE   D7 07 D 040 D 040           XC    HCSW(8,R13),HCSW(R13)
001104   D7 0B E 080 E 080           XC    LOGOUT(12,R14),LOGOUT(R14)
00110A   91 80 B 000                 TM    0(R11),X'80'        CHECK CONTROL SWITCH FOR NO I-O
00110E   47 10 F 1AE                 BC    ALL,INOW            BR. IF ON
001112   91 C0 F 004                 TM    SNSW,X'C0'
001116   47 80 F 15E                 BC    NONE,JOHN
*****************************************************************************
*                              SENSE SWITCH LOOPS
*****************************************************************************
00111A   91 80 F 004          ITRY1  TM    SNSW,X'80'          CHECK SECTION SENSE SWITCH 0
00111E   47 80 F 12A                 BC    NONE,ITRY2          BR. IF OFF
001122   9C 00 C 000          ILOOP  SIO   0(R12)              START I-O
001126   47 F0 F 11A                 BC    UNC,ITRY1           BR. UNCONDITIONAL
00112A   91 40 F 004          ITRY2  TM    SNSW,X'40'          CHECK SECTION SENSE SWITCH 1
00112E   47 80 F 14A                 BC    NONE,IHI            BR. IF OFF
001132   9D 00 C 000          IHANG  TIO   0(R12)              TEST I-O
001136   47 70 F 11A                 BC    NCC0,ITRY1          BR. IF NOT COND. CODE 0
00113A   91 40 F 004                 TM    SNSW,X'40'          CHECK SECTION SENSE SWITCH 1
00113E   47 80 F 14A                 BC    NONE,IHI            BR. IF OFF
001142   9C 00 C 000                 SIO   0(R12)              START I-O
001146   47 F0 F 132                 BC    UNC,IHANG           BR. UNCONDITIONAL
00114A   58 9E 0 198          IHI    L     R9,WT(R14)          PICK UP DM WAIT FACTOR.
00114E   88 90 0 003                 SRL   R9,3                CUT IT DOWN TO 1.25 SECS.
001152   9D 00 C 000          GREG   TIO   0(R12)              TEST I-O TO DEVICE.
001156   47 80 F 15E                 BC    CC0,JOHN            BR IF AVAILABLE.
00115A   46 90 F 152                 BCT   R9,GREG             LOOP UNTIL TIME OUT.
*****************************************************************************
*       EXECUTE START I-O HERE
*****************************************************************************
00115E   D7 01 F 0E8 F 0E8    JOHN   XC    ISW(2),ISW          ZERO THE I-O HANDLER SWITCHES.
001164   96 80 F 0E8                 OI    ISW,X'80'           TURN ON THE HANG SWITCH.
001168   94 00 F AF3                 NI    CRSW,X'00'          ZERO DIAG MSG SW.
00116C   94 00 F AF1                 NI    HDSW,X'00'          ZERO THE HEADING SWITCH.
001170   92 E7 F 82D                 MVI   IACSNS+5,C'X'       MOVE AN X INTO THE ACTUAL SENSE DATA
001174   92 E7 F 7C7                 MVI   IACTCC+5,C'X'       MOVE IN A -X-
001178   9C 00 C 000          ISSUE  SIO   0(R12)              START I-O COMMAND.
00117C   47 80 F 1AA                 BC    CC0,IZERO           BR. IF COND. CODE 0
001180   47 40 F 198                 BC    CC1,IONE            BR. IF COND. CODE 1
001184   47 20 F 190                 BC    CC2,ITWO            BR. IF COND. CODE 2
001188   92 F3 F 7C7                 MVI   IACTCC+5,X'F3'      INDICATE COND. CODE 3
00118C   47 F0 F 1AE                 BC    UNC,INOW            BR. UNCONDITIONAL
001190   92 F2 F 7C7          ITWO   MVI   IACTCC+5,X'F2'      INDICATE COND. CODE 2
001194   47 F0 F 1AE                 BC    UNC,INOW            BR. UNCONDITIONAL
001198   92 F1 F 7C7          IONE   MVI   IACTCC+5,X'F1'      INDICATE COND. CODE 1
00119C   D2 07 F 788 D 040           MVC   ICSW1(8),HCSW(R13)  SAVE CSW
0011A2   96 40 F 0E8                 OI    ISW,X'40'           INDICATE 1 CSW
0011A6   47 F0 F 1AE                 BC    UNC,INOW            BR. UNCONDITIONAL
0011AA   92 F0 F 7C7          IZERO  MVI   IACTCC+5,X'F0'      INDICATE COND. CODE 0
0011AE   94 7F F 0E8          INOW   NI    ISW,X'7F'           TURN OFF HANG UP SWITCH
0011B2   91 40 B 000                 TM    0(R11),X'40'        CHECK CONTROL SWITCH FOR NO ENABLE
0011B6   47 10 F 252                 BC    ALL,ISEN            BR. IF ON
0011BA   96 10 F 0E8                 OI    ISW,X'10'           INDICATE ENABLED ONCE
0011BE   58 9E 0 198          IWAIT  L     R9,WT(R14)          LOAD DM WAIT FACTOR
```

2540 PUNCH FUNCTION TESTS - SECTION 3 F822
2540 PUNCH OVERLAY SECTION

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0011C2   88 90 0 003                  SRL   R9,3                 ADJUST
0011C6   96 80 F 0E8                  OI    ISW,X'80'            TURN ON HANG UP SW
0011CA   80 00 F 95F                  SSM   MSK1                 ENABLE
0011CE   46 90 F 1CE                  BCT   R9,*                 WAIT
0011D2   80 00 F 960                  SSM   MSK2                 DISABLE
0011D6   94 7F F 0E8                  NI    ISW,X'7F'            TURN OFF HANG SW
0011DA   47 F0 F 252                  BC    UNC,ISEN             BR. UNCONDITIONAL
                         ****************************************************************
                         *                  ALL I-O INTERRUPTS RETURN HERE
                         ****************************************************************
0011DE   49 C0 F 03A           IRETRN CH    R12,IOOPSW+2         COMPARE FOR CURRENT I-O ADDRESS
0011E2   47 60 F 200                  BC    UNEQ,IUIO            BR. IF UNEQUAL
0011E6   94 7F F 0E8                  NI    ISW,X'7F'            RESET HANG UP SW
0011EA   91 40 F 0E8                  TM    ISW,X'40'
0011EE   47 10 F 230                  BC    ALL,ISV2             BR. IF 1 CSW ALREADY STORED
0011F2   D2 07 F 788 F 040            MVC   ICSW1(8),HCSW(R15)   SAVE CSW 1
0011F8   96 40 F 0E8                  OI    ISW,X'40'            INDICATE 1 CSW STORED
0011FC   47 F0 F 23A                  BC    UNC,INT3             BR. UNCONDITIONAL
001200   D2 07 F 7A0 F 040     IUIO   MVC   WORK(8),HCSW(R15)
001206   0A DD                        SVC   X'DD'                CONVERT ADDRESS
001208   0002                         DC    AL2(2)               2 BYTES OF I-O OLD PSW.
00120A   003A                         DC    AL2(IOOPSW+2-SECNO)  FROM HERE.
00120C   0973                         DC    AL2(IUNEX+17-SECNO)  TO HERE
00120E   0A D0                        SVC   X'D0'                PRINT UNEXPECTED INTERRUPT DEVICE
001210   64                           DC    X'64'                ADDRESS
001211   15                           DC    X'15'
001212   F962                         DC    AL2(IUNEX-SECNO+REG)
001214   D2 02 F 7FE F 7F7            MVC   IBLAH+1(3),ICSW      MOVE -CSW- TO MESSAGE
00121A   92 1A F 429                  MVI   ICNT,X'1A'           ADJUST COUNT
00121E   D2 02 F 814 F 817            MVC   IBLAH+23(3),IACT     MOVE -ACT- TO MESSAGE
001224   45 90 F 412                  BAL   R9,ICOUT             BR. TO OUTPUT CSW
001228   96 02 F 0E8                  OI    ISW,X'02'            INDICATE UIO
00122C   47 F0 F 4EC                  BC    UNC,ILOGED           BR. UNCONDITIONAL
001230   D2 07 F 790 F 040     ISV2   MVC   ICSW2(8),HCSW(R15)   SAVE CSW 2
001236   96 20 F 0E8                  OI    ISW,X'20'            INDICATE 2 CSWS STORED
00123A   91 10 B 000           INT3   TM    0(R11),X'10'         CHECK CTRL SW FOR 2 INTR EXPECTED
00123E   47 80 F 252                  BC    NONE,ISEN            BR. IF NOT
001242   91 08 F 0E8                  TM    ISW,X'08'
001246   47 10 F 252                  BC    ALL,ISEN             BR. IF ALREADY ENABLED TWICE
00124A   96 08 F 0E8                  OI    ISW,X'08'            INDICATE ENABLED TWICE
00124E   47 F0 F 1BE                  BC    UNC,IWAIT
001252   91 02 B 000           ISEN   TM    0(R11),X'02'         CHECK CONTROL SWITCH FOR SNS ON UC
001256   47 80 F 27A                  BC    NONE,IDOSNS          BR. IF OFF TO ISSUE SENSE
00125A   91 40 F 0E8                  TM    ISW,X'40'            SEE IF 1ST CSW IN.
00125E   47 80 F 30C                  BC    NONE,IBSN            BR IF NONE.
001262   91 02 F 78C                  TM    ICSW1+4,X'02'        CHECK FOR UNIT CHECK
001266   47 10 F 27A                  BC    ALL,IDOSNS           IF YES BR. TO ISSUE SENSE
00126A   91 20 F 0E8                  TM    ISW,X'20'            CHECK FOR SECOND CSW
00126E   47 80 F 30C                  BC    NONE,IBSN            BR IF NONE.
001272   91 02 F 794                  TM    ICSW2+4,X'02'        CHECK FOR UNIT CHECK
001276   47 80 F 30C                  BC    NONE,IBSN            BR IF NONE.
00127A   41 80 F 750           IDOSNS LA    R8,ISENSE            LOAD SENSE COMMAND ADDR.
00127E   45 70 F 5DC                  BAL   R7,ISTRT             BR TO AUX START I-O.
001282   91 80 F 0E9                  TM    ISW+1,X'80'          CHK FOR DATA RECEIVED
001286   47 80 F 2A0                  BC    NONE,IFUR            BR IF NOT.
00128A   96 04 F 0E8                  OI    ISW,X'04'            INDICATE SENSE RECIEVED
00128E   94 7F F 0E9                  NI    ISW+1,X'7F'          TURN OFF DATA RECEIVED.
001292   D5 00 F 82D B 005            CLC   IACSNS+5(1),5(R11)   COMPARE FOR EXPECTED SENSE
001298   47 80 F 2A0                  BC    EQ,IFUR              BR IF EQUAL.
00129C   96 01 F 0E8                  OI    ISW,X'01'            INDICATE AN ERROR.
0012A0   91 80 F 0E8           IFUR   TM    ISW,X'80'            SEE IF HANG UP CONDITION.
0012A4   47 10 F 30C                  BC    ALL,IBSN             BR IF YES.
0012A8   91 80 B 001                  TM    1(R11),X'80'         SEE IF DIAGNOSTIC CHK RD WANTED.
0012AC   47 80 F 30C                  BC    NONE,IBSN            BR IF NOT.
0012B0   41 80 F 758                  LA    R8,DCRD              PUT ADDR. OF CHK RD INTO 8.
0012B4   45 70 F 5DC                  BAL   R7,ISTRT             BR TO AUX, START I-O.
0012B8   91 80 F 0E9                  TM    ISW+1,X'80'          TEST FOR DATA RECIVED
0012BC   47 80 F 2C8                  BC    NONE,ISEA            BR IF NOT.
```


2540 PUNCH FUNCTION TESTS - SECTION 3 F822
2540 PUNCH OVERLAY SECTION

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0012C0   96 40 F 0E9                  OI    ISW+1,X'40'          INDICATE 1ST CHK READ DATA RECEIVED.
0012C4   94 7F F 0E9                  NI    ISW+1,X'7F'          TURN OFF DATA RECEIVED SW.
0012C8   41 80 F 758           ISEA   LA    R8,DCRD              PUT ADDR. OF CHK RD INTO 8.
0012CC   45 70 F 5DC                  BAL   R7,ISTRT             BR TO AUX, START I-O.
0012D0   91 80 F 0E9                  TM    ISW+1,X'80'          SEE IF DATA RECEIVED
0012D4   47 80 F 2E0                  BC    NONE,BTCD            BR IF NOT.
0012D8   96 20 F 0E9                  OI    ISW+1,X'20'          INDIC 2ND CHK READ DATA RECEIVED.
0012DC   94 7F F 0E9                  NI    ISW+1,X'7F'          TRN OFF GENERAL DATA REC. SW.
0012E0   45 10 F 570           BTCD   BAL   R1,ICDT              BR TO CHK DATA.
0012E4   91 60 F 0E9                  TM    ISW+1,X'60'          SEE IF ANY OF THE CHK READS OK.
0012E8   47 50 F 30C                  BC    ANY,IBSN             BR IF YES.
0012EC   96 01 F 0E8                  OI    ISW,X'01'            TURN ON ERROR SW.
0012F0   47 F0 F 30C                  BC    UNC,IBSN             BR TO CONTINUE.
0012F4   91 40 F 0E8           INOEX1 TM    ISW,X'40'
0012F8   47 10 F 35A                  BC    ALL,INDER            BR. IF CSW STORED
0012FC   47 F0 F 35E                  BC    UNC,IDUNCK           BR. UNCONDITIONAL
001300   91 20 F 0E8           INOEX2 TM    ISW,X'20'
001304   47 10 F 35A                  BC    ALL,INDER            BR. IF CSW 2 STORED
001308   47 F0 F 35E                  BC    UNC,IDUNCK           BR. UNCONDITIONAL
00130C   D5 00 F 7C7 B 004     IBSN   CLC   IACTCC+5(1),4(R11)   COMPARE FOR EXPECTED COND. CODE
001312   47 60 F 35A                  BC    UNEQ,INDER           BR. IF UNEQUAL
001316   91 08 B 000                  TM    0(R11),X'08'
00131A   47 80 F 2F4                  BC    NONE,INOEX1          BR. IF NO CSW EXPECTED
00131E   91 40 F 0E8                  TM    ISW,X'40'
001322   47 80 F 35A                  BC    NONE,INDER           BR. IF NO CSW RECIEVED
001326   48 88 0 006                  LH    R8,6(R11)            LOAD CSW ADDR
00132A   40 80 F 332                  STH   R8,ICCSW1+4          STORE IN COMPARE INSTR.
00132E   D5 07 F 788 F 788     ICCSW1 CLC   ICSW1(8),ICSW1       COMPARE FOR EXPECTED CSW
001334   47 60 F 35A                  BC    UNEQ,INDER           BR. IF UNEQUAL
001338   91 04 B 000                  TM    0(R11),X'04'
00133C   47 80 F 300                  BC    NONE,INOEX2          BR. IF NO CSW 2 EXPECTED
001340   91 20 F 0E8                  TM    ISW,X'20'
001344   47 80 F 35A                  BC    NONE,INDER           BR. IF NO CSW 2 RECIEVED
001348   41 88 0 008                  LA    R8,8(R8)             UPDATE TO SECOND CSW
00134C   40 80 F 354                  STH   R8,ICCSW2+4
001350   D5 07 F 790 F 790     ICCSW2 CLC   ICSW2(8),ICSW2       COMPARE FOR EXPECTED CSW 2
001356   47 80 F 35E                  BC    EQ,IDUNCK            BR. IF EQUAL
00135A   96 01 F 0E8           INDER  OI    ISW,X'01'            INDICATE AN ERROR
00135E   92 64 F 39E           IDUNCK MVI   IFLAG1,X'64'         SET UP FOR ERROR PRINTOUT
001362   92 C0 F 53E                  MVI   IFLAG2,X'C0'
001366   91 01 F 0E8                  TM    ISW,X'01'            CHECK FOR A DETECTED ERROR
00136A   47 10 F 37E                  BC    ALL,IOUTIT           BR. IF ERROR DETECTED
00136E   91 01 F 004                  TM    SNSW,X'01'           CHECK SECTION SENSE SWITCH 7
001372   47 80 F 55A                  BC    NONE,ILEAVE          BR. IF OFF
001376   92 24 F 39E                  MVI   IFLAG1,X'24'         SET UP FOR CORRECT PRINTOUT
00137A   92 80 F 53E                  MVI   IFLAG2,X'80'
00137E   95 40 F 82D           IOUTIT CLI   IACSNS+5,X'40'       SEE IF INTERVENTION REQUIRED.
001382   47 80 F 5C6                  BC    EQ,RRM               BR IF YES.
001386   91 01 F 78C                  TM    ICSW1+4,X'01'        SEE IF UNIT EXCEPTION.
00138A   47 10 F 5C6                  BC    ALL,RRM              BR IF YES.
00138E   D2 01 F 854 B 002            MVC   ITSTNO+5(2),2(R11)   MOVE TEST NO. TO PRINT AREA.
001394   0A DD                        SVC   X'DD'                CONVERT TEST NUMBER
001396   0002                         DC    AL2(2)
001398   0854                         DC    AL2(ITSTNO+5-SECNO)
00139A   0854                         DC    AL2(ITSTNO+5-SECNO)
00139C   0A D0                        SVC   X'D0'                PRINT TEST NUMBER
00139E   64                    IFLAG1 DC    X'64'
00139F   09                           DC    X'09'
0013A0   F84F                         DC    AL2(ITSTNO-SECNO+REG)
0013A2   41 80 0 004                  LA    R8,4                 ADJUST LINK ADDRESS FOR PRINTOUT
0013A6   1B B8                        SR    R11,R8
0013A8   50 B0 F 7E0                  ST    R11,ILINK+5
0013AC   0A DD                        SVC   X'DD'                CONVERT LINK ADDRESS
0013AE   0003                         DC    AL2(3)
0013B0   07E1                         DC    AL2(ILINK+6-SECNO)
0013B2   07E0                         DC    AL2(ILINK+5-SECNO)
0013B4   0A D0                        SVC   X'D0'                PRINT LINK ADDRESS
0013B6   A0                           DC    X'A0'
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0013B7    10                          DC    X'10'
0013B8    F7DB                        DC    AL2(ILINK-SECNO+REG)
0013BA    41 BB 0 004                 LA    R11,4(R11)
0013BE    91 80 B 000                 TM    0(R11),X'80'
0013C2    47 10 F 440                 BC    ALL,IOCSW             BR. IF NO I-O COMMAND ISSUED
0013C6    0A DD                       SVC   X'DD'                 CONVERT I-O ADDRESS
0013C8    0003                        DC    AL2(3)
0013CA    095C                        DC    AL2(IOADR-SECNO)
0013CC    07D1                        DC    AL2(IOADDR+5-SECNO)
0013CE    0A D0                       SVC   X'D0'                 PRINT I-O ADDRESS
0013D0    A0                          DC    X'A0'
0013D1    0F                          DC    X'0F'
0013D2    F7CC                        DC    AL2(IOADDR-SECNO+REG)
0013D4    95 9C F 178                 CLI   ISSUE,X'9C'           COMPARE FOR SIO COMMAND
0013D8    47 60 F 42E                 BC    UNEQ,ICCOUT           BR. IF NOT
0013DC    50 A0 F 7F0                 ST    R10,ICAW+5            STORE CCW ADDR.
0013E0    0A DD                       SVC   X'DD'                 CONVERT CAW
0013E2    0003                        DC    AL2(3)
0013E4    07F1                        DC    AL2(ICAW+6-SECNO)
0013E6    07F0                        DC    AL2(ICAW+5-SECNO)
0013E8    0A D0                       SVC   X'D0'                 PRINT CAW
0013EA    A0                          DC    X'A0'
0013EB    0B                          DC    X'0B'
0013EC    F7EB                        DC    AL2(ICAW-SECNO+REG)
0013EE    D2 02 F 7FE F 7FA           MVC   IBLAH+1(3),ICCW       MOVE -CCW- TO MESSAGE
0013F4    92 16 F 429                 MVI   ICNT,X'16'            ADJUST COUNT
0013F8    D2 07 F 7A0 A 000   ICWOUT  MVC   WORK(8),0(R10)        MOVE CCW TO WORK AREA
0013FE    45 90 F 412                 BAL   R9,ICOUT              BR. TO OUTPUT CCW
001402    91 C0 A 004                 TM    4(R10),X'C0'          CHECK FOR ANY CHAIN FLAGS
001406    47 80 F 42E                 BC    NONE,ICCOUT           BR. IF NONE
00140A    41 AA 0 008                 LA    R10,8(R10)            UPDATE TO NEXT CCW
00140E    47 F0 F 3F8                 BC    UNC,ICWOUT            BR. UNCONDITIONAL
001412    0A DD               ICOUT   SVC   X'DD'                 CONVERT
001414    0008                        DC    AL2(8)
001416    07A0                        DC    AL2(WORK-SECNO)
001418    07A0                        DC    AL2(WORK-SECNO)
00141A    D2 07 F 802 F 7A0           MVC   IBLAH+5(8),WORK       MOVE TO MESSAGE
001420    D2 07 F 80B F 7A8           MVC   IBLAH+14(8),WORK+8
001426    0A D0                       SVC   X'D0'                 PRINT
001428    A0                          DC    X'A0'
001429    1A                  ICNT    DC    X'1A'
00142A    F7FD                        DC    AL2(IBLAH-SECNO+REG)
00142C    07 F9                       BCR   UNC,R9                RETURN VIA REG 9
00142E    D2 00 F 78D B 004   ICCOUT  MVC   IEXPCC+5(1),4(R11)    MOVE EXP CC TO MESSAGE
001434    0A D0                       SVC   X'D0'                 PRINT EXPECTED COND. CODE
001436    A0                          DC    X'A0'
001437    0A                          DC    X'0A'
001438    F788                        DC    AL2(IEXPCC-SECNO+REG)
00143A    0A D0                       SVC   X'D0'                 PRINT ACTUAL COND. CODE
00143C    A0                          DC    X'A0'
00143D    0A                          DC    X'0A'
00143E    F7C2                        DC    AL2(IACTCC-SECNO+REG)
001440    D2 02 F 7FE F 7F7   IOCSW   MVC   IBLAH+1(3),ICSW       MOVE -CSW- TO MESSAGE
001446    92 1A F 429                 MVI   ICNT,X'1A'            ADJUST COUNT
00144A    91 08 B 000                 TM    0(R11),X'08'
00144E    47 80 F 472                 BC    NONE,IDIDI            BR. IF NO CSW EXPECTED
001452    D2 02 F 814 F 81A           MVC   IBLAH+23(3),IEXP      MOVE -EXP- TO MESSAGE
001458    48 8B 0 006                 LH    R8,6(R11)
00145C    40 80 F 46C                 STH   R8,ICHNG1+4
001460    41 88 0 008                 LA    R8,8(R8)
001464    40 80 F 49C                 STH   R8,ICHNG2+4
001468    D2 07 F 7A0 F 7A0   ICHNG1  MVC   WORK(8),WORK          MOVE EXPECTED CSW TO WORK AREA
00146E    45 90 F 412                 BAL   R9,ICOUT              BR. TO OUTPUT EXPECTED CSW
001472    91 40 F 0E8         IDIDI   TM    ISW,X'40'
001476    47 80 F 48A                 BC    NONE,IMORST           BR. IF NO CSW STORED
00147A    D2 02 F 814 F 817           MVC   IBLAH+23(3),IACT      MOVE -ACT- TO MESSAGE
001480    D2 07 F 7A0 F 788           MVC   WORK(8),ICSW1         MOVE ACTUAL CSW TO WORK AREA
001486    45 90 F 412                 BAL   R9,ICOUT              BR. TO OUTPUT ACTUAL CSW
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00148A    91 04 B 000         IMORST  TM    0(R11),X'04'
00148E    47 80 F 4A2                 BC    NONE,IDID             BR. IF NOT EXPECTING 2 CSWS
001492    D2 02 F 814 F 81A           MVC   IBLAH+23(3),IEXP      MOVE -EXP- TO MESSAGE
001498    D2 07 F 7A0 F 7A0   ICHNG2  MVC   WORK(8),WORK          MOVE EXPECTED CSW TO WORK AREA
00149E    45 90 F 412                 BAL   R9,ICOUT              BR. TO OUTPUT EXPECTED CSW 2
0014A2    91 20 F 0E8         IDID    TM    ISW,X'20'
0014A6    47 80 F 4BA                 BC    NONE,IPAS             BR. IF NO SECOND CSW STORED
0014AA    D2 02 F 814 F 817           MVC   IBLAH+23(3),IACT      MOVE -ACT- TO MESSAGE
0014B0    D2 07 F 7A0 F 790           MVC   WORK(8),ICSW2         MOVE CSW TO WORK AREA
0014B6    45 90 F 412                 BAL   R9,ICOUT
0014BA    D2 00 F 822 B 005   IPAS    MVC   IEXSNS+5(1),5(R11)    MOVE EXP SENSE TO MESSAGE
0014C0    91 04 F 0E8                 TM    ISW,X'04'
0014C4    47 80 F 4E4                 BC    NONE,IPASS            BR. IF NO SENSE DATA RECIEVED
0014C8    0A DD                       SVC   X'DD'                 CONVERT EXPECTED SENSE
0014CA    0001                        DC    AL2(1)
0014CC    0822                        DC    AL2(IEXSNS+5-SECNO)
0014CE    0822                        DC    AL2(IEXSNS+5-SECNO)
0014D0    0A D0                       SVC   X'D0'                 PRINT EXPECTED SENSE
0014D2    A0                          DC    X'A0'
0014D3    0B                          DC    X'0B'
0014D4    F81D                        DC    AL2(IEXSNS-SECNO+REG)
0014D6    0A DD                       SVC   X'DD'
0014D8    0001                        DC    AL2(1)
0014DA    082D                        DC    AL2(IACSNS+5-SECNO)
0014DC    082D                        DC    AL2(IACSNS+5-SECNO)
0014DE    0A D0                       SVC   X'D0'                 PRINT ACTUAL SENSE DATA
0014E0    A0                          DC    X'A0'
0014E1    0B                          DC    X'0B'
0014E2    F828                        DC    AL2(IACSNS-SECNO+REG)
0014E4    95 30 E 181         IPASS   CLI   SYSMOD(R14),X'30'     CHECK FOR MOD 30.
0014E8    47 60 F 518                 BC    UNEQ,ICD              BR. IF NOT
0014EC    D2 0B F 7A0 E 080   ILOGED  MVC   WORK(12),LOGOUT(R14)  MOVE LOG OUT TO WORK AREA
0014F2    0A DD                       SVC   X'DD'                 CONVERT
0014F4    000C                        DC    AL2(12)
0014F6    07A0                        DC    AL2(WORK-SECNO)
0014F8    07A0                        DC    AL2(WORK-SECNO)
0014FA    D2 01 F 838 F 7A0           MVC   IOLOG+5(2),WORK       MOVE LOG OUT TO MESSAGE
001500    D2 05 F 83B F 7A2           MVC   IOLOG+8(6),WORK+2
001506    D2 05 F 842 F 7AA           MVC   IOLOG+15(6),WORK+10
00150C    D2 05 F 849 F 7B2           MVC   IOLOG+22(6),WORK+18
001512    0A D0                       SVC   X'D0'                 PRINT LOG OUT
001514    A0                          DC    X'A0'
001515    1C                          DC    X'1C'
001516    F833                        DC    AL2(IOLOG-SECNO+REG)
001518    91 02 F 0E8         ICD     TM    ISW,X'02'             SEE IF UIO.
00151C    47 80 F 528                 BC    NONE,IBCD             BR IF NO
001520    94 FD F 0E8                 NI    ISW,X'FD'             RESET UIO SWITCH
001524    47 F0 F 1BE                 BC    UNC,IWAIT             BR. UNCONDITIONAL
001528    91 80 F 0E8         IBCD    TM    ISW,X'80'             SEE IF HANG UP CONDITION.
00152C    47 10 F 53C                 BC    ALL,IOPOUT            BR IF YES.
001530    91 80 B 001                 TM    1(R11),X'80'          SEE IF DIAG CHK READ DONE.
001534    47 80 F 53C                 BC    NONE,IOPOUT           BR. IF NOT UIO
001538    45 10 F 570                 BAL   R1,ICDT               BR TO INDICATE ANY DATA ERRORS.
00153C    0A D0               IOPOUT  SVC   X'D0'                 PRINT LOOP OPTIONS
00153E    C0                  IFLAG2  DC    X'C0'
00153F    36                          DC    X'36'
001540    F858                        DC    AL2(IOPT1-SECNO+REG)
001542    0A D0                       SVC   X'D0'                 SPACE A LINE
001544    A0                          DC    X'A0'
001545    01                          DC    X'01'
001546    F7DB                        DC    AL2(ILINK-SECNO+REG)
001548    50 AD 0 048                 ST    R10,HCAW(R13)         STORE CAW
00154C    91 C0 F 004                 TM    SNSW,X'C0'            CHECK SECTION SENSE SWITCH 0 AND 1
001550    47 50 F 11A                 BC    ANY,ITRY1             BR. IF ANY ON
001554    91 80 F 0E8                 TM    ISW,X'80'
001558    07 15                       BCR   ALL,R5                RETURN VIA REG 5 IF HANG UP
00155A    91 08 B 000         ILEAVE  TM    0(R11),X'08'
00155E    47 80 F 566                 BC    NONE,IUP              BR. IF NO CSW EXPECTED
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001562   41 BB 0 002            LA    R11,2(R11)          UPDATE LINK ADDRESS FOR RETURN
001566   41 BB 0 006     IUP    LA    R11,6(R11)
00156A   98 09 F 760           LM    R0,R9,ISAVE         RESTORE WORKING REGS.
00156E   07 FB                 BCR   UNC,R11             RETURN VIA REG 11
                       ********************************************************************
                       *      DATA COMPARE ROUTINE
                       ********************************************************************
001570   41 20 0 001     ICDT   LA    R2,1                PUT A 1 INTO REG 2.
001574   41 30 F AA0            LA    R3,EXPBUF           PICK UP ADDR OF EXP DATA.
001578   D2 00 F AF2 3 000 IT80 MVC   ICODAT(1),0(R3)     SAVE THE BYTE FOR COMPARE.
00157E   41 42 F A4F           LA    R4,CHKBUF-1(R2)     PICK UP ADDR OF CHK DATA BYTE.
001582   41 72 F 9FF           LA    R7,BUFFER-1(R2)     PICK UP ADDR OF DATA BYTE.
001586   D5 00 7 000 F AF2      CLC   0(1,R7),ICODAT      SEE IF DATA BYTE AS EXPECTED.
00158C   47 60 F 5B6           BC    UNEQ,ISIP           BR IF NOT EQUAL.
001590   91 60 F 0E9     ITCO   TM    ISW+1,X'60'         SEE IF ANY CHK READS DONE.
001594   47 80 F 5A0            BC    NONE,IRTU           BR IF NO.
001598   91 FF 4 000            TM    0(R4),X'FF'         SEE IF ANY CHK BITS ON.
00159C   47 50 F 5B6           BC    ANY,ISIP            BR IF YES.
0015A0   41 33 0 001     IRTU   LA    R3,1(R3)            ADD 1 TO EXP DATA BYTE.
0015A4   41 22 0 001           LA    R2,1(R2)            ADD 1 TO INDEX VALUE.
0015A8   55 20 F 9F8           CL    R2,ATE1             SEE IF END OF COMPARE
0015AC   47 60 F 578           BC    UNEQ,IT80           BR IF NO.
0015B0   96 02 F 0E9     ISSW   OI    ISW+1,X'02'         TURN ON 1ST PASS SW.
0015B4   07 F1                 BCR   UNC,R1              RETURN.
0015B6   91 02 F 0E9     ISIP   TM    ISW+1,X'02'         SEE IF 1ST PASS SW ON.
0015BA   47 10 F 61E           BC    ALL,IGOP            BR IF YES
0015BE   96 01 F 0E8           OI    ISW,X'01'           INDICATE AN ERROR
0015C2   47 F0 F 5B0           BC    UNC,ISSW            BR TO EXIT ROUTINE
                       ********************************************************************
                       *      INTERVENTION REQUIRED ROUTINE
                       ********************************************************************
0015C6   0A D0          RRM    SVC   X'D0'               PRINT -MAKE DEVICE READY-
0015C8   2410                  DC    X'2410'
0015CA   F926                  DC    AL2(MDR-SECNO+REG)
0015CC   0A DA                 SVC   X'DA'               HALT
0015CE   9D 00 C 000           TIO   0(R12)              TEST I-O
0015D2   0A D0                 SVC   X'D0'               PRINT A BLANK.
0015D4   8001                  DC    X'8001'
0015D6   F926                  DC    AL2(MDR-SECNO+REG)
0015D8   47 F0 F 0FA           BC    UNC,CONP            BR TO CONTINUE.
                       ********************************************************************
                       *      AUXILIARY START I-O ROUTINE
                       ********************************************************************
0015DC   58 9E 0 198     ISTRT  L     R9,WT(R14)          LOAD DM WAIT FACTOR.
0015E0   88 90 0 002           SRL   R9,2                CUT IT DOWN TO 2.5 SECS.
0015E4   50 8D 0 048           ST    R8,HCAW(R13)        STORE IN CAW
0015E8   9C 00 C 000           SIO   0(R12)              START I-O
0015EC   47 70 F 60C           BC    NCC0,IBACK
0015F0   9D 00 C 000     ITIOLP TIO   0(R12)              TEST I-O
0015F4   47 40 F 5FE           BC    CC1,ILOKE           BR. IF CSW STORED
0015F8   46 90 F 5F0     ITIC   BCT   R9,ITIOLP
0015FC   07 F7                 BCR   UNC,R7              RETURN.
0015FE   91 04 D 044     ILOKE  TM    HCSW+4(R13),X'04'   CHECK FOR DEVICE END.
001602   47 80 F 5F8           BC    NONE,ITIC           BR IF NOT IN YET.
001606   96 80 F 0E9           OI    ISW+1,X'80'         INDICATE THE DATA RECEIVED.
00160A   07 F7                 BCR   UNC,R7              RETURN.
00160C   91 01 F 78C     IBACK  TM    ICSW1+4,X'01'       SEE IF UNIT EXCEPTION.
001610   47 10 F 5C6           BC    ALL,RRM             BR IF YES.
001614   95 40 F 82D           CLI   IACSNS+5,X'40'      SEE IF INTERVENTION REQUIRED.
001618   47 80 F 5C6           BC    EQ,RRM              BR IF YES.
00161C   07 F7                 BCR   UNC,R7              RETURN.
                       ********************************************************************
                       *      DATA PRINTOUT ROUTINE
                       ********************************************************************
00161E   91 60 F 0E9     IGOP   TM    ISW+1,X'60'         SEE IF AT LEAST ONE CHK READ OK.
001622   47 50 F 63C           BC    ANY,COPT            BR IF YES.
001626   91 80 F AF3           TM    CRSW,X'80'          SEE IF MSG ALREADY PRINTED.
00162A   47 10 F 692           BC    ALL,NTC             BR IF YES.
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00162E   0A D0                 SVC   X'D0'               PRINT BOTH CHK READS FAILED.
001630   8026                  DC    X'8026'
001632   F936                  DC    AL2(TCRA-SECNO+REG)
001634   96 80 F AF3           OI    CRSW,X'80'          TURN ON SWITCH FOR MSG.
001638   47 F0 F 692           BC    UNC,NTC             GO TO MSG.
00163C   D2 24 F 8F5 F 8F4 COPT MVC   GOODY+1(37),GOODY  BLANK DATA PRINT AREA.
001642   92 F0 F 90A           MVI   GOODY+22,C'0'       MOVE ZERO INTO PRINT AREA.
001646   91 10 4 000           TM    0(R4),X'10'         SEE IF XU ON IN DIAG CHK READ BYTE.
00164A   47 80 F 652           BC    NONE,NXU            BR IF NOT ON.
00164E   92 F1 F 90A           MVI   GOODY+22,C'1'       MOVE ONE INTO PRINT AREA.
001652   92 F0 F 90D     NXU   MVI   GOODY+25,C'0'       PUT ZERO INTO PRINT AREA.
001656   91 08 4 000           TM    0(R4),X'08'         SEE IF XL ON IN DIAG CHK DATA.
00165A   47 80 F 662           BC    NONE,NXL            BR IF NOT ON.
00165E   92 F1 F 90D           MVI   GOODY+25,C'1'       MOVE ONE INTO PRINTOUT
001662   92 F0 F 910     NXL   MVI   GOODY+28,C'0'       MOVE ZERO INTO PRINTOUT.
001666   91 04 4 000           TM    0(R4),X'04'         SEE IF BUFFER PARITY ON IN CHK DATA.
00166A   47 80 F 672           BC    NONE,NBP            BR IF NOT ON.
00166E   92 F1 F 910           MVI   GOODY+28,C'1'       MOVE A ONE INTO PRINTOUT.
001672   92 F0 F 914     NBP   MVI   GOODY+32,C'0'       MOVE A ZERO INTO PRINTOUT.
001676   91 01 4 000           TM    0(R4),X'01'         SEE IF ADDR CHK IN CHK DATA
00167A   47 80 F 682           BC    NONE,NAC            BR IF NOT.
00167E   92 F1 F 914           MVI   GOODY+32,C'1'       MOVE A ONE INTO THE PRINTOUT.
001682   92 F0 F 919     NAC   MVI   GOODY+37,C'0'       MOVE A ZERO INTO PRINTOUT.
001686   91 02 4 000           TM    0(R4),X'02'         SEE IF TRANSLATE CHK
00168A   47 80 F 692           BC    NONE,NTC            BR IF NO.
00168E   92 F1 F 919           MVI   GOODY+37,C'1'       MOVE A ONE INTO PRINTOUT.
001692   91 80 F AF1     NTC   TM    HDSW,X'80'          SEE IF HEADING PRINTED.
001696   47 10 F 6BC           BC    ALL,IPDA            BR IF YES.
00169A   0A D0                 SVC   X'D0'               PRINT 1ST HDR.
00169C   A009                  DC    X'A009'
00169E   F88E                  DC    AL2(HD1-SECNO+REG)
0016A0   0A D0                 SVC   X'D0'               PRINT CARD LOCATION IN READER.
0016A2   A014                  DC    X'A014'
0016A4   F897                  DC    AL2(HD1A-SECNO+REG)
0016A6   0A D0                 SVC   X'D0'               PRINT A BLANK.
0016A8   A001                  DC    X'A001'
0016AA   F8AB                  DC    AL2(BIG-SECNO+REG)
0016AC   0A D0                 SVC   X'D0'               PRINT HEADING 3.
0016AE   A022                  DC    X'A022'
0016B0   F8AB                  DC    AL2(BIG-SECNO+REG)
0016B2   0A D0                 SVC   X'D0'               PRINT HEADING 4.
0016B4   A027                  DC    X'A027'
0016B6   F8CD                  DC    AL2(BEAUTY-SECNO+REG)
0016B8   96 80 F AF1           OI    HDSW,X'80'          TURN ON THE HEADING SW.
0016BC   18 42           IPDA  LR    R4,R2               PUT THE COLUMN NO. INTO REG 4.
0016BE   4E 40 F 798           CVD   R4,DBWD             CONV IT TO DECIMAL.
0016C2   F3 11 F 8F6 F 79E     UNPK  GOODY+2(2),DBWD+6(2) PUT IT INTO PRINT AREA.
0016C8   96 F0 F 8F7           OI    GOODY+3,X'F0'       COVER SIGN UP FOR PRINTING.
0016CC   D2 00 F 798 7 000     MVC   DBWD(1),0(R7)       MOVE ACTUAL DATA TO CONVERT AREA.
0016D2   0A DD                 SVC   X'DD'               CONVERT FROM HEX TO BINARY.
0016D4   0001                  DC    AL2(01)             1 BYTE.
0016D6   0798                  DC    AL2(DBWD-SECNO)     FROM HERE.
0016D8   0906                  DC    AL2(GOODY+18-SECNO) TO HERE
0016DA   0A DD                 SVC   X'DD'               CONVERT FROM HEX TO BINARY.
0016DC   0001                  DC    AL2(01)             1 BYTE.
0016DE   0AF2                  DC    AL2(ICODAT-SECNO)   FROM HERE
0016E0   0902                  DC    AL2(GOODY+14-SECNO) TO HERE
0016E2   90 04 F C20           STM   R0,R4,TWENTY        SAVE REGISTERS
0016E6   1B 11                 SR    R1,R1               ZERO REG 1
0016E8   1B 22                 SR    R2,R2               ZERO REG 2.
0016EA   1B 33                 SR    R3,R3               ZERO REG 3.
0016EC   41 40 0 002           LA    R4,2                LOAD DIVISOR
0016F0   43 30 F AF2           IC    R3,ICODAT           PICK UP HEX CHARACTER
0016F4   18 13                 LR    R1,R3               SAVE HEX CHARACTER
0016F6   1D 24                 DR    R2,R4               DIVIDE HEX CHARACTER BY 2
0016F8   1A 31                 AR    R3,R1               ADD DIVIDEND TO CHARACTER
0016FA   43 13 F C4C           IC    R1,HOLES(R3)        PICK UP FIRST BYTE
0016FE   89 10 0 008           SLL   R1,8                SHIFT
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001702   43 13 F C4D                  IC    R1,HOLES+1(R3)       PICK UP SECOND BYTE
001706   41 30 0 0FF                  LA    R3,255               LOAD MASK
00170A   14 23                        NR    R2,R3                AND WITH REMAINDER
00170C   47 50 F 714                  BC    ANY,*+8              BR. IF THERE WAS A REMAINDER
001710   88 10 0 004                  SRL   R1,4                 SHIFT OFF UNUSED 4 BITS
001714   50 10 F 798                  ST    R1,DBWD              SAVE REG 1.
001718   41 40 0 006                  LA    R4,6                 SET UP FOR 6 POSSIBLE PUNCHES
00171C   41 30 0 00C                  LA    R3,12                SET UP TO CHECK 12 PUNCHES
001720   41 00 0 001                  LA    R0,1                 LOAD MASK
001724   43 23 F 919           PIK    IC    R2,PUNCHS-1(R3)      PICK UP PRINTABLE CHARACTER
001728   58 10 F 798                  L     R1,DBWD              RESTORE REG 1.
00172C   14 10                        NR    R1,R0                TEST FOR PUNCH
00172E   47 80 F 73A                  BC    NONE,NXT             BR. IF NONE
001732   42 24 F 8F9                  STC   R2,GOODY+5(R4)       STORE PRINTABLE CHARACTER
001736   46 40 F 73A                  BCT   R4,*+4               DECREMENT PRINT AREA INDEX
00173A   89 00 0 001           NXT    SLL   R0,1                 SHIFT MASK FOR NEXT BIT
00173E   46 30 F 724                  BCT   R3,PIK               BR. UNTIL 12 CHECKED
001742   98 04 F C20                  LM    R0,R4,TWENTY         RESTORE REGISTERS
001746   0A D0                 PRGD   SVC   X'D0'                PRINT THE DATA.
001748   8026                         DC    X'8026'
00174A   F8F4                         DC    AL2(GOODY-SECNO+REG)
00174C   47 F0 F 5A0                  BC    UNC,IRTU             RETURN TO COMPARE RTN.
                       ********************************************************************************
                       *      I-O HANDLER WORK AREA.
                       ********************************************************************************
001750   04 00182D 0000 0001   ISENSE CCW   X'04',IACSNS+5,X'00',1
001758   C6 001A50 2000 0050   DCRD   CCW   X'C6',CHKBUF,X'20',80
001760   00000000              ISAVE  DC    10F'0'
001764   00000000
001768   00000000
00176C   00000000
001770   00000000
001774   00000000
001778   00000000
00177C   00000000
001780   00000000
001784   00000000
001788   0000000000000000      ICSW1  DC    XL8'0'
001790   0000000000000000      ICSW2  DC    XL8'0'
001798   +00.00000000000000    DBWD   DC    D'0'
0017A0                         WORK   DS    24C
001788   40C3C34040E740C5E7    IEXPCC DC    C' CC  X EXP'
0017C1   D7
0017C2   40C3C34040E740C1C3    IACTCC DC    C' CC  X ACT'
0017CB   E3
0017CC   40C1C4D940E7E7E7E7    IOADDR DC    C' ADR XXXXXX SIO'
0017D5   E7E740E2C9D6
0017DB   00                            DC    X'00'
0017DC                                 CNOP  0,4
                    0017DB             ORG   *-1
0017DB   40C1C4D940E7E7E7E7    ILINK  DC    C' ADR XXXXXX LINK'
0017E4   E7E740D3C9D5D2
0017EB   00                            DC    X'00'
0017EC                                 CNOP  0,4
                    0017EB             ORG   *-1
0017EB   40C3C1E640E7E7E7E7    ICAW   DC    C' CAW XXXXXX '
0017F4   E7E740
0017F7   C3E2E6                ICSW   DC    C'CSW'
0017FA   C3C3E6                ICCW   DC    C'CCW'
0017FD   40C3E2E640E7E7E7E7    IBLAH  DC    C' CSW XXXXXXXX XX'
001806   E7E7E7E740E7E7
00180D   E7E7E7E7E7E740C5E7            DC    C'XXXXXX EXP'
001816   D7
001817   C1C3E3                IACT   DC    C'ACT'
00181A   C5E7D7                IEXP   DC    C'EXP'
00181D   40E2D5E240E7E740C5    IEXSNS DC    C' SNS XX EXP'
001826   E7D7
001828   40E2D5E240E7E740C1    IACSNS DC    C' SNS XX ACT'
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001831   C3E3
001833   40D3D6C740E7E740E7    IOLOG  DC    C' LOG XX XXXXXX X'
00183C   E7E7E7E7E740E7
001843   E7E7E7E7E740E7E7E7            DC    C'XXXXX XXXXXX'
00184C   E7E7E7
00184F   40E3E2E340E7E7E7E7    ITSTNO DC    C' TST XXXX'
001858   40E2C5E340E2E240F0    IOPT1  DC    C' SET SS 0 ON FOR'
001861   40D6D540C6D6D9
001868   40D3D6D6D740D6D540            DC    C' LOOP ON SIO, SS'
001871   E2C9D66B40E2E2
001878   40F140D6D540C6D6D9            DC    C' 1 ON FOR TIO SI'
001881   40E3C9D640E2C9
001888   D640D3D6D6D7                 DC    C'O LOOP'
00188E   40D9C5C1C440C5D9D9    HD1    DC    C' READ ERR'
001897   40C3C1D9C440C9D540    HD1A   DC    C' CARD IN '
0018A0   D7D9C5E2E3D2D940E2            DC    C'PRESTKR STA'
0018A9   E3C1
0018AB   4040404040C5E7D7C5    BIG    DC    C'     EXPECTED SH'
0018B4   C3E3C5C440E2C8
0018BB   C4404040404040404040          DC    C'D              B'
0018C4   404040404040C2
0018CB   E4C6                          DC    C'UF'
0018CD   40C3D6D340D7E4D5C3    BEAUTY DC    C' COL PUNCHES  RD'
0018D6   C8C5E24040D9C4
0018DD   4040D9C440E7E440E7            DC    C'  RD XU XL PAR A'
0018E6   D340D7C1D940C1
0018ED   C4D940E3D9C1D5                DC    C'DR TRAN'
0018F4   4040404040404040    GOODY  DC    C'               '
0018FD   40404040404040
001904   4040404040404040               DC    C'               '
00190D   40404040404040
001914   4040404040                    DC    C'      '
00191A   E3C5F0F1F2F3F4F5F6    PUNCHS DC    C'TE0123456789'
001923   F7F8F9
001926   40D4C1D2C540C4C5E5    MDR    DC    C' MAKE DEVICE RDY'
00192F   C9C3C540D9C4E8
001936   40F240C4C9C1C740C3    TCRA   DC    C' 2 DIAG CHK RDS '
00193F   C8D240D9C4E240
001946   C1E3E3C5D4D7E3C5C4            DC    C'ATTEMPTED -BOTH '
00194F   4060C2D6E3C840
001956   C6C1C9D3C5C4                  DC    C'FAILED'
00195C   001178                IOADR  DC    AL3(ISSUE)
00195F   FE                    MSK1   DC    X'FE'
001960   01                    MSK2   DC    X'01'
001961   00                    RTSV   DC    X'00'                SAVE RT NO. FOR HANGUP.
001962   40E4C9D640C6D9D6D4    IUNEX  DC    C' UIO FROM DEVICE'
00196B   40C4C5E5C9C3C5
001972   40E7E7E7E7                    DC    C' XXXX'
                       ********************************************************************************
                       *                          INITIALIZE ROUTINE
                       ********************************************************************************
001978   1B DD                  INIT   SR    R13,R13              ZERO REG 13
00197A   91 40 E 196                  TM    406(R14),X'40'       CHECK FOR FORCED PROBLEM STATE
00197E   47 80 F 984                  BC    NONE,NITWIT          BR. IF NOT
001982   18 DF                        LR    R13,R15              SET UP FOR PROBLEM STATE
001984   58 C0 F 0E0           NITWIT L     R12,UNIT1            LOAD REG 12 WITH UNIT TABLE ENTRY
001988   54 C0 F 9FC                  N     R12,MOD50            SAVE ONLY THE PUNCH ADDR.
00198C   50 C0 F 9F0                  ST    R12,PCH              SAVE IT
001990   58 C0 F 0E4                  L     R12,UNIT2            PICK UP THE READER UNIT TABLE.
001994   54 C0 F 9FC                  N     R12,MOD50            SAVE ONLY THE READER ADDR.
001998   50 C0 F 9EC                  ST    R12,RDR              SAVE IT
00199C   92 00 F AF0                  MVI   LDSW,X'00'           ZERO LOADER INDICATOR.
0019A0   1B 66                        SR    R6,R6                ZERO REG 6.
0019A2   43 6E 0 1B9                  IC    R6,DMIOL(R14)        PUT LENGTH OF DMIO TABLE INTO 6.
0019A6   4A 6E 0 1BC                  AH    R6,DMPTR(R14)        ADD OFFSET ADDRESS TO LENGTH.
0019AA   1A 6E                        AR    R6,R14               ADD BASE REG VALUE.
0019AC   06 60                        BCTR  R6,0                 SUBTRACT 2 TO GET
0019AE   06 60                        BCTR  R6,0                   TO LOADER ADDR.
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0019B0    49 C6 0 000                CH    R12,0(R6)              SEE IF TEST DEVICE IS LOADER.
0019B4    47 60 F 9BC                BC    UNEQ,BLOOP             BR IF NOT.
0019B8    96 80 F AF0                OI    LDSW,X'80'             TURN ON LOADER SW.
0019BC    91 80 F 0E8       BLOOP    TM    ISW,X'80'              CHECK FOR HANG UP
0019C0    47 10 F 9D0                BC    ALL,HANGUP             BR. IF DETECTED
0019C4    92 40 F A00                MVI   BUFFER,C' '            CLEAR DATA AREA.
0019C8    D2 9E F A01 F A00          MVC   BUFFER+1(159),BUFFER   CLEAR DATA AREA.
0019CE    07 F4                      BCR   UNC,R4                 RETURN VIA REG 4
0019D0    D2 00 F 003 F 961  HANGUP  MVC   SECNO+3(1),RTSV        RESTORE RT NO.
0019D6    0A D0                      SVC   X'D0'                  PRINT
0019D8    64                         DC    X'64'                  -PREVIOUS HANGUP DETECTED-
0019D9    1A                         DC    X'1A'
0019DA    FAF6                       DC    AL2(HUNG-SECNO+REG)
0019DC    96 01 F 0E8                OI    ISW,X'01'              TURN ON ERROR SWITCH.
0019E0    45 50 F 27A                BAL   R5,IDOSNS              BR. TO OUTPUT AVAILABLE INFO
0019E4    92 00 F 0E8                MVI   ISW,X'00'              RESET HANGUP SWITCH
0019E8    47 F0 F 9BC                BC    UNC,BLOOP
0019EC                               CNOP  0,4
                        ********************************************************************************
                        *     AUXILIARY WORK AREA.
                        ********************************************************************************
0019EC    00000000    RDR    DC    F'0'
0019F0    00000000    PCH    DC    F'0'
0019F4    0000001B    TW7    DC    F'27'
0019F8    00000051    ATE1   DC    F'81'
0019FC    00003FFF    MOD50  DC    X'00003FFF'
001A00                BUFFER DS    80C
001A50                CHKBUF DS    80C
001AA0                EXPBUF DS    80C
001AF0    00          LDSW   DC    X'00'
001AF1    00          HDSW   DC    X'00'
001AF2    00          ICODAT DC    X'00'
001AF3    00          CRSW   DC    X'00'
001AF4    00          SFLE   DC    X'00'
001AF5    00          GENDAT DC    X'00'
001AF6    40D7D9C5E5C9D6E4E2 HUNG   DC    C' PREVIOUS HANG U'
001AFF    40C8C1D5C740E4
001B06    D740C4C5E3C5C3E3C5         DC    C'P DETECTED'
001B0F    C4
001B10                               CNOP  0,4
                        ********************************************************************************
                        * ROUTINE 02 - READ 39 CARDS PUNCHED FROM SECTION F822 ROUTINE 01.
                        ********************************************************************************
001B10    02          ROUT02 DC    X'02'                  ROUTINE NUMBER
001B11    00FFFF             DC    X'00FFFF'              LAST ROUTINE
001B14    45 40 F 978        BAL   R4,INIT                BR TO INITIALIZE
001B18    91 40 F 005        TM    SNSW+1,X'40'           TEST SSW 9.
001B1C    47 10 F B3C        BC    ALL,EXEC               BR IF ON.
001B20    0A D0              SVC   X'D0'                  PRINT -IF DESIRED TO VERIFY THE CDS
001B22    2431               DC    X'2431'                IN POCKET 1 OF PUNCH, SET SSW 9 ON.
001B24    FF4F               DC    AL2(IDTR-SECNO+REG)
001B26    0A DA              SVC   X'DA'                  -HALT-
001B28    9D 00 C 000        TIO   0(R12)                 TEST I-O
001B2C    0A D0              SVC   X'D0'                  PRINT A BLANK.
001B2E    8001               DC    X'8001'
001B30    FF4F               DC    AL2(IDTR-SECNO+REG)
001B32    91 40 F 005        TM    SNSW+1,X'40'           TEST SSW 9.
001B36    47 10 F B3C        BC    ALL,EXEC               BR IF ON.
001B3A    0A D6              SVC   X'D6'                  ROUTINE EXIT.
001B3C    58 C0 F 9EC  EXEC  L     R12,RDR                PUT READER ADDR. INTO REG 12.
001B40    91 80 F AF0        TM    LDSW,X'80'             SEE IF ON LOADER DEVICE
001B44    47 80 F C06        BC    NONE,ERM               BR IF NO.
001B48    0A D0              SVC   X'D0'                  PRINT -REMOVE CDS FROM STACKER-
001B4A    2422               DC    X'2422'
001B4C    FDE4               DC    AL2(RTD1-SECNO+REG)
001B4E    0A D0              SVC   X'D0'                  PRINT -REMOVE REMAINING TEST DECKS-
001B50    A03C               DC    X'A03C'
001B52    FE06               DC    AL2(RTD2-SECNO+REG)
```



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001B54    0A D0              SVC   X'D0'                  PRINT -DO NOPRO-
001B56    A040               DC    X'A040'
001B58    FE42               DC    AL2(RTD3-SECNO+REG)
001B5A    0A D0              SVC   X'D0'                  PRINT -SAVE TEST DECKS-
001B5C    A045               DC    X'A045'
001B5E    FE82               DC    AL2(RTD4-SECNO+REG)
001B60    0A D0        RAP   SVC   X'D0'                  PRINT -TAKE CDS FROM PCH AND PUT
001B62    A04A               DC    X'A04A'                 THEM INTO RDR-
001B64    FEC7               DC    AL2(RTD5-SECNO+REG)
001B66    0A DA              SVC   X'DA'                  -HALT-
001B68    9D 00 C 000        TIO   0(R12)                 TEST I-O
001B6C    0A D0              SVC   X'D0'                  PRINT A BLANK
001B6E    8001               DC    X'8001'
001B70    FEC7               DC    AL2(RTD5-SECNO+REG)
001B72    D2 0B F C40 F C34  MVC   PARAM(12),ROW          INITIALIZE PARAMETERS.
001B78    92 00 F AF5        MVI   GENDAT,X'00'           ZERO 1ST EXP EBCDIC CHARACTER.
001B7C    41 60 0 027        LA    R6,39                  PUT 39 INTO REG 6.
001B80    41 80 F AA0  TEST  LA    R8,EXPBUF              PUT ADDR OF EXP DATA BUFFER INTO 8.
001B84    55 60 F 9F4        CL    R6,TW7                 SEE IF REG 6 IS 27.
001B88    47 20 F BEA        BC    HI,LA52                BR IF HIGHER.
001B8C    43 70 F AF5        IC    R7,GENDAT              PICK UP THE 1ST EBCDIC CHARACTER.
001B90    41 50 0 050        LA    R5,80                  PUT 80 INTO REG 5.
001B94    42 78 0 000  PIB   STC   R7,0(R8)               STORE EBCDIC CHAR IN BUFFER.
001B98    41 77 0 001        LA    R7,1(R7)               ADD 1 TO REG 7.
001B9C    41 88 0 001        LA    R8,1(R8)               ADD 1 TO REG 8.
001BA0    46 50 F B94        BCT   R5,PIB                 BR UNTIL EXP DATA GENERATED.
001BA4    D2 00 F AF5 F AA7  MVC   GENDAT(1),EXPBUF+7     SAVE NEXT 1ST EBCDIC CHAR.
001BAA    41 A0 F C10  RSIO  LA    R10,RDNF               PUT CMD ADDR INTO REG 10.
001BAE    45 B0 F 0EA        BAL   R11,ISIO               BR TO ISSUE START I-O.
001BB2    2880               DC    X'2880'                CTRL SWITCHES
001BB4    0020               DC    X'0020'                T E S T   N U M B E R
001BB6    F000         ESNS  DC    X'F000'                EXP COND. CODE AND SENSE.
001BB8    FDCC               DC    AL2(EXP1-SECNO+REG)    EXP CSW ADDRESS.
001BBA    41 A0 F C18  DOF   LA    R10,FSS1               PUT FEED STK SEL R1 CCW ADDR. IN 10.
001BBE    45 B0 F 0EA        BAL   R11,ISIO               BR TO ISSUE START I-O.
001BC2    2E00               DC    X'2E00'                CTRL SWITCHES
001BC4    0030               DC    X'0030'                T E S T   N U M B E R
001BC6    F100               DC    X'F100'                EXP COND. CODE AND SENSE.
001BC8    FD04               DC    AL2(EXP2-SECNO+REG)    EXP CSW ADDRESS.
001BCA    46 60 F B80        BCT   R6,TEST                BR TO TEST EVERY CARD.
001BCE    91 80 F AF0        TM    LDSW,X'80'             SEE IF ON LOADER.
001BD2    47 80 F BE8        BC    NONE,EXIT              BR IF NOT.
001BD6    0A D0              SVC   X'D0'                  PRINT -PUT TEST DECKS BACK.
001BD8    243E               DC    X'243E'
001BDA    FF11               DC    AL2(PTDB-SECNO+REG)
001BDC    0A DA              SVC   X'DA'                  -HALT-
001BDE    9D 00 C 000        TIO   0(R12)
001BE2    0A D0              SVC   X'D0'                  PRINT A BLANK
001BE4    8001               DC    X'8001'
001BE6    FF11               DC    AL2(PTDB-SECNO+REG)
001BE8    0A D6        EXIT  SVC   X'D6'                  EXIT
001BEA    D2 00 8 000 F C40  LA52  MVC   0(1,R8),PARAM       MOVE CHAR TO EXP DATA.
001BF0    D2 4E 8 001 8 000        MVC   1(79,R8),0(R8)     FILL EXP BUFFER WITH SAME CHAR.
001BF6    D2 0A F C40 F C41        MVC   PARAM(11),PARAM+1  SHIFT PARAMETERS OVER.
001BFC    D2 00 F C4B 8 000        MVC   PARAM+11(1),0(R8)  RESTORE 1ST PARAMETER TO LAST POS.
001C02    47 F0 F BAA              BC    UNC,RSIO           BR TO ISSUE SIO.
001C06    0A D0        ERM   SVC   X'D0'                  PRINT REMOVE CDS FROM RDR.
001C08    241C               DC    X'241C'
001C0A    FF80               DC    AL2(RTC-SECNO+REG)
001C0C    47 F0 F B60        BC    UNC,RAP                BR TO NXT MSG.
                        ********************************************************************************
                        *     CCW AREA
                        ********************************************************************************
001C10    C2 001A00 2000 0050  RDNF  CCW   X'C2',BUFFER,X'20',80 RD NO FEED CCW.
001C18    23 001A00 2000 0001  FSS1  CCW   X'23',BUFFER,X'20',1
001C20                         TWENTY DS    20C
001C34    5060F0F1F2F3F4F5F6   ROW   DC    X'5060F0F1F2F3F4F5F6F7F8F9'
001C3D    F7F8F9
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001C40  5060F0F1F2F3F4F5F6      PARAM  DC    X'5060F0F1F2F3F4F5F6F7F8F9'
001C49  F7F8F9
                                *                ***************
                                *                * HOLES TABLE *
                                *                ***************
001C4C  B039018818418218        HOLES  DC    X'B039018818418218'
001C54  1180980580390388              DC    X'1180980580390388'
001C5C  384382381380B807              DC    X'384382381380B807'
001C64  D035014814414214              DC    X'D035014814414214'
001C6C  1140940540350348              DC    X'1140940540350348'
001C74  344342341340B407              DC    X'344342341340B407'
001C7C  7033012812412212              DC    X'7033012812412212'
001C84  1120920520330328              DC    X'1120920520330328'
001C8C  3243223213208207              DC    X'3243223213208207'
001C94  F031010810410210              DC    X'F031010810410210'
001C9C  1100900500310308              DC    X'1100900500310308'
001CA4  304302301300B007              DC    X'304302301300B007'
001CAC  000B01A81A41A21A              DC    X'000B01A81A41A21A'
001CB4  11A09A05A0390288              DC    X'11A09A05A0390288'
001CBC  284282281280A806              DC    X'284282281280A806'
001CC4  800D01C81C41C21C              DC    X'800D01C81C41C21C'
001CCC  11C09C05C0350248              DC    X'11C09C05C0350248'
001CD4  244242241240A406              DC    X'244242241240A406'
001CDC  4003006816416216              DC    X'4003006816416216'
001CE4  1160960560330200              DC    X'1160960560330200'
001CEC  024222221220A206              DC    X'024222221220A206'
001CF4  E00F01E81E41E21E              DC    X'E00F01E81E41E21E'
001CFC  11E09E05E0310208              DC    X'11E09E05E0310208'
001D04  204202201200A006              DC    X'204202201200A006'
001D0C  B02B00A80A40A20A              DC    X'B02B00A80A40A20A'
001D14  10A08A04A02A01A8              DC    X'10A08A04A02A01A8'
001D1C  2A42A22A12A0AA06              DC    X'2A42A22A12A0AA06'
001D24  D02D00C80C40C20C              DC    X'D02D00C80C40C20C'
001D2C  10C08C04C02C01C8              DC    X'10C08C04C02C01C8'
001D34  2C42C22C12C0AC06              DC    X'2C42C22C12C0AC06'
001D3C  7027006806406206              DC    X'7027006806406206'
001D44  1060860460260168              DC    X'1060860460260168'
001D4C  264262261260A606              DC    X'264262261260A606'
001D54  F02F00E80E40E20E              DC    X'F02F00E80E40E20E'
001D5C  10E08E04E02E01E8              DC    X'10E08E04E02E01E8'
001D64  2E42E22E12E0AE06              DC    X'2E42E22E12E0AE06'
001D6C  A009008808408208              DC    X'A009008808408208'
001D74  1080880480280188              DC    X'1080880480280188'
001D7C  3A43A23A13A0BA07              DC    X'3A43A23A13A0BA07'
001D84  6005004804404204              DC    X'6005004804404204'
001D8C  1040840440240188              DC    X'1040840440240188'
001D94  3C43C23C13C0BC07              DC    X'3C43C23C13C0BC07'
001D9C  2827012802402202              DC    X'2827012802402202'
001DA4  1020820420220168              DC    X'1020820420220168'
001DAC  3643623613608607              DC    X'3643623613608607'
001DB4  2001000800400200              DC    X'2001000800400200'
001DBC  1000800400200188              DC    X'1000800400200188'
001DC4  3E43E23E13E0BE07              DC    X'3E43E23E13E0BE07'
                        ********************************************************************************
                        *       EXP CSW AREA
                        ********************************************************************************
001DCC  00001C18        EXP1   DC    A(RDNF+8)
001DD0  0C000000               DC    X'0C000000'
001DD4  00000000        EXP2   DC    XL4'00'
001DD8  08000000               DC    X'08000000'
001DDC  00000000               DC    XL4'0'
001DE0  04000000               DC    X'04000000'
                        ********************************************************************************
                        *       MESSAGES
                        ********************************************************************************
001DE4  40D9C5D4D6E5C540C3      RTD1   DC    C' REMOVE CDS FROM'
001DED  C4E240C6D9D6D4
001DF4  40E2E3C1C3D2C5D940             DC    C' STACKER OF READ'
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001DFD  D6C640D9C5C1C4
001E04  C5D9                          DC    C'ER'
001E06  40D9C5D4D6E5C540E3      RTD2   DC    C' REMOVE THE REMA'
001E0F  C8C540D9C5D4C1
001E16  C9D5C9D5C740E3C5E2             DC    C'INING TEST DECKS'
001E1F  E340C4C5C3D2E2
001E26  6BC9C640C1D5E86B40             DC    C',IF ANY, FROM TH'
001E2F  C6D9D6D440E3C8
001E36  C540D9C5C1C4C5D940             DC    C'E READER HPR'
001E3F  C8D7D9
001E42  40C4D640D5D6D7D9D6      RTD3   DC    C' DO NOPRO AND PL'
001E4B  40C1D5C440D7D3
001E52  C1C3C540C3C4E240D9             DC    C'ACE CDS RUN OUT '
001E5B  E4D540D6E4E340
001E62  C9D540C6D9D6D5E340             DC    C'IN FRONT OF REMA'
001E6B  D6C640D9C5D4C1
001E72  C9D5C9D5C740E3C5E2             DC    C'INING TEST DECKS'
001E7B  E340C4C5C3D2E2
001E82  40E2C1E5C540D9C5D4      RTD4   DC    C' SAVE REMAINING '
001E8B  C1C9D5C9D5C740
001E92  E3C5E2E340C4C5C3D2             DC    C'TEST DECKS UNTIL'
001E9B  E240E4D5E3C9D3
001EA2  40C140D4E2C740D9C5             DC    C' A MSG REQUESTS '
001EAB  D8E4C5E2E3E240
001EB2  E3C8C5D440E3D640C2             DC    C'THEM TO BE PUT I'
001EBB  C540D7E4E340C9
001EC2  D540C8D7D9                     DC    C'N HPR'
001EC7  40D9C5D4D6E5C540C3      RTD5   DC    C' REMOVE CDS FROM'
001ED0  C4E240C6D9D6D4
001ED7  40D7F140D6C640D7C3             DC    C' P1 OF PCH AND P'
001EE0  C840C1D5C440D7
001EE7  E4E340C9D540D9C4D9             DC    C'UT IN RDR HPR OF'
001EF0  40C8D7D940D6C6
001EF7  40E2C1D4C540F2F5F4             DC    C' SAME 2540,MAKE '
001F00  F06BD4C1D2C540
001F07  D9C4E86BC5D6C640D6             DC    C'RDY,EOF ON'
001F10  D5
001F11  40D7E4E340D9C5D4C1      PTDB   DC    C' PUT REMAINING T'
001F1A  C9D5C9D5C740E3
001F21  C5E2E340C4C5C3D2E2             DC    C'EST DECKS INTO R'
001F2A  40C9D5E3D640D9
001F31  C4D940C8D7D940C1D5             DC    C'DR HPR AND MAKE '
001F3A  C440D4C1D2C540
001F41  D9C4D940D9C4E86BC5             DC    C'RDR RDY,EOF ON'
001F4A  D6C640D6D5
001F4F  40C9C640C4C5E2C9D9      IDTR   DC    C' IF DESIRED TO V'
001F58  C5C440E3D640E5
001F5F  C5D9C9C6E840E3C8C5             DC    C'ERIFY THE CDS IN'
001F68  40C3C4E240C9D5
001F6F  40D7F16B40E2C5E340             DC    C' P1, SET SSW 9 0'
001F78  E2E2E640F940D6
001F7F  D5                             DC    C'N'
001F80  40D9C5D4D6E5C540C1      RTC    DC    C' REMOVE ALL CDS '
001F89  D3D340C3C4E240
001F90  C6D9D6D440E3C8C540             DC    C'FROM THE RDR'
001F99  D9C4D9
                        ********************************************************************************
                        *       EQUATES
                        ********************************************************************************
                  000000 NEVER  EQU   0
                  000007 NCCO   EQU   7
                  00000F UNC    EQU   15
                  000008 NONE   EQU   8
                  000004 SOME   EQU   4
                  000001 ALL    EQU   1
                  000005 ANY    EQU   5
                  000008 CC0    EQU   8
                  000004 CC1    EQU   4
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000002      CC2     EQU   2
000001      CC3     EQU   1
00000A      CCO2    EQU   10
000006      CC12    EQU   6
000008      EQ      EQU   8
000004      LO      EQU   4
000002      HI      EQU   2
000006      UNEQ    EQU   6
00000C      EQLO    EQU   12
00000A      EQHI    EQU   10
000080      LOGOUT  EQU   X'80'
000181      SYSMOD  EQU   X'181'
00F000      REG     EQU   X'F000'
00005A      WHAT    EQU   90
000000      R0      EQU   0
000001      R1      EQU   1
000002      R2      EQU   2
000003      R3      EQU   3
000004      R4      EQU   4
000005      R5      EQU   5
000006      R6      EQU   6
000007      R7      EQU   7
000008      R8      EQU   8
000009      R9      EQU   9
00000A      R10     EQU   10
00000B      R11     EQU   11
00000C      R12     EQU   12
00000D      R13     EQU   13
00000E      R14     EQU   14
00000F      R15     EQU   15
000198      WT      EQU   408
000040      HCSW    EQU   64
000048      HCAW    EQU   72
0001A0      DMSSW   EQU   X'01A0'
0001B9      DMIOL   EQU   X'01B9'
0001BC      DMPTR   EQU   X'01BC'
            END     ROUT02
```


POST ASSEMBLY DATA.

REFERENCES TO DEFINED SYMBOLS.

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  1      8    EQ    1298,  1356,  1382,  1618
  1      2    HI    1B88
  1      4    LO
  1      0    R0    10F0,  156A,  16E2,  1720,  172C,  173A,  1742
  1      1    R1    12E0,  1538,  15B4,  16E6,  16E6,  16F4,  16F8
                    16FA,  16FE,  1702,  1710,  1714,  1728,  172C
  1      2    R2    1570,  157E,  1582,  15A4,  15A4,  15A8,  16BC
                    16E8,  16E8,  16F6,  170A,  1724,  1732
  1      3    R3    1574,  1578,  15A0,  15A0,  16EA,  16EA,  16F0
                    16F4,  16F8,  16FA,  1702,  1706,  170A,  171C
                    1724,  173E
  1      4    R4    157E,  1598,  1646,  1656,  1666,  1676,  1686
                    16BC,  16BE,  16E2,  16EC,  16F6,  1718,  1732
                    1736,  1742,  19CE,  1B14
  1      5    R5    1558,  19E0,  1B90,  1BA0
  1      6    R6    19A0,  19A0,  19A2,  19A6,  19AA,  19AC,  19AE
                    19B0,  1B7C,  1B84,  1BCA
  1      7    R7    127E,  12B4,  12CC,  1582,  1586,  15FC,  160A
                    161C,  16CC,  1B8C,  1B94,  1B98,  1B98
  1      8    R8    127A,  12B0,  12C8,  1326,  132A,  1348,  1348
                    134C,  13A2,  13A6,  1458,  145C,  1460,  1460
                    1464,  15E4,  1B80,  1B94,  1B9C,  1B9C,  1BEA
                    1BF0,  1BF0,  1BFC
  1      9    R9    10F0,  114A,  114E,  115A,  11BE,  11C2,  11CE
                    1224,  13FE,  142C,  146E,  1486,  149E,  14B6
                    156A,  15DC,  15E0,  15F8
  1    198    WT    114A,  11BE,  15DC
  1      1    ALL   110E,  11B6,  11EE,  1246,  1266,  12A4,  12F8
                    1304,  136A,  138A,  13C2,  152C,  1558,  15BA
                    1610,  162A,  1696,  19C0,  1B1C,  1B36
  1      5    ANY   12E8,  1550,  159C,  1622,  170C
 16   18AB    BIG   16AA,  16B0
  1      8    CCO   1156,  117C
  1      4    CC1   1180,  15F4
  1      2    CC2   1184
  1      1    CC3
  4   1BBA    DOF
  2   1C06    ERM   1B44
  9   188E    HD1   169E
  4   1518    ICD   14E8
  4   114A    IHI   112E,  113E
  2   10E8    ISW   115E,  115E,  1164,  11A2,  11AE,  118A,  11C6
                    11D6,  11E6,  11EA,  11F8,  1228,  1236,  1242
                    124A,  125A,  126A,  1282,  128A,  128E,  129C
                    12A0,  12B8,  12C0,  12C4,  12D0,  12D8,  12DC
                    12E4,  12EC,  12F4,  1300,  131E,  1340,  135A
                    1366,  1472,  14A2,  14C0,  1518,  1520,  1528
                    1554,  1590,  15B0,  15B6,  15BE,  1606,  161E
                    19BC,  19DC,  19E4
  4   1566    IUP   155E
 16   1926    MDR   15CA,  15D6
  4   1682    NAC   167A
  4   1672    NBP   166A
  4   1692    NTC   162A,  1638,  168A
  4   1662    NXL   165A
  4   173A    NXT   172E
  4   1652    NXU   164A
  4   19F0    PCH   198C
  4   1B94    PIB   1BA0
  4   1724    PIK   173E
  1      A    R10   10FA,  13DC,  13F8,  1402,  140A,  140A,  1548
```

			1BAA, 1BBA
1	B	R11	10EA, 110A, 11B2, 123A, 1252, 1292, 12A8
			130C, 1316, 1326, 1338, 138E, 13A6, 13A8
			13BA, 13BA, 13BE, 142E, 144A, 1458, 148A
			14BA, 1530, 155A, 1562, 1562, 1566, 1566
			156E, 1BAE, 1BBE
1	C	R12	1122, 1132, 1142, 1152, 1178, 11DE, 15CE
			15E8, 15F0, 1984, 1988, 198C, 1990, 1994
			1998, 19B0, 1B28, 1B3C, 1B68, 1BDE
1	D	R13	10FA, 10FE, 10FE, 119C, 1548, 15E4, 15FE
			1978, 1978, 1982
1	E	R14	1104, 1104, 114A, 11BE, 14E4, 14EC, 15DC
			197A, 19A2, 19A6, 19AA
1	F	R15	11F2, 1200, 1230, 1982
2	1B60	RAP	1C0C
4	19EC	RDR	1998, 1B3C
1	F000	REG	1212, 13A0, 13B8, 13D2, 13EC, 142A, 1438
			143E, 14D4, 14E2, 1516, 1540, 1546, 15CA
			15D6, 1632, 169E, 16A4, 16AA, 16B0, 16B6
			174A, 19DA, 1B24, 1B30, 1B4C, 1B52, 1B58
			1B5E, 1B64, 1B70, 1B88, 1BC8, 1BDA, 1BE6
			1C0A
12	1C34	ROW	1B72
2	15C6	RRM	1382, 138A, 1610, 1618
16	1F80	RTC	1C0A
4	19F4	TW7	1B84
1	F	UNC	1126, 1146, 118C, 1194, 11A6, 11DA, 11FC
			122C, 124E, 12F0, 12FC, 1308, 140E, 142C
			1524, 156E, 15B4, 15C2, 15D8, 15FC, 160A
			161C, 1638, 174C, 19CE, 19E8, 1C02, 1C0C
4	19F8	ATE1	15A8
4	12E0	BTCD	12D4
1	A	CC02	
1	6	CC12	
4	10FA	CONP	15D8
6	163C	COPT	1622
1	1AF3	CRSW	1168, 1626, 1634
8	1798	DBWD	16BE, 16C2, 16CC, 16D6, 1714, 1728
8	1758	DCRD	12B0, 12C8
1	A	EQHI	
1	C	EQLO	
2	1B86	ESNS	
4	1B3C	EXEC	1B1C, 1B36
2	1BE8	EXIT	1BD2
4	1DCC	EXP1	1B88
4	1DD4	EXP2	1BC8
8	1C18	FSS1	1BBA
4	1152	GREG	115A
1	48	HCAW	10FA, 1548, 15E4
1	40	HCSW	10FE, 10FE, 119C, 11F2, 1200, 1230, 15FE
9	1897	HD1A	16A4
1	1AF1	HDSW	116C, 1692, 16B8
16	1AF6	HUNG	19DA
3	1817	IACT	121E, 147A, 14AA
4	1528	IBCD	151C
6	130C	IBSN	125E, 126E, 1276, 12A4, 12AC, 12E8, 12F0
12	17EB	ICAW	13DC, 13E4, 13E6, 13EC
3	17FA	ICCW	13EE
4	1570	ICDT	12E0, 1538
1	1429	ICNT	121A, 13F4, 1446
3	17F7	ICSW	1214, 1440
4	14A2	IDID	148E
16	1F4F	IDTR	1B24, 1B30
3	181A	IEXP	1452, 1492
4	12A0	IFUR	1286, 1298
4	161E	IGOP	15BA
2	1978	INIT	1B14
4	11AE	INOW	110E, 118C, 1194, 11A6

4	123A	INT3	11FC
4	1198	IONE	1180
6	14BA	IPAS	14A6
2	16BC	IPDA	1696
4	15A0	IRTU	1594, 174C
4	12C8	ISEA	12BC
4	1252	ISEN	11B6, 11DA, 123E, 1246
6	10EA	ISIO	1BAE, 1BBE
4	15B6	ISIP	158C, 159C
4	15B0	ISSW	15C2
6	1230	ISV2	11EE
6	1578	IT80	15AC
4	1590	ITCO	
4	15F8	ITIC	1602
4	1190	ITWO	1184
6	1200	IUIO	11E2
6	115E	JOHN	1116, 1156
6	1BEA	LA52	1B88
1	1AF0	LDSW	199C, 19B8, 1B40, 1BCE
1	195F	MSK1	11CA
1	1960	MSK2	11D2
1	7	NCCO	1136, 15EC
1	8	NONE	1116, 111E, 112E, 113E, 123E, 1256, 125E
			126E, 1276, 1286, 12AC, 12BC, 12D4, 131A
			1322, 133C, 1344, 1372, 1406, 144E, 1476
			148E, 14A6, 14C4, 151C, 1534, 155E, 1594
			1602, 164A, 165A, 166A, 167A, 168A, 172E
			197E, 1B44, 1BD2
2	1746	PRGD	
16	1F11	PTDB	1BDA, 1BE6
8	1C10	RDNF	1BAA, 1DCC
4	1BAA	RSIO	1C02
16	1DE4	RTD1	1B4C
16	1E06	RTD2	1B52
16	1E42	RTD3	1B58
16	1E82	RTD4	1B5E
16	1EC7	RTD5	1B64, 1B70
1	1961	RTSV	10F4, 19D0
1	1AF4	SFLE	
4	1004	SNSW	1112, 111A, 112A, 113A, 136E, 154C, 1B18
			1B32
1	4	SOME	
16	1936	TCRA	1632
4	1B80	TEST	1BCA
1	6	UNEQ	11E2, 1312, 1334, 13D8, 14E8, 158C, 15AC
			19B4
1	5A	WHAT	
1	17A0	WORK	1200, 13F8, 1416, 1418, 141A, 1420, 1468
			1468, 1480, 1498, 1498, 14B0, 14EC, 14F6
			14F8, 14FA, 1500, 1506, 150C
4	19BC	BLOOP	19B4, 19E8
1	1B9	DMIOL	19A2
1	1BC	DMPTR	19A6
1	1A0	DMSSW	
16	18F4	GOODY	163C, 163C, 1642, 164E, 1652, 165E, 1662
			166E, 1672, 167E, 1682, 168E, 16C2, 16C8
			16D8, 16E0, 1732, 174A
8	1C4C	HOLES	16FA, 1702
4	160C	IBACK	15EC
16	17FD	IBLAH	1214, 121E, 13EE, 141A, 1420, 142A, 1440
			1452, 147A, 1492, 14AA
2	1412	ICOUT	1224, 13FE, 146E, 1486, 149E, 14B6
8	1788	ICSW1	119C, 11F2, 1262, 132E, 132E, 1386, 1480
			160C
8	1790	ICSW2	1230, 1272, 1350, 1350, 14B0
4	1472	IDIDI	144E
4	1132	IHANG	1146
16	17DB	ILINK	13A8, 13B0, 13B2, 13B8, 1546

4	15FE	ILOKE	15F4
4	1122	ILOOP	
4	135A	INDER	12F8, 1304, 1312, 1322, 1334, 1344
3	195C	IOADR	13CA
6	1440	IOCSW	13C2
16	1833	IOLOG	14FA, 1500, 1506, 150C, 1516
16	1858	IOPT1	1540
4	14E4	IPASS	14C4
4	1760	ISAVE	10F0, 156A
4	1178	ISSUE	13D4, 195C
4	15DC	ISTRT	127E, 12B4, 12CC
4	111A	ITRY1	1126, 1136, 1550
4	112A	ITRY2	111E
16	1962	IUNEX	120C, 1212
4	11BE	IWAIT	124E, 1524
4	11AA	IZERO	117C
4	19FC	MOD50	1988, 1994
1	0	NEVER	
12	1C40	PARAM	1B72, 1BEA, 1BF6, 1BF6, 1BFC
4	1000	SECNO	1008, 1018, 103C, 1080, 10F4, 120A, 120C 1212, 1398, 139A, 13A0, 13B0, 13B2, 13B8 13CA, 13CC, 13D2, 13E4, 13E6, 13EC, 1416 1418, 142A, 1438, 143E, 14CC, 14CE, 14D4 14DA, 14DC, 14E2, 14F6, 14F8, 1516, 1540 1546, 15CA, 15D6, 1632, 169E, 16A4, 16AA 16B0, 16B6, 16D6, 16D8, 16DE, 16E0, 174A 19D0, 19DA, 1B24, 1B30, 1B4C, 1B52, 1B58 1B5E, 1B64, 1B70, 1B88, 1BC8, 1BDA, 1BE6 1C0A
4	10E0	UNIT1	1984
4	10E4	UNIT2	1990
16	18CD	BEAUTY	16B6
1	1A00	BUFFER	1582, 19C4, 19C8, 19C8, 1C10, 1C18
1	1A50	CHKBUF	157E, 1758
1	1AA0	EXPBUF	1574, 1B80, 1BA4
1	1AF5	GENDAT	1B78, 1B8C, 1BA4
6	19D0	HANGUP	19C0
11	1828	IACSNS	1170, 1292, 137E, 14DA, 14DC, 14E2, 1614 1750
10	17C2	IACTCC	1174, 1188, 1190, 1198, 11AA, 130C, 143E
6	142E	ICCOUT	13D8, 1406
6	132E	ICCSW1	132A
6	1350	ICCSW2	134C
6	1468	ICHNG1	145C
6	1498	ICHNG2	1464
1	1AF2	ICODAT	1578, 1586, 16DE, 16F0
6	13F8	ICWOUT	140E
4	127A	IDDSNS	1256, 1266, 19E0
4	135E	IDUNCK	12FC, 1308, 1356
10	17B8	IEXPCC	142E, 1438
11	181D	IEXSNS	14BA, 14CC, 14CE, 14D4
1	139E	IFLAG1	135E, 1376
1	153E	IFLAG2	1362, 137A
4	155A	ILEAVE	1372
6	14EC	ILOGED	122C
4	148A	IMORST	1476
4	12F4	INOEX1	131A
4	1300	INOEX2	133C
15	17CC	IOADDR	13CC, 13D2
4	1038	IOOPSW	11DE, 120A
2	153C	IOPOUT	152C, 1534
4	137E	IOUTIT	136A
4	11DE	IRETRN	107C
8	1750	ISENSE	127A
4	15F0	ITIOLP	15F8
9	184F	ITSTNO	10EA, 138E, 1398, 139A, 13A0
1	80	LOGOUT	1104, 1104, 14EC
4	1984	NITWIT	197E

12	191A	PUNCHS	1724
1	1B10	ROUT02	1015, 1F9C
1	181	SYSMOD	14E4
1	1C20	TWENTY	16E2, 1742
1	1000	XF8220	

NO ERROR DETECTED IN ABOVE ASSEMBLY

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PERIODS CORRESPOND TO BLANK COLUMNS.

COLS. 1 THROUGH 20	COLS. 21 THROUGH 40	COLS. 41 THROUGH 60	COLS. 61 THROUGH 80
BESD.....AA..AAXF82 9 YQ Y9	20..AAAA.AGQ..... YYQY Y8	840	577.130498..82200001
99 9	9999 99		
BTXT.AAA..A8..AA8SAA 9 YQY Y9 Y9 9YY	AAAAAAAAABOAADAAAAMU YYYYYYYYY9+Y99YYYY88	AAAAAAAAAAAAAAAAAAAA YYYYYYYYYYYYYYYYYYYY	AAAAAAAAAAAA82200002 YYYYYYYYYYYY
999 9 9 99	999999999 9 99999	99999999999999999999	999999999999
BTXT.AA8..A8..AAAAAA 9 YQ9 Y9 Y9YYYY	AAAAAAAAAAAAAAAAAAAA YYYYYYYYYYYYYYYYYYYY	AAAAAAAAADAAAAAAAAAA YYYYYYYYY9YYYYYYYYY	AAAAAAAAAAAA82200003 YYYYYYYYYYYY
99 9 9 9999	99999999999999999999	999999999 9999999999	999999999999
BTXT.AAO..AA..AAAAAA 9 YQ+ YQ Y9YYYY	AAAAADAAAAJB..... YYYY99YYYY9Q	.....	82200004
99- 99 9 9999	9999 9999 9		
BTXT.AAS..A8..AABAAA 9 YQ8 Y9 Y9OYYY	AAAAAAAAAKA94ABAA8-PG OYYYYYYY 9 8Q9Q8 9	0.0.PCSASAA.ODGA1F+N - - 88Y8Y- 9ZQ Z Y	AHAAODGA1OEA82200005 YZ-Y 9ZY 8QY
99 9 9 9 9	9 99999 90 9	9 9	9 9
BTXT.AJQ..A8..AAOAGO 9 Y99 Y9 Y9+YZ+	1WAOODGA1WDAOAGO1OHF 8-+ 9ZY 8QY+YZ 9RQ	AHHAACEAOAGA1BFA16GO 9-OQY9QY+YZY 9ZQ 9Z	1BAOEOAADFGA82200006 9Z+Q+-YQ8ZQ
9 9 9 9 -	9 9 9 9	9 9 9	-Z Z 9
BTXT.AJ+..A8..AA1FAO 9 Y9 Y9 Y9 RZ+	EH+5AHGO1OPAOYOYFAOY Q 8YZZ 9 9 -Y	DADEDADDBA9NDAOAGA1O -YQ8-YQ8-Y 9QY+YZY O	G.1DGJ1DB38P82200007 Z -ZY Y- Y
9 9 9 -	Z 9	9Z 9Z 9 9 9	9
BTXT.AJH..A8..AAGO1K 9 Y9O Y9 Y9Z Y	B28PGO1KB18PKG8HO.F. - YZ Y- Y 9 O- -	OYGO1KBO8PD7OYA.AAGA Z Y- Y-8 - QYZQ	2FFAOYHFAHHA82200008 8-Q RQ9-OQ
9 9 9		09 9	9
BTXT.AJO..A8..AAACFA 9 Y9+ Y9 Y9Y9-Y	OYAABBFA1BAABCD7OYGO YYQZZQ YYYQZ-8 Z	2FAOO2G-1DD7OYA.OYGA 88+ 8Z Q-8 - ZQ	2UKG8HO.F.OY82200009 8 9 0 -
9 9 9 9	9Z 9 9Z	9 Z 9	9
BTXT.AJ8..A8..AAGO26 9 Y9 Y9 Y9Z 9	KGBAO.BEABA2BEBOMNBD 9QY 8QY9Y88R8-Z9QZ	KB8W8GBK41KB8D8GEA4S 9 Q-8 8 9 Q QZQ 9	FBOYGO4DKG8A82200010 -9 Z Q 9 Q
9 9 9	Z9 999 999 9 Z	9 9 9 Z Z	Z
BTXT.AKA..A8..AAO.FJ 9 Y9Q Y9 Y9 -Y	OYAAAAGA2FAHOYGA2FFH -QQYZY 8-9 ZQ 8-9	OYGO1BABAAGA2FA.OYGA Z Q-9QYZY R- ZY	2MAB8DGA2FAJ82200011 O-9 YZQ R-Y
9 Z 9 9 9	909 9	O 09 O	9 9 9
BTXT.AKQ..A8..AAOYGA 9 Y9Z Y9 Y9 ZY	2MAB8DGA2MAA8HEO6MA. O-9 -ZY OZY RZ+ Z-	9NGA6FAAOZGA2MFDOYD7 9ZQ 8-Y ZY O-9 -8	OZNA9NAEGA2M82200012 Y 9Q9ZY O
9 9 9	-	9	9 O
BTXT.AKJ..A8..AAFAOY 9 Y9Y Y9 Y9-9	AAEHAADFGA2DAAEAEO6M ZYQO-YQ8ZQ OZYQQZ+ Z	AAOZGA2DAADFGA2MFBOK -Y ZY Q-YQ8ZY -9 Y	D7OZGO2DFJOK82200013 -8 Z Q-Y Y
9 9 9	Z- Z 9 - ZO -	Z Z 9	Z 9 9
BTXT.AKQ..A8..AAGO2D 9 Y9 Y9 Y9Z Y	FDOKGO3UA.OYGA3BGO3F -9 YZ 9- ZQ OZ O	AJOYGA3BGO3FAAEQAADF -Y ZQ OZ OZYQO-YQ8	GA3DAAEJEO6M82200014 ZQ 8ZYQYZ+ Z
9 9 9 9	9 9	9 9 Z Z	9 9 Z -
BTXT.ALA..A8..AAAAOZ 9 Y9Q Y9 Y9-Y	GA3YAADFGA2DF.OKD7OZ ZY 9-YQ8ZQ Q- Y-8	AA9NGA34EA5HNA8PADG- -Q 9ZY 9ZY O Y YQ9Z	3BAHAAGA2UA.82200015 O-9QYZY -
9 9 9 9	Z 9 9	9 - 9 O	O9
BTXT.ALH..A8..AAOYGA 9 Y9Z Y9 Y9 ZY	3BHCAF.A3KNG8H8HG-3B OZYY9 Y 8 9 O OZ O	ADAAGA2OAJOYGA3BAHAH -9QYZY -Y ZY OZOY9	.A34NG8A8AGA82200016 Y 8 9 Q QZY
9 9 9	9	O9 9 9	

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BTXT.ALA..A8..AA3FFA 9 Y9Y Y9 Y9 O-9	OYBM3FBO5FAAOYGA3OAA -Z O-+ O-9 ZQ O-9	ODGA5KBU3FBA5FKA94AB 9ZY O-9 O-Y O 9 8Q9	BEABA4A4BOMA82200017 8QY988888-Z8
9 9 9	- 9	- 90	999 99999 9
BTXT.ALH..A8..AA97AA 9 Y9O Y9 Y9 9ZY	ADLH+A8HBEACHIHHBOJA Y98O Q 8QY99 9 8-YQ	8CACADAAAAGA4+BEACB7 ZQY9-YQYZQ 8QY988	HIBOJG8D+J8Q82200018 908-Y8 O Y
9 - 9 9	9 9- O 999 9 9	09 09 9 999 99	-9 9 -
BTXT.ALO..A8..AABEAC 9 Y9 Y9 Y98QY9	HRHQBOJC8LKB8W8SBO41 9 9 8-Y8 9 -9 8	KGBAJAEA4SAOJDGA46AK 9QYYYZQ 9-+Y9ZY 8ZY	AHGO4HBEAHBA82200019 Y9Z 98QY98Y
9 9 9 999	9 9 9	Z9 9 9	9 999 99
BTXT.AMY..A8..AABAKG 9 Y99 Y9 Y98Y 9	8KBAKG83BHBOJK8VG9KA YQY 9 Q98-Y8 9 Y	8NADBOJB8JBOJB8KKB8W OQ98-Y8 Y8-Y8 Y 9	8GBK41AHAAGA82200020 Q-8 8-9QYZY
9 9 9 99	9Z9 Z 9 9 9	0 9 9 9 9	9 9 9 09
BTXT.AM-..A8..AA4BKB 9 Y9 Y9 Y9 O 9	8D9BHCAF.A44AHAH.A4M Q 9ZYY9 Y 8ZOY9 Y Y	KGBABAEA4SA.OYGA4BKB 9QYQYZQ 9- ZY Q 9	8D8GKGBA8HEA82200021 Q Q 9QY OZQ
9 9 9	Z 9 9	Z9Z9	Z Z Z9
BTXT.AMH..A8..AA4SAD 9 Y9- Y9 Y9 9-9	AAGA4BKB8D9BKGBABAEA QYZY O 9 Q 9 9QYQYZQ	4SAJOYGA4BKB8D8GKGBA 9-Y ZY Y 9 Q Q 9QY	8AEA4SKA9BAE82200022 QZQ 9 Y 8Q9
9 9 9	09 - Z Z9Z9	9 9 Z Z Z9	9 9O
BTXT.AMO..A8..AAADOY 9 Y9- Y9 Y9-9	GA44BEAAABABBOJC9EBE ZY 8QY988888-Y8 98Q	AAANANBOJC9AEAJAG-5Y Y989898-Y8 Q-QZOZ 9	KCBASABEADBA82200023 8QY8Y8QY88Y
9 9 9	999 99999 9 99	9 9 9 9 9 9 Z	9Z9 999999
BTXT.ANH..A8..AABAKA 9 Y99 Y9 Y98Y 9	9JBAKE9TBBKE9SBBKE91 YQY 9 9Q9 9 8Q8 9 9	BKBOJM9LABOYGA58DEOY Q98-Y8 8-9 ZY 9-Q	GO1BFBOZAAOL82200024 Z Q-9 -Y Y
9 9 9 99	9Z9 Z 9Z9	Z 9 9 9 Z	O 9
BTXT.AN•••A8..AAGA5D 9 Y9 Y9 Y9ZY R	FJOLEA5HD7DDDGOLA.OL -Y YZY O-8Q8-Q Y- Y	GA5DFAOLAABQA.CHAOCQ ZY O-Q YZQQZZ QRZ+QO	AADFGA5AAABH82200025 -YQ8ZQ YZQQO
9 9 9	9 9 - Z 9 9 9	9 9 ZZ Z -Z	Z 9 ZZ-
BTXT.ANH..A8..AAA.CH 9 Y9R Y9 Y9Z Q9	AOC8EA5FBOOE9.BOJA8C Z+Q ZQ Q8-+Z 8-Y9	+NAHAOODG+1BAAOYGNAH YYZ-+ 9Z 9-Y 99-9	AAGA5OACABAC82200026 QYZY YZQY9ZQ
9 O 9 9 Z	-Z 9 99 9	9	09 09 O
BTXT.ANA..A8..AAAFHA 9 Y9Q Y9 Y9Y9-8	8-GCAABQA.CHAOCQAADF 9QZQQZZ Q9Z+QO-YQ8	GA5QAABHA.CHAOC8EA5F ZY ZQQOZ QRZ+Q ZQ Q	G8AJAANAAAOA82200027 9 ZYY9 YQY+Y
9 O 9 9 9 9	Z ZZ Z -Z Z	ZZ- Z -Z 9 9	99 9Z9-9
BTXT.ANY..A8..AAG-6O 9 Y9 Y9 Y9Z 9	AG.AG+6DAQ.AG+62ASAA -9 YZ 9-9 YZ 9Z9Y9	A3AADAAAGAAEJB-G-5S Z9Y9ZZY9ZRY9RYQ Z	G1FAOLAAOLGA82200028 9 -Y Y-Q YZQ
9 9 9	9 9 9	9 9 09 9Z	9 9 9 9
BTXT.AOJ..A8..AA54AB 9 Y9Y Y9 Y9 -9	OZGA6FFAOYGO54F.OLAJ ZQ Q-9 Z - Y-Y	OLGA5DABOZGA6FFAOYGO YZQ Q-9 ZQ Q-9 Z	5DBOUEB2BBEA82200029 Q8-98Q98QQY
9 9 9 9	9 9 9	9 9 Z 9	Z9 9Z 99 9
BTXT.AOH..A8..AAOABO 9 Y9R Y9 Y9+Y8-	AAB2GOO6HFAHHAAB+EAH Y9Q9Z RQ9-OQY9 YYZ	DAOAGO6DEAOAG.6FFA6H QY+YZ+ -QY+YZ OZQ R	G7ADODGA6AFA82200030 9 -9-ZZY Y-Y
9 9 9 9 99	Z 9 9	9 9 - 9 9 0	
BTXT.AOA..A8..AAOZG7 9 Y9Q Y9 Y9 9	A.9NGAO6G7B.BAKUBABA - 9ZQ 9 - QY 9Q9QY	KB9F9MAJOLGA6YKB9F9J 8 - Y-Y YZY 8 - O	AADFGA6OAJOK82200031 -YQ8ZQ -Y Y
9 9 9	9 Z9 Z Z9	9 9 9 9	Z 9 9 9
BTXT.AOH..A8..AAG+68 9 Y9 Y9 Y9Z	AADEGA7HKAGFFBBOJLGM -YQ8ZQ Z 9QOQ88-Y9QY	FADEGO7HAADFGA6DABOK -YQ8Z Z-YQ8ZQ -9 Y	GA6DBOBOAA.A82200032 ZY Y- Q9-Q Y
9 9 9	Z 9 Z-Z99 Z	Z 9 9	9 Z 9 9
BTXT.APA..A8..AAGA7H 9 Y9Y Y9 Y9ZY 9	B1BOBOBJAH.AGA7QB1BJ - Q9- Q8-9 YZY 9- Q8	BOBMAD.AGA7YB1BMBOBJ - Q8-9 YZY 9- Q8- QY	AA.AGA78B1BJ82200033 -9 YZY 9- QY
9 9 9 9	Z Z9 9 Z9	Z9 9 Z9 Z9	9 Z9

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BTXT.AP8..A8..AABOBV   AB.AGA7HB1BVADEQAJOL   GA7AAADFGA7DADOKG+7D   A.DEGA8DKAGF82200034
9    Y99  Y9  Y9- Q9   -9 YZY Z- Q9Q9Q -Y Y   ZY Y-YQ8ZY Y-9 YZ  -   - Q8ZQ 8 9Q0
     9    9   9   Z       9      Z   Z 9 9          Z         9       Z 9    Z-

BTXT.APO..A8..AAFHBO   JLGMF.DEGO8DAADFGA7D   GO7MA.OKGA7MAADDGA7F   BOJH9EBOJM9E82200035
9    Y9+  Y9  Y9Q98-   Y9QY- Q8Z  8-YQ8ZQ Y   Z  8-  YZY Z-YQ8ZQ Q   8-Y9 O8-Y9 Y
     9 -  9   9 Z 9      Z   Z        Z  9              9       Z 9 0   9     9

BTXT.APQ..A8..AABOJA   9GBOJS9GBOJX9RFADDKA   DGAAQBF.8H3JBB8FFOBC   KA8HOABEAAHH82200036
9    Y90  Y9  Y98-Y9    08-Y9 08-Y9  -YQ8 Y   Q8QY9Z8  - 9Q9 Q- Q9    Y -+Y8QY99-
     9    9   9 9       -9    -9        Z 9   Z Z9          Z     Z    9  -9999

BTXT.APS..A8..AABKBE   AADGBFLJLSL3A.ABCADG   QLNUK1CLFDIAAHCLFEAA   AGMTG+8QHAAD82200037
9    Y98  Y9  Y9898Q   Y98888898989Z Y9ZQQ8   998989Z9Q80QY9Z9Q8ZQ   YQ99Z  9QQY9
     9    9   9 9 99   9 9 999 9 9   9  ZZ      9 9   Z9 99   Z9 Z   9Z        99

BTXT.AQQ..A8..AA+A8H   A.AFAAADAAAACTBVHA8H   MAGA86BUBEF.86IAAAFA   8YBOAWBAHDEQ82200038
9    Y99  Y9  Y9 Q -   Z Y9ZQY8ZYY9Z9Q9RQ -   9QZY 8Z9Q9Z  8OYY9ZQ    98-Y9QY-9Q
     9    9   9  9       9  Z99 99   Z  9      9   9  Z     9 99  Z    9   Z9  Z

BTXT.AQ+..A8..AAGO5D   AAAADAJNAAAAAAAAAAAA   AAAAAAAAAAAAAAAAAAAA   AAAAAAAAAAA82200039
9    Y9   Y9  Y9Z  Q   YYYY9Y89YYY9YYYYYYYY   YYYYYYYYYYYYYYYYYYYY   YYYYYYYYYYYY
     9    9   9    Z   9999 99 999 99999999   99999999999999999999   999999999999

BTXT.AQH..A8..AAAAAA   AAAAAAAAAAAAAAAAAAAA   .CC..X.EXP.CC..X.ACT   .ADR.XXXXXX.82200040
9    Y90  Y9  Y9YYYY   YYYYYYYYYYYYYYYYYYYY
     9    9   9 9999   99999999999999999999

BTXT.AQO..AD..AASIOA   ....................   ....................   ............82200041
9    Y9+  Y9  Y9   Y
     9    9   9    9

BTXT.AQC..AJ..AA.ADR   .XXXXXX.LINKA.......   ....................   ............82200042
9    Y9   Y9  Y9                   Y
     9    9   9                    9

BTXT.AQL..A8..AA.CAW   .XXXXXX.CSWCCW.CSW.X   XXXXXXX.XXXXXXXX.EXP   ACTEXP.SNS.X82200043
9    Y9   Y9  Y9
     9    9   9

BTXT.AJC..A8..AAX.EX   P.SNS.XX.ACT.LOG.XX.   XXXXXX.XXXXXX.XXXXXX   .TST.XXXX.SE82200044
9    Y88  Y9  Y9
     999  9   9

BTXT.AJC..A8..AAT.SS   .O.ON.FOR.LOOP.ON.PR   ESTKR.CD.OR.SS.1.ON.   FOR.LOOP.ON.82200045
9    Y8Z  Y9  Y9
     99   9   9

BTXT.AJ3..A8..AASTAC   KED.CD.PCH.ERR.CARD.   IN.PRESTKR.STAPRESTK   R.STASTACKER82200046
9    Y88  Y9  Y9
     99   9   9

BTXT.AJC..A8..AA.P1C   .....EXPECTED.SHD...   ...........BUF.COL.P   UNCHES..RD..82200047
9    Y80  Y9  Y9   8
     99-  9   9

BTXT.AJL..A8..AARD.X   U.XL.PAR.ADR.TRAN...   ....................   ............82200048
9    Y8Y  Y9  Y9
     999  9   9

BTXT.AKT..A8..AA...T   E0123456789.MAKE.PCH   .RDYAJDFA.UIO.FROM.D   EVICE.XXXXAA82200049
9    Y89  Y9  Y9                                Y9RQ9                          YY
     99   9   9                                 9 0Z                           99

BTXT.AKL..AE..AAAAAA   AAAAAAA7G...........   ....................   ............82200050
9    Y88  Y8  Y9YYYY   YYYYRYY8Q
     99   99  9 9999   9999 999Z
```



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BTXT.AMH..A8..AAGAOA   AAAAA.PREVIOUS.HANG.   UP.DETECTEDAAAGFLEA.   JFGAD4QGHOOS82200051
9    Y8Z  Y9  Y98Y Y   YYYYY                             Y9YQQ8Q-    Z-ZYQ89QR+ 8
     99   9   9 99 9   99999                             9 9ZZ99         Z  9

BTXT.AMA..A8..AADOBM   +OBMAAOYGAEWBOUJGGBO   JEB2BBEAOABOAAGGA-AX   BADFBAD+KCE882200052
9    Y8Y  Y9  Y9R+QZ    +Q8-Y  ZQQ88-98QQ8-   Y8Q98QQY+Y8-Y9QQZ Y9   -YQ8-YQ  8Q
     99   9   9   Z      Z        9Z99  9Z09   9Z 99 9 99   ZO  9     9Z  9Z  9Z

BTXT.AMH..A8..AAEME.   EDHOBMAJEOKADYFDAADF   GADFAJEHKADYFFEAOM6A   AAOAGDAADFGA82200053
9    Y80  Y9  Y9QYZ    QZR+Q8ZYQ+ 9Q Q9-YQ8   ZYQQZYQ  9Q Q9ZQ Y8Y   YQ YQY-YQ8ZQ
     99-  9   9 Z9     Z  Z   Z   Z Z   Z      Z9  Z   Z Z  0 999   99 9Z   Z  9

BTXT.AMO..A8..AAEJFA   DFMAOKDBF-DBAJEHHOBM   B.BHKFBIBHEAOM6AAAOA   GDBOMAOKDHD782200054
9    Y8   Y9  Y9QY-Y   Q8 9 YQ8Z QQZYQ R+Q8   - QO 8QOQOZQ Y8YYQ Y   QQ8  9 YQZ-8
     99   9   9 Z9     Z    9Z   ZO  Z   Z     Z-  Z-Z- 0 99999 9   Z 9     9Z

BTXT.ANY..A8..AADFGO   DDBOMKDAFAOYE+2FBAOY   GODHAABQAADFGAEDAABH   +AEME-EOGJED82200055
9    Y89  Y9  Y9Q8Z    QQ8-Z8QR-9  Z  R-Y     Z QOZYQZ-YQ8ZYQRZYQO    YQ R Q-ZYQO
     99   9   9 Z      ZZ9  9Z          0 9     Z   Z   Z   Z   Z-     Z   Z  9Z

BTXT.AN-..A8..AACOD+   A+A+BHAAAGAAAHAAF+EQ   HAEMKAD+AGG4KAAAE8KF   AAAAKBE8E9KA82200056
9    Y8   Y9  Y9Z+Q    Z Y ZRYYZRY9ZOY9Z QZ   RYQ  YQ Y99  YYYQ  8   Y9YY 8Q Q  Y
     99   9   9  -Z      9  099 09   9   Z     Z  9Z       9 9Z        9 9Z Z  9

BTXT.ANH..A8..AAFCAA   G4AABALQJAA+BAL8JAA+   FALHJAA+FALHJAA+AAKQ   JAA+AAKHJAA+82200057
9    Y8-  Y9  Y9Q9YY   9 YY Y80YYY  Y8 YYY     Y89YYY  Y8RYYY 9Y8Z   YYY 9Y80YYY
     99   9   9 Z  9     99 99 999  99 999     99 999  99 999  99    999  99-999

BTXT.ANO..AH..AAAAAL   AAAA................   ....................   ............82200058
9    Y8-  Y9  Y9YYY8   YYYY
     99   9   9 9999   9999

BTXT.ANM..A8..AA+-01   23456789+-0123456789   GDGDC2C6A1AHQABQJAHE   A1CH8CB8LAHG82200059
9    Y8Y  Y9  Y9                              QYQQ    Q8909Z099Y-9   Y8909Z099Y09
     999  9   9                               Z Z     09              9         -

BTXT.AOU..A8..AAO5AH   MABMJ.DE.5CH4CB4L.DG   O3AYKASKJJBEJ3CY2CS2   LJBGO1AHAABA82200060
9    Y89  Y9  Y9-99Z   9ZZ99 -9 99Z9ZZ99 09   +9999Z999Y-9Y9999Z99   9Y09 999QZ9Q
     99   9   9                           -   -         9  9          9-     9  9

BTXT.AOM..A8..AAJAAE   A1CHACBALAAGACAQKAKK   JJBEJ1BHYBBYKAQFAEAH   MABMJODEO5BH82200061
9    Y88  Y9  Y99YQ9   Y999QZ9Q9YQ9Y8908Z08   9YQ9Y8909Z099YO9Y89    8Z 89+Q9+99Z
     99   9   9  9     9   Z  Z 90 99  9  9        9             9   9  9

BTXT.AOD..A8..AAUBBU   K.MF.CAQDAKOJ-FE-3BO   BBSSKJKFSGAYOASOJSFE   S1BHJBBJKAJF82200062
9    Y8-  Y9  Y99ZZ9   9 09 9YZ9ZZ99 -9 99+   9Z999Y09889 8Z 898Q9   8999YZ9Y9YY9
     99   9   9              9                     9    9   9   9        9  9 9

BTXT.AOD..A8..AAATAQ   B.KBAJBDJSAQSBKSKJKF   OVAHD.BDAODDOUAHUBBU   KOMFOXAQF.KF82200063
9    Y8Y  Y9  Y9Q8YO   8 08QYY9Y8908Z089YY9   -8Y 8  8Q+Y9+89 8Z 8   9+Y9+9YZ9 Z9
     999  9   9 099    9  99     9  9  9       99 9  99    9  9  9       - 9

BTXT.APD..A8..AAA-FD   -WAQWBKWK-OFOXAYF.SF   ASFDSWAYWBSWKSOFJAAH   H.BHAAHDAYAQ82200064
9    Y89  Y9  Y9Q 09    99Z9ZZ99 09 8Y 8  8   Q8Y9889 8Z 898Y9Y8YO   9 09QY09Y990
     99   9   9 9                    99 9  9   9    9  9  9    99          9

BTXT.AP4..A8..AA2CK2   LJBG-EAHD.BDA.DD.UAH   4CB4LODGYXAYB.SBAJBD   JSAQ6CK6L-FG82200065
9    Y88  Y9  Y98Z08   9YQ9 9YZ9 Z9Q 09 99    8Z 89+Q999999 99QY09   Y99Z9ZZ99 09
     999  9   9 9 9      0  9    9            9  9  0         99     9          -

BTXT.APD..A8..AAJAAH   A.BAAAADAJAY6CS6LSFG   AANHHAAAAAAADAAAAANO   HAAAAAAADAAA82200066
9    Y8R  Y9  Y9Y9Y9   Y 9YQYY9YY9 8Z 898Q9   YY8 9YYYYYYY9YYYYY8-   9YYYYYYY9YYY
     990  9   9 9 9    9  999  99  9  9  0    999  9999999 999999     9999999 999

BTXT.APM..AU..AA.DIA   G.CMD.C6.FAILED.DO.N   OPROTEMPTY.PCH.STKRS   ............82200067
9    Y8Y  Y8  Y9                                 8
     99   99  9
```

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BRLD......A4....AAAA      AAANEAA4AAQJAAK7AANJ    AANRAANAAANIAANAAANI    EAPDDAPD....82200068
9         Y9    Y9Y9      8YQ98YQ88Y988Y888Y80    8Y808Y808Y808Y8 8Y8     8Y8Y8Y8Q
          9     9 9       999 999 99  9999999     999 999-999-999 999     999 999

BEND.AMU......AA....      ....................    ....................    ...........82200069
9   Y88       Y9
    99        9

BDAT...............       ....................    ....................    ...........82200070
9

BESD......AA..AAXF82      20..AAAA.AGD........    ....................    ...........82200071
9         YQ  Y9             YYQY Y8Q
          99  9              9999 99

BTXT.AAN..AC..AAALA.      ....................    ....................    ...........82200072
9    YQ9  Y9  Y9Y8Q
     99   9   9 999

BTXT.AA4..AD..AAAAJF      ....................    ....................    ...........82200073
9    YQ8  Y9  Y9YY9Q
     99   9   9 99 9

BTXT.AAY..A8..AAAAKA      8DABAA7-KA9/0C+NAHPG    0.0.PCSASAAAAAGA1OAO    ODGA1OAAODGA82200074
9    YQ   Y9  Y9YY 9       RQ9Q8    Y    9 YYZ 9  - -   88Y8Y-YQYZQ Y-+      9ZY 8-Y 9ZY
     99   9   9 99         0   9    9        9        9       09 9

BTXT.AJJ..A8..AA1SDA      0AGO1KA.ODGA1BEA0AGO    1KA.ODGA1BDA0AGO12HF    AHHAACEA0AGA82200075
9    Y9Y  Y9  Y9 8QY      +YZ   8-   9ZY 8QY+YZ+   8-   9ZY 8QY+YZ   9RQ  9-0QY9QY+YZY
     9 9  9   9  9 9       9    9          9 9 -  9          9 9            9   9 9

BTXT.AJH..A8..AA10FA      1BPAOYOYFAOYDAB3DAB1    BX8VBX7GDA0AGA1KG.1H    GJ1AB37GG0182200076
9    Y9R  Y9  Y9 8ZQ       R 9     -Y  -YQ -YQ    -  8-    QY+YZY YZ  -   ZY Q-    Z  Y
     9    9   9                        9Z  9Z        9       9 9          9

BTXT.AJA..A8..AAB27G      G010B17GKG7HO.F.OYGO    10B07GD70YA.AAGA2BFA    OYHFAHHAACFA82200077
9    Y9Q  Y9  Y9-         Z  Y-      9 0- -   Z    Y-    -8   - QYZQ R-Q    RQ9-0QY9-Y
     9    9   9                                                 09 9    9           9

BTXT.AJH..A8..AA0YAA      9PFA1FAA9-D70YG02BA0    02G-2AD70YA.OYGA2AKG    7HO.F.OYG0282200078
9    Y9   Y9  Y9   YY      8ZQ YYY   -8  Z  R8+    8Z  Y-8   -    ZQ Q 9   0  -     Z  8
     9    9   9    9           9 9                 9    9            9 Z               9

BTXT.AKA..A8..AAKG7J      0.BEABA2ACBOMN9KKB7F    77BK4/KB8M8PEA4KFBOY    GO4MKG7AO.FJ82200079
9    Y9Y  Y9  Y9 9 Y         8QY9Y88R8-Z9 Z 9 Q    -8 8 9 9 9ZQ 9-9       Z  Y 9 Q  -Y
     9 9  9   9              999 99909         Z    9 9                       9      9

BTXT.AK8..A8..AA0YAA      AAGA2BAHOYGA2BFHOYGO    1FABAAGA22A.OYGA3DAB    7DGA22AJOYGA82200080
9    Y99  Y9  Y9   -Q     QYZY R-9   ZQ R-9  Z     Q-9QYZY 8-    ZY 8-9    YZQ 8-Y   ZY
     9    9   9    9      09            9          0  09              9       9   9

BTXT.AKO..A8..AA3DAB      7DGA3DAA7+EO5DAAOZGA    2JFDOYD7OZNA8VAEGA2J    FAOYAAOYGA3D82200081
9    Y9+  Y9  Y9 8-9       -ZY 8ZY   Z+ Q-Y  ZY    Y-9  -8     Y 8Q9ZY Y  -9   -Y   ZQ 8
     9 -  9   9  9              9      - 9                   9 90                    9 9

BTXT.AKQ..A8..AAAAAA      GA3DAA7HEO5DAAOZGA2H    F.0ZD7OZAA7HEO5DAAOZ    GA2SFJ0ZD70Z82200082
9    Y90  Y9  Y9-YQ9      ZY 8ZY RZ+ Q-Y  ZY      -    -8  ZY RZ+ Q-Y     ZY 8-Y  -8
     9    9   9   0          9      - 9                          -.9          9

BTXT.AKS..A8..AAEA50      A-0ZG+3DFAOYGO3DA.OY    GA3KGO3OAJOYGA3KGO3O    NA7GADG-3KAH82200083
9    Y98  Y9  Y9ZQ +      -   Z  8-9  Z  8-       ZQ 8Z   8-Y  ZQ 8Z  8    Y  Q9Z  8-9
     9    9   9  9 -             9        9        9        9   9         9  0

BTXT.ALQ..A8..AAAAGA      24A.OYGA3KHCAF.A32NG    7H7HG-3KADAAGA3AAJOY    GA3KAHAH.A3D82200084
9    Y99  Y9  Y9QYZY       -    ZY 8ZYY9 Y 9 9     0 0Z   8-9QYZY Y-Y     ZY 8Z0Y9 Y R
     9    9   9 09                   9                        09   9 9          9
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BTXT.AL+..A8..AANG7A      7AGA3OFAOYBM3FBO56AA    OYGA36AAODGA5KBU3FBA    56E.8VGA5FAA82200085
9    Y9   Y9  Y9 9 Q       QZY 8-9  -Z Q-+ 8-9      ZQ 8-9 9ZY 8-9 Q-Y     8-  8ZY  -9
     9    9   9                             9.       9                     9   9

BTXT.ALH..A8..AA7DGA      5FKA8DABBEABHDHDBOMA    8GAAADLH+A7SBEACGJGS    BOJA7CACADAA82200086
9    Y90  Y9  Y9 YZQ         9 RQ98QY99R9R8-Z8     8ZYY980 Q 88QY99Z98    8-YQ QZQY9-Y
     9    9   9   9              0 999     9 9        9 9- 0  999         9  9 9 09

BTXT.ALO..A8..AAAAGA      4.BEACAMGJBOJG7DED1H    G-4W+J70BEACG1GOBOJC    7LK87F7BB04/82200087
9    Y9+  Y9  Y9QYZQ        8QY9889 8-Y8 Y-Q R    Z .8 Y. 8QY99 9 8-Y8     Y 9 Q Q-9 8
     9    9   9 09 9        999 9   9  9 9   0       9    999     9  9    9   Z Z   9

BTXT.AL8..A8..AAKG7J      JAEA4KAOJDGA4WAKAHGO    38BEAHGJGJKG8B7JKG8C    7QBOJK7EG9KA82200088
9    Y9   Y9  Y9 9 Y      YYZQ 9-+Y9ZY 8ZYY9Z       8QY99Y9Y 9 9 Y 9 8     08-Y8 Q9   Y
     9    9   9            9             9 9        999              9      9  9 Z   9

BTXT.AMA..A8..AA7EAD      BOJB7HBOJB7BKB7F77BK    4/AHAAGA4BKB8M8KHCAF    .A4UAHAH.A4D82200089
9    Y9Q  Y9  Y9 QQ9      8-Y8 08-Y8    9 Q  -8     8-9QYZY R 9 9 8ZYY9    Y 8Z0Y9 Y Q
.    9 Z  9   9  00       9  9 -9  9      Z    9   9  09   0     9  9          9

BTXT.AMQ..A8..AAKG7J      7JEA4KA.OYGA4BKB8M8P    KG7J7HEA4KADAAGA4KKB    8M8KKG7J7JEA82200090
9    Y9Z  Y9  Y9 9 Y       YZQ 9-    ZY Y 9 9 9     9 Y 0ZQ 9-9QYZY 0 9     9 8 9 Y YZQ
     9    9   9                                                09           9

BTXT.AMJ..A8..AA4KAJ      OYGA4BKB8M8PKG7J7AEA    4KKA8SAEADOYGA4UBEAA    HSHSBOJC8NBE82200091
9    Y9Y  Y9  Y9 9-Y        ZY Q 9 9 9 9 Y QZQ      9 Y 9Q9-9   ZY   8QY9  99998-Y8 88Q
     9    9   9   9            0                     9  0            999       9  9 999

BTXT.AMQ..A8..AAAAHV      HVBOJC8YEAJAG-5QKC7J    SABEADGJGJKA887JKE83    7KKE8B7KKE8A82200092
9    Y9   Y9  Y9Y998      988-Y8 9-QZ0Z   9 8 Y   8Y8QY89Y9Y 9 9 Y 9 8     0 9 Z Y 9 8
     9    9   9 9  9       99  9   Z        9       9999              9

BTXT.ANA..A8..AA7BBO      JM83ABOYGA5YDEOYGO1F    AAOYGA54AAAAGA54EA50    BO068HBOJA7C82200093
9    Y9Q  Y9  Y9 08-      Y8 9-9  ZY 9-Q  Z  Q    -Y  ZQ 8-YQ9ZY 8ZQ +    8-+9 R8-Y9 Q
     9 9  9   9  -9       9             Z    0          9 9  0   9 9 -    9     9    9

BTXT.ANH..A8..AA+NAH      AOODG+1KAAOYGNAHAAGA    5OACABACAFHA7-GCAJAA    AABJKAB2AAAB82200094
9    Y9Z  Y9  Y9 YYZ      -+ 9Z   8-Y   99-9QYZY   ZZQY9ZQY9-8   9QZYY9   ZQQY YQ QYZZ
     9    9   9   9               9         09       09  09  9   Z 99      ZZ  9Z Z9

BTXT.ANA..A8..AABGAB      9GNAOAB2G-5FA-OZGA5J    AG.AG+5FA3AAASAAEJ98    G-5HFBOZG1AB82200095
9    Y9Y  Y9  Y9Q8ZR       Q Y+YQ Z  O-    ZY Y   -Q YZ   0Z9Y9Z9Y9RY     Z  R-9  9 -9
     9    9   9 Z  0       Z 9-9Z     -            Z 9   -  9   9  9        0

BTXT.ANH..A8..AAOZGA      6OFAOYGO5ABOUA9WBBEA    OABOAA9WGOOBHFAHHAAB    +EAHDAOAGO6D82200096
9    Y90  Y9  Y9   ZQ      8-9  Z   Q8-9Q 98QQY   +Y8-Y9 9Z   QRQ9-0QY9    YYZQY+YZ+ 8
     9 -  9   9    9       9         09  9  99 9   99          Z       9     9  9 9 - 9

BTXT.ANO..A8..AAEAOA      G.5FFA5OG7ADODGA58FA    OZG7AA7DGA5FE.8VGA5F    G7A-0ZG+64AA82200097
9    Y9   Y9  Y9QY+Y      Z  QZQ  9 -9-ZZY  -Y      9 -9 YZQ .-   8ZY     9 -    Z  8-Y
     9    9   9 9 9          Z                              9      9                9

BTXT.AOY..A8..AAB3GA      6BBOAW96FAB3GO6BKU85    84BO9BAA.AGA6BB19BBO    9EAH.AGA6KB182200098
9    Y99  Y9  Y9Q ZQ       -8-Y9 9-YQ Z  - 9       -   8-Q YZY R-   8-      8-9 YZY Z-
     9    9   9 Z  9        9        Z                9 9 9          9      9   9

BTXT.AO-..A8..AA9EBO      9AAD.AGA6BB19ABO9MAA    .AGA6BB19MBO9JAB.AGA    6BB19JAAB1GA82200099
9    Y9   Y9  Y9 8-        Q-9 YZY R-   Q-   9-9   YZY 0-   9-   8-9 YZY    --   8-YQ ZQ
     9    9   9  9         9   9   0    9          9              9   9          9  Z  9

BTXT.AOH..A8..AA6DBO      JA8FBOJM8GBOJA8LBOJS    8LBOJX8EFAB1QBF.7H3J    867FF087KA7H82200100
9    Y9-  Y9  Y9 Q8-      Y8 Y8-Y9 -8-Y9 Y8-Y9     Y8-Y9 Y-YQ 9Z8   - 9      Q-      Y -
     9    9   9  09        9 9      9      9       . 9    9  Z                    9

BTXT.AOO..A8..AAOABE      AAGHAFBEAAB2ABADDJLJ    LSL3A.ABCAB2QLNUK1CL    DDIAAHCLDEAA82200101
9    Y9-  Y9  Y9+Y8Q      Y99-898QY98 89Q9QY89    8989Z Y9ZQQ 998989Z9    Q80QY9Z9Q8ZQ
     9    9   9 -999      9   9 999 9 9    Z99    9 9   9  ZZ    9 9      Z  99    Z  Z
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F822 2540 PCH FUNCTION SEC 3

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BTXT.APH..A8..AAAGMT   G+7MHAAD+A7HA.AFAAAD   AAAACT9JHA7HMAGA728U   89F.72IAAAFA82200102
9    Y99  Y9  Y9YQ99   Z  90QY9 Q -Z Y9ZQY8   ZYY9Z9 8RQ -9QZY 8Z9     Z  80YY9ZQ
     9    9   9 9Z         99  9    9  Z99     99    9 9   9   9          9 99  Z

BTXT.AP...A8..AA7UHD   DJB0AW84G05JDAQVAAAA   FAK+JAA+AAAAAAAAAAAA   AAAAAAAAAAAA82200103
9    Y9   Y9  Y9 9-9   QY8-Y9  Z  Y9Y98YYY9    Y8 YYY YYYYYYYYYYYY   YYYYYYYYYYYY
     9    9   9        Z99            9 9999    99 999 999999999999   999999999999

BTXT.APH..AY..AAAAAA   AAAAAAAAAAAAAAAAAAAA   AAAAAAAAAAAAAAAA....   ............82200104
9    Y9R  Y9  Y9YYYY   YYYYYYYYYYYYYYYYYYYY   YYYYYYYYYYYYYYYY
     9 0  9   9 9999   99999999999999999999   9999999999999999

BTXT.APH..AU..AA.CC.   .X.EXP.CC..X.ACT.ADR   .XXXXXX.SIOA........   ............82200105
9    Y90  Y9  Y9                                           Y
     9 -  9   9                                            9

BTXT.APC..AJ..AA.ADR   .XXXXXX.LINKA.......   ....................   ............82200106
9    Y9Q  Y9  Y9                     Y
     9 9  9   9                      9

BTXT.APL..A8..AA.CAW   .XXXXXX.CSWCCW.CSW.X   XXXXXXX.XXXXXXXX.EXP   ACTEXP.SNS.X82200107
9    Y9Y  Y9  Y9
     9 9  9   9

BTXT.AQT..A8..AAX.EX   P.SNS.XX.ACT.LOG.XX.   XXXXXX.XXXXXX.XXXXXX   .TST.XXXX.SE82200108
9    Y99  Y9  Y9
     9    9   9

BTXT.AQL..A8..AAT.SS   .O.ON.FOR.LOOP.ON.SI   OT.SS.1.ON.FOR.TIO.S   IO.LOOP.READ82200109
9    Y98  Y9  Y9                               8
     9    9   9

BTXT.AQC..A8..AA.ERR   .CARD.IN.PRESTKR.STA   .....EXPECTED.SHD...   ...........B82200110
9    Y9-  Y9  Y9
     9    9   9

BTXT.AQC..A8..AAUF.C   OL.PUNCHES..RD..RD.X   U.XL.PAR.ADR.TRAN...   ............82200111
9    Y9Y  Y9  Y9
     9 9  9   9

BTXT.AJC..A8..AA....   ...................T   E0123456789.MAKE.DEV   ICE.RDY.2.DI82200112
9    Y89  Y9  Y9
     99   9   9

BTXT.AJ3..A8..AAAG.C   HK.RDS.ATTEMPTED.-BO   TH.FAILEDAJHFAA.UIO.   FROM.DEVICE.82200113
9    Y88  Y9  Y9                                       Y9RQ9Y
     999  9   9                                        9 0Z 9

BTXT.AJC..A8..AAXXXX   ALEA.JFGA9DQGH00SD09   D+090H00UD09D+09MBAB   OLOCWAIBWADK82200114
9    Y8R  Y9  Y9       Y8Q- Z-ZY 09QR+ 8R+    Q +  R+  R+ Q + Y-YQ    8ZZ890889Q8
     990  9   9        999         9          Z             Z   9 9Z    9    -   09

BTXT.AJL..A8..AAWF-F   -AFAAG-9DFAB0AA0YGA9   0B.BAKFBABAG4KA0C9/B   OMKB6FA0YE+282200115
9    Y8Y  Y9  Y989 9    8 YYZ  Q-YQ -Y  ZQ    -- QY QQ9QY9  Y 9  8   -Z8Q -9  Z
     99   9   9           99   0  Z      9       Z9  Z Z9   9    9     9Z

BTXT.AJT..AN..AA2BA0   YG09DAAAAAAAAAAALAAA   AAA7G...............   ............82200116
9    Y8   Y8  Y98-Y     Z  QYYYYYYYYYYY8YYY   RYY8Q
     99   99  9   9        0999999999999999    999Z

BTXT.AK0..A8..AAAAAA   AA.PREVIOUS.HANG.UP.   DETECTEDBAGGE.9HA.0E   GAC4B0U1GGBB82200117
9    Y8   Y9  Y9YYYY   YY                           9YQQZ  R-  9     ZQQ88-99Q88Q
     99   9   9 9999   99                            9ZZ   0          9Z99   Z 99

BTXT.ALY..A8..AAEA0A   B0AAGGA.0EGAC4B0H09M   AAB0GADFB0USEUB0J4FF   B0J.FBB0JEFB82200118
9    Y89  Y9  Y9QY+Y   8-Y9Q8-  9ZQQ88 R+ Y   -YQ ZYQ98-99Q 8-Y8Q9   8-Y QZ8-YZQ0
     99   9   9 9 9    9  Z       9Z99    9     Z  Z 9   Z 9  9Z     9  Z 9   Z
```


F822 2540 PCH FUNCTION SEC 3

```
BTXT.AL-..A8..AAB0JB   FGBBEA0AB0AAFGKCD.D4   BAB5A-AXAABJE-94GJCK   C0B5A+A+BHAA82200119
9    Y8   Y9  Y98-Y8   Q 8QQY+Y8-Y9Q  8Q Q9   -YQ Z Y9ZYQYR   ZYQY   Z+Q Z Y ZRYY
     99   9   9 9      Z 99 9 99   Z  9Z Z     9Z   9   Z      9Z9    -Z   9  099

BTXT.ALH..A8..AAAGAA   AHAAF+CDKAB5BPAJDAEA   OKYAAJ0AEDAJDQEA0KWA   AA1AEMF-CAAA82200120
9    Y8-  Y9  Y9ZRY9   Z0Y9Z Q- YQ Q0ZYQQZQ    Y9YYY YQYZYQ9ZQ Y8Y   YQ YQ Z QY-Y
     99   9   9  09      9   Z  9Z Z   Z9 0    9  99 9Z9  Z  0 999   9Z 9Z   Z

BTXT.AL0..A8..AAB0GA   CYB0U6GJBBEA0AB0AAGJ   B0KAAAD.KFAAAAKBD.DA   KADCAAG0CKB082200121
9    Y8-  Y9  Y9Q ZY   Q 8-98Q98QQY+Y8-Y9Q9   8  YYYQ  8Y9YY 8Q QZ    YQ8YYZ QY8-
     99   9   9 Z      Z 9  9Z 99 9 99   Z    9  9 9Z       9 9Z Z    9Z  9  Z 9

BTXT.AMH..AQ..AAUMGA   G0C-BAKAJAA+TAKAJAAA   ....................   ............82200122
9    Y89  Y9  Y998QY   Z Q  Y8YYYY 9Y8YYYY9
     99   9   9  9Z      Z  999999  999999

BTXT.AM4..A8..AA+-01   23456789+-0123456789   A1AHQABQJAHEA1CH8CB8   LAHG05AHMABM82200123
9    Y89  Y9  Y9                              Q8909Z099Y-9Y8909Z09   9Y09-99Z9ZZ9
     99   9   9                               09             9         -

BTXT.AMU..A8..AAJ.DE   .5CH4CB4L.DG03AYKASK   JJBEJ3CY2CS2LJBG01AH   AABAJAAEA1CH82200124
9    Y88  Y9  Y99 -9    99Z9ZZ99 09+9999Z99   9Y-9Y9999Z999Y09 999   QZ9Q9YQ9Y999
     99   9   9                    - -         9  9          9-      9  9 9  9

BTXT.AMM..A8..AAACBA   LAAGACAQKAKKJJBEJ1BH   YBBYKAQFAEAHMABMJ0DE   05BHUBBUK.MF82200125
9    Y80  Y9  Y9QZ9Q   9YQ9Y8908Z089YQ9Y890   9Z099Y09Y89 8Z 89+Q9   +99Z9ZZ99 09
     99   9   9 Z  Z    90 99  9  9     9              9  9  9

BTXT.AMD..A8..AA.CAQ   0AK0J-FE-3B0BBSSKJKF   SGAY0AS0JSFES1BHJBBJ   KAJFATAQB.KB82200126
9    Y8Q  Y9  Y9 9YZ   9ZZ99 -9 99+9Z999Y09   889 8Z 898Q98999YZ9Y   9YY9Q8Y08 08
     999  9   9  9                        9    9  9  9          9 9   9  099 9  9

BTXT.ANM..A8..AAAJBD   JSAQSBKSKJKF0VAHD.BD   A0DD0UAHUBBUK0MF0XAQ   F.KFA-FD-WAQ82200127
9    Y89  Y9  Y9QYY9   Y8908Z089YY9-8Y 8  8   Q+Y9+89 8Z 89+Y9+9YZ   9 Z9Q 09 99Z
     99   9   9 9       9  9  9     99 9  9   9    9  9  9    - 9       9

BTXT.AND..A8..AAWBKW   K-0F0XAYF.SFASFDSWAY   WBSWKS0FJAAHH.BHAAHD   AYAQ2CK2LJBG82200128
9    Y88  Y9  Y99ZZ9   9 09 8Y 8  8Q8Y9889    8Z 898Y9Y8Y09 09QY09   Y9908Z089YQ9
     99   9   9              99 9  99    9    9  9     99      9         9  9  0

BTXT.AND..A8..AA-EAH   D.BDA.DD.UAH4CB4L0DG   YXAYB.SBAJBDJSAQ6CK6   L-FGJAAHA.BA82200129
9    Y80  Y9  Y9 9YZ   9 Z9Q 09 99 8Z 89+Q9   99999 99QY09Y99Z9ZZ9   9 09Y9Y9Y 9Y
     99   9   9  9         9        9  9  0               99  9        - 9 9 9  9

BTXT.AND..A8..AAAAAD   AJAY6CS6LSFGAAMQDAAA   AAAAHAAAAAAADAAA.REM   0VE.CDS.FR0M82200130
9    Y8Q  Y9  Y9QYY9   YY9 8Z 898Q9YY898YYY   YYYY9YYYYYYY9YYY
     990  9   9 99     99  9  9  0 999 9999   9999 9999999 999

BTXT.AN4..A8..AA.STA   CKER.OF.READER.REMOV   E.THE.REMAINING.TEST   .DECKSTIF.AN82200131
9    Y8   Y9  Y9                                                             8
     99   9   9

BTXT.A0U..A8..AAYT.F   ROM.THE.READER.HPR.D   O.NOPRO.AND.PLACE.CD   S.RUN.OUT.IN82200132
9    Y88  Y9  Y9 8
     999  9   9

BTXT.AOM..A8..AA.FRO   NT.OF.REMAINING.TEST   .DECKS.SAVE.REMAININ   G.TEST.DECKS82200133
9    Y8Z  Y9  Y9
     99   9   9

BTXT.AOD..A8..AA.UNT   IL.A.MSG.REQUESTS.TH   EM.TO.BE.PUT.IN.HPR.   REMOVE.CDS.F82200134
9    Y8Q  Y9  Y9
     99   9   9

BTXT.AOM..A8..AAROM.   P1.OF.PCH.AND.PUT.IN   .RDR.HPR.OF.SAME.254   OTMAKE.RDYTE82200135
9    Y8   Y9  Y9                                                      8        8
     99   9   9
```

F822 2540 PCH FUNCTION SEC 3

```
BTXT.APD..A8..AAOF.O     N.PUT.REMAINING.TEST        .DECKS.INTO.RDR.HPR.     AND.MAKE.RDR82200136
9    Y88  Y9  Y9
     999  9   9

BTXT.APD..A8..AA.RDY     TEOF.ON.IF.DESIRED.T        O.VERIFY.THE.CDS.IN.     P1T.SET.SSW.82200137
9    Y8Z  Y9  Y9          8                                                      8
     99   9   9

BTXT.AP4..AJ..AA9.ON     .REMOVE.ALL.CDS.FROM        .THE.RDR.............    ............82200138
9    Y88  YY  Y9
     99   99  9

BRLD......AU....AAAA     AAANEAA4AAPAAAPJAAJM        AAMJAAMJDAND........     ............82200139
9         Y9    Y9Y9     8YQ98YQ88Y9R8Y988Y88        8Y898Y888Y8Y
          9     9 9      999 999 99  99  999         999 99999999

BEND.ALA......AA....     ....................        ....................     ............82200140
9    Y8Q      Y9
     999      9

BLDT..................   ....................        ....................     ............82200141
9
```

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1403 PRINTER FUNCTION TESTS DESCRIPTION

TABLE OF CONTENTS

1. PURPOSE

1.1 INTENT.

F830 PRINTER FUNCTION 1
TESTS ABILITY TO...
1. ADDRESS THE DEVICE UNDER TEST.
2. ISSUE SENSE START I-O.
3. PROPERLY SET ALL CONDITION CODES.
4. CLEAR INTERRUPTS WITH TEST I-O AND BY ENABLING THE SYSTEM MASK.
5. PROPERLY STORE THE CSW (CHANNEL STATUS WORD).
6. PROPERLY SET AND SUPPRESS THE INCORRECT LENGTH INDICATOR.
7. COMMAND AND DATA CHAIN CHANNEL COMMAND WORDS (CCW).

F831 PRINTER FUNCTION 2
TESTS ABILITY TO...
1. BREAK COMMAND CHAINING WITH UNIT CHECK (CHANNEL 9).
2. DISTINGUISH BETWEEN DATA AND COMMAND CHAINING.
3. BREAK COMMAND CHAINING WITH UNIT EXCEPTION (CHANNEL 12).
4. BREAK COMMAND CHAINING WITH INCORRECT LENGTH RECORD.
5. REJECT THE BLOCK OR ALLOW DATA CHECK COMMAND AND THE PRE-CONDITION LOAD COMMAND IF THEY ARE NOT FIRST IN A CHAIN.
6. PRINT BLANKS
7. SET AND RESET THE PRE-CONDITION LOAD LATCH.
8. REJECT ALL INVALID COMMANDS ISSUED TO THE DEVICE.

F832 PRINTER FUNCTION 3
TESTS ABILITY TO...
1. LOAD THE UCS BUFFER WITH OR WITHOUT FOLDING.
2. LOAD THE UCS BUFFER AND SET THE INCORRECT LENGTH RECORD FLAG ON WITH A SHORT OR LONG COUNT.
3. LOAD THE UCS BUFFER WITH BLANKS -40-.
4. SET PRINT CHECK.
5. ISSUE DIAGNOSTIC CHECK READ AND OBTAIN CORRECT READ BACK.
6. SET PRINT LINE COMPLETE BIT.
7. ALLOW OR BLOCK DATA CHECKS DEPENDING UPON THE SETTING OF THE BLOCK DATA CHECK LATCH.
8. PRINT A CHARACTER ON A SINGLE COMPARE BETWEEN DATA BUFFER AND UCS BUFFER.
9. LOAD THE DATA BUFFER WITH A SINGLE CHARACTER WITHOUT AFFECTING THE REST OF THE BUFFER.
10. CORRECTLY TRANSFER WHAT IS IN THE PRINT AREA TO THE DATA BUFFER.
11. PERFORM FOLDING FROM THE 1ST TO THE 4TH QUADRANT.
12. CORRECTLY TRANSLATE DUALING CHARACTERS.

2. PREREQUISITES

2.1 PROGRAM REQUIREMENTS.

ALL SECTIONS ARE RELOCATABLE.
THE EXCLUSIVE CPU FLAG IS ON IN ALL SECTIONS.

THE UNIT DEFINITION TABLE-UDT-ENTRY MUST BE PUNCHED AS FOLLOWS.

UNIT CODE	OPTIONAL FEATURE DIGIT 1							OPTIONAL FEATURE DIGIT 2							
UNIT	ZZ	BIT 0 HEX 8	BIT 1 HEX 4	BIT 2 HEX 2	BIT 3 HEX 1	BIT 4 HEX 8	BIT 5 HEX 4	BIT 6 HEX 2	BIT 7 HEX 1						
1403 PRINTER OR 1404 PRINTER CONTINUOUS FORMS	83	ASCII	SEL TAPE LISTER		UNIV. CHAR. BUFF.	HI-SPEED PTR.	120 PRINT POS.		2821 #2 CHNL SWITCH						

2.2 EQUIPMENT REQUIREMENTS.

INPUT DEVICE FOR PROGRAM LOADING.
OUTPUT DEVICE OTHER THAN TEST DEVICE.
4K OF STORAGE FOR THIS PROGRAM.
CPU
CHANNEL

3. USE PROCEDURE

3.1 PROGRAM LOADING.

STANDARD AS DESCRIBED IN USERS GUIDE.

3.2 PROGRAM OPERATE.

********** NOTE **********
* IF 2 CHANNEL SWITCH FEATURE INSTALLED, DISABLE THE UNUSED *
* INTERFACE TO PREVENT NOT READY TO READY STATUS FROM BEING *
* PRESENTED TO THE OTHER CHANNEL. *
****

3.2.1 SENSE SWITCH USAGE.

THE SENSE SWITCHES SHOWN BELOW ARE IN THE SENSE SWITCH BYTES OF THEIR RESPECTIVE SECTION PREFACES. THE CHARACTER X REPRESENTS THE RELOCATION FACTOR CONTAINED IN REGISTER 15 DURING RUN TIME. THE SWITCH BITS ARE ZERO WHEN OFF, AND ONE WHEN ON.

SENSE SW. #	FUNCTION	SECTION OR ROUTINE	BYTE AND BIT
0	OFF-PROCEED ON--LOOP ON CURRENT I-O COMMAND.	ALL	X004 0
1	OFF-PROCEED ON--LOOP ON CURRENT SIO, TIO COMMAND.	ALL	X004 1
5	OFF-BYPASS MANUAL INTERVENTION ROUTINES. ON--PERFORM MANUAL INTERVENTION ROUTINES.	F830	X004 5
7	OFF-PROCEED ON--PRINT CORRECT RESULTS.	ALL	X004 7
24	OFF-PROGRAM WILL ASSUME THE PRINTER DOES HAVE A PCS EMITTER CHAIN, AND IS THEREFORE NOT IN DUALING MODE ON--PROGRAM WILL ASSUME THE PRINTER DOES NOT HAVE PCS EMITTER CHAIN AND IS IN DUALING MODE	F832	X007 0

3.2.2 DUALING MODE INFORMATION
IF THE UCS PRINTER IS AN -N1-, OR MOD 3, YOU CAN TELL IF IT IS IN DUALING MODE BY INSPECTING THE INSTALLED CHAIN CARTRIDGE. WHILE FACING THE PRINTER, YOU WILL SEE A MICRO SWITCH LOCATED NEAR THE LEFT END OF THE CARTRIDGE. IF THIS SWITCH IS NOT DEPRESSED BY A CLIP OR TAB ON THE CARTRIDGE, THE PRINTER IS IN DUALING MODE.

IF THE UCS PRINTER IS A MOD 2, YOU CAN TELL IF IT IS IN DUALING MODE BY INSPECTING THE INSTALLED CHAIN CARTRIDGE. WHILE FACING THE PRINTER YOU WILL SEE A SMALL CABLE CONNECTED TO THE LEFT END OF THE CHAIN CARTRIDGE. IF THIS CABLE IS DISCONNECTED, THE PRINTER IS IN DUALING MODE.

3.2 PROGRAM HALTS

F830 - THE PROGRAM WILL HALT ONCE FOR EACH DEVICE TO BE TESTED, AFTER INSTRUCTING THE OPERATOR TO INSTALL THE DIAGNOSTIC CARRIAGE TAPE. THE PROGRAM WILL ALSO HALT MANY TIMES IN ROUTINE 07 AFTER PRINTING OPERATOR INSTRUCTIONS, AND AT THE END OF THE ROUTINE.

F832 - THE PROGRAM WILL HALT FOR EACH UCS PRINTER, AFTER INSTRUCTING THE OPERATOR TO CHECK SECTION SENSE SWITCH 24.

3.3 PROGRAM OPERATE

ALL ROUTINES IN EACH SECTION WILL BE RUN ON A DEVICE, BEFORE THE SECTION PROCEEDS TO THE NEXT DEVICE.

4. PRINTOUTS

4.1 OPERATOR INSTRUCTIONS

F830

- INSTALL CARRIAGE TAPE, CE OUTPUT MUST NOT BE TEST DEVICE-

THE ABOVE MESSAGE WILL OCCUR ONCE FOR EACH DEVICE, PRIOR TO A HALT. SEE F838* FOR DESCRIPTION OF CARRIAGE TAPE. MAKE THE DEVICE READY FOR THE TEST. IT MAY BE NECESSARY TO REDEFINE THE CE OUTPUT DEVICE AT THIS TIME.

- RTN BYPASSED -

THE ABOVE MESSAGE WILL OCCUR WHEN A ROUTINE IS BYPASSED.

ROUTINE 07 WILL BE BYPASSED IF SECTION SENSE SWITCH 5 IS O F F . THIS ROUTINE REQUIRES MANUAL INTERVENTION. IT TESTS THE RESPONSE OF A NOT READY DEVICE, A NOT AVAILABLE DEVICE, AND REQUIRES OBSERVING CARRIAGE RESPONSE.

ROUTINE 11 WILL BE BYPASSED IF SECTION SENSE SWITCH 7 IS O N . TESTS 0400 TO 0450 OF THIS ROUTINE ARE BYPASSED IF CORRECT PRINT SWITCH IS ON. THIS IS DUE TO TIMING RESTRICTIONS. MISLEADING RESULTS WOULD OCCUR IF TIME WAS TAKEN BETWEEN TESTS 0400 AND 0450 TO ATTEMPT PRINTING CORRECT RESULTS.

- MAKE NOT READY-

THE ABOVE PRINTOUT WILL APPEAR PRIOR TO A HALT IN ROUTINE 07. THE OPERATOR SHOULD DROP READY ON THE TEST DEVICE AT THIS TIME.

- MAKE UNAVAILABLE-

THE ABOVE PRINTOUT WILL OCCUR IN ROUTINE 07 PRIOR TO A HALT. THE OPERATOR SHOULD MAKE THE TEST DEVICE UNAVAILABLE AT THIS TIME. FOR EXAMPLE, TAKE THE DEVICE OFF LINE.

- MAKE AVAILABLE, RESTORE, READY-

THE ABOVE PRINTOUT WILL OCCUR IN ROUTINE 07 PRIOR TO A HALT. THE OPERATOR SHOULD PLACE THE DEVICE ON LINE, RESTORE THE CARRIAGE, AND READY THE DEVICE BEFORE CONTINUING.

- OBSERVE NO CARRIAGE MOTION-
- SKIP TO 1 IMMED-

THE ABOVE PRINTOUTS WILL APPEAR IN ROUTINE 07 PRIOR TO A HALT. THE OPERATOR SHOULD WATCH THE TEST DEVICE FOR ERRONEOUS CARRIAGE MOTION.

- OBSERVE NO CARRIAGE MOTION-
- PRINT NO SPACE-
THE ABOVE PRINTOUT WILL APPEAR IN ROUTINE 07 PRIOR TO A HALT. THE OPERATOR SHOULD WATCH THE TEST DEVICE FOR ERRONEOUS CARRIAGE MOTION.

- OBSERVE CARRIAGE MOTION-
- SKIP TO 1 IMMED-

THE ABOVE PRINTOUT WILL OCCUR IN ROUTINE 07, PRIOR TO A HALT. THE OPERATOR SHOULD WATCH THE TEST DEVICE TO MAKE SURE THE CARRIAGE MOVES.

F832

-SEC SS 24 IS OFF SET IT ON FOR DUALING MODE-

-SEC SS 24 IS ON SET IT OFF IF NOT DUALING MODE-

ONE OF THE ABOVE MESSAGES WILL APPEAR ONCE FOR EACH UCS PRINTER, PRIOR TO A HALT. THE OPERATOR SHOULD CHECK FOR THE PROPER SETTING OF THIS SWITCH BEFORE EACH DEVICE IS TESTED.

ROUTINE 07 WILL BE BYPASSED IF SECTION SENSE SWITCH 24 IS OFF. THIS ROUTINE TESTS DUALING MODE.

4.2 STATUS MESSAGES

4.2.1 SAMPLE CORRECT PRINTOUT

LINE	MESSAGE
01	- SDO F8304 08 00135C 00E-
02	- TST 0370-
03	- ADR 001BA4 LINK-
04	- ADR 001182 SIO-
05	- CAW 001BB8-
06	- CCW 05001831 80000020-
	- CCW 00001831 00000064-
07	- CC 0 EXP-
08	- CC 0 ACT-
09	- CSW 00001BC8 08000001 EXP-
10	- CSW 00001BC8 08000001 ACT-
11	- CSW 00000000 04000000 EXP-
12	- CSW 00000000 04000000 ACT-
13	- SNS 00 EXP-
14	- SNS 00 ACT-
15	- LOG 00 000000 000000 000000-
16	- SS 0 ON FOR LOOP ON SIO, SS 1 ON FOR TIO SIO LOOP-

4.2.2 ANALYSIS OF SAMPLE PRINTOUT

LINE	EXPLANATION
01	THIS IS THE HEADER LINE PRINTED BY DM. IF AN ASTERISK PRECEEDS THE -SDO- AN ERROR HAS CAUSED THE MESSAGE PRINTOUT. IF NO ASTERISK IS PRINTED, THE MESSAGE IS A RESULT OF EITHER HAVING THE CORRECT PRINTOUT SWITCH ON OR AN OPERATOR MESSAGE IS TO FOLLOW. ALL LINES THAT FOLLOW THE -SDO- ARE PART OF THAT SAME MESSAGE. THE START OF A NEW MESSAGE IS INDICATED BY ANOTHER -SDO- PRINTOUT. THE -F830R- IS THE SECTION ID NUMBER WHERE -R- REPRESENTS THE REVISION LEVEL OF THE PROGRAM. THE -08- IS THE PROGRAM ROUTINE NUMBER WHILE THE -00E- IS THE ADDRESS OF THE DEVICE UNDER TEST.
02	THIS IS THE TEST NUMBER ASSOCIATED WITH THE MESSAGE. AT THE BEGINNING OF THE PROGRAM LISTING, THERE IS A LIST OF TEST NUMBERS. WITH THE TEST NUMBER IS A SHORT EXPLANATION OF WHAT WAS BEING DONE, AND WHAT SHOULD OCCUR.
03	THIS LINE SHOWS THE ADDRESS FROM WHICH THE I-O HANDLER SUB-ROUTINE WAS ENTERED. ALL I-O COMMANDS ARE ISSUED FROM THIS SUB-ROUTINE, SO IT IS ENTERED MANY TIMES FROM MANY PLACES. TO INSURE THE SPECIFIC I-O OPERATION WILL BE THE NEXT ONE PERFORMED, RESTART THE PROGRAM WITH A SYSTEM RESET, PSW RESTART, AND ADDRESS STOP AT THE GIVEN ADDRESS.
04	THIS LINE SHOWS THE ADDRESS OF THE START I-O, TEST I-O, OR HALT I-O THAT WAS ISSUED IN THE I-O HANDLER SUB-ROUTINE.
05	THIS LINE SHOWS THE ADDRESS OF THE CCW TO BE ISSUED BY A START I-O COMMAND. IF CCWS ARE CHAINED, THE ADDRESS GIVEN REFERS TO THE FIRST CCW IN THE CHAIN.
06	THIS LINE DISPLAYS THE FIRST CCW. THE FIRST BYTE CONTAINS THE COMMAND CODE. THE NEXT 3 BYTES CONTAIN AN ADDRESS IN STORAGE, WHICH WILL BE USED IF DATA TRANSFER IS PERFORMED. THE NEXT BYTE CONTAINS FLAGS USED BY THE CHANNEL. THE LAST 3 BYTES ARE THE COUNT FIELD. IF CHAINING IS INDICATED IN BYTE 4, ADDITIONAL CCWS WILL BE SHOWN BELOW THIS LINE.

07	THIS LINE SHOWS THE CONDITION CODE EXPECTED, BY THE PROGRAM, IN RESPONSE TO ISSUING THE I-O COMMAND.
08	THIS LINE SHOWS THE ACTUAL CONDITION CODE SET IN RESPONSE TO THE I-O COMMAND.
09	THIS LINE DISPLAYS THE FIRST CSW EXPECTED BY THE PROGRAM. A BIT BY BIT DESCRIPTION OF THE DEVICE STATUS BYTE PORTION OF THE CSW, APPEARS IN THE PROGRAM LISTING, FOLLOWING THE TEST NUMBER DESCRIPTIONS.
10	THIS LINE DISPLAYS THE ACTUAL CSW RECIEVED BY THE PROGRAM. NOTE...FOR EVERY EXPECTED -EXP- CSW PRINTED OUT THERE SHOULD BE A CORRESPONDING ACTUAL -ACT- CSW PRINTED OUT ON THE NEXT LINE. THE ABSENCE OF A -ACT- CSW PRINTOUT INDICATES A MACHINE FAILURE. A MACHINE FAILURE IS ALSO INDICATED IF THERE ARE -ACT- CSW PRINTOUTS WHEN THERE ARE NONE EXPECTED.
11	THIS LINE WILL APPEAR IF THE PROGRAM EXPECTS MORE THAN ONE CSW.
12	THIS LINE WILL APPEAR IF THE PROGRAM RECIEVED A SECOND CSW.
13	THIS LINE SHOWS THE SENSE BYTE EXPECTED BY THE PROGRAM. A BIT BY BIT DESCRIPTION OF THE 1403 SENSE BYTE APPEARS IN THE PROGRAM LISTING, AFTER THE TEST NUMBER DESCRIPTIONS.
14	THIS LINE SHOWS THE ACTUAL SENSE BYTE RECIEVED BY THE PROGRAM.
15	THIS LINE DISPLAYS THE CPU AND CHANNEL LOGOUT AREA ON MODEL 30 SYSTEMS. IT WILL NOT APPEAR ON ANY OTHER SYSTEM.
16	THIS LINE SHOWS THE SECTION SENSE SWITCH LOOP OPTIONS. IF AN ERROR HAD OCCURRED, AND DM SENSE SWITCH 25 WAS ON, A HALT WOULD NOW OCCUR, TO ALLOW SETTING OF THE SECTION SENSE SWITCHES. TO INSURE THAT YOU WILL LOOP ON THE COMMAND THAT FAILED, YOU SHOULD REQUEST A HALT ON ERROR. SET THE PROPER SENSE SWITCH ON, AND PRESS THE EXTERNAL INTERRUPT KEY TO LOOP.

- PREVIOUS HANGUP DETECTED-
- SEE DESCRIPTION-COMMENTS -

5. COMMENTS

5.1 LOOPING

IF IT IS DESIRED TO LOOP ON AN ENTIRE ROUTINE RATHER THEN USE THE SECTION SENSE SWITCH LOOPS PROVIDED. MANUALLY ENTER THE NUMBER OF THE ROUTINE IN X04C. WHERE X STANDS FOR THE RELOCATION ADDRESS. NOW PERFORM A SYSTEM RESET-PSW RESTART, TO LOOP THE ROUTINE. SENSE SWITCHES MAY BE SET BY MANUALLY ENTERING THE DESIRED BITS.

5.2 HANG UP

THE HANG UP MESSAGE WILL APPEAR IF A SYSTEM RESET PSW RESTART IS PERFORMED AFTER A HANGUP CONDITION ON AN I-O COMMAND. FOLLOWING THIS LINE WILL BE A PRINTOUT SIMILAR TO THE ABOVE SAMPLE MESSAGE.

A FALSE HANG UP MESSAGE PRINTOUT CAN OCCUR IF THE OPERATOR PERFORMS A SYSTEM RESET-PSW RESTART WHILE THE PROGRAM IS RUNNING. THE PROGRAM WILL RESTART AFTER PRINTING THE MULTI-LINE ERROR MESSAGE, OR ANOTHER SYSTEM RESET PSW RESTART MAY BE PERFORMED TO BYPASS THE ERROR MESSAGE.

---------- LAST PAGE ----------

1403 PRINTER FUNCTION 1

```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                    PROGRAM LENGTH = 3944 (DECIMAL)

                                2          PRINT ON,GEN,DATA
01000                           3   XF8305 START 4096
01000                           4          USING *,15
                                5   *
                                6   *
                                7   ********************************************************************
                                8   * MODIFICATIONS
                                9   *
                               10   * REVISION LEVEL 5.  THIS REVISION DIFFERS FROM VERSION 4 AS FOLLOWS...
                               11   *      1.  PROGRAM HAS BEEN MODIFIED TO RUN WITH DM-44.
                               12   ********************************************************************
                               13   * REVISION LEVEL 4.  THIS REVISION DIFFERS FROM VERSION 3 AS FOLLOWS...
                               14   *      1.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE -TEST NUMBERS-
                               15   *      2.  THE PROGRAM WILL TEST THE RESET OF THE CARRIAGE LATCHES
                               16   *          ON A PRINT AND SPACE COMMAND.
                               17   *      3.  INCREASED TESTING AND USE OF HALT I-O INSTRUCTION.
                               18   *      4.  TEST THE ABILITY TO SET AND SUPPRESS INCORRECT LENGTH RECORD
                               19   *          ON A READ COMMAND.
                               20   *      5.  INCLUDE TESTING PREVIOUSLY HANDLED BY PROGRAM ID F833 WHICH
                               21   *          IS NOW OBSOLETE.
                               22   * E.C. PREREQUISITES
                               23   *      MACHINE . . . 2821 MUST BE AT MINIMUM EC 125655
                               24   *      PROGRAM . . . NONE
                               25   * USE DESCRIPTION F830* AT EC 125655, DATED NOV 15, 1966 OR LATER.
                               26   ********************************************************************
                               27   * REVISION LEVEL 3.  THIS REVISION DIFFERS FROM VERSION 2 AS FOLLOWS...
                               28   *      1.  THE PROGRAM HAS BEEN MODIFIED TO RESET THE BLOCK DATA CHECK
                               29   *          LATCH, ON UCS PRINTERS, DURING INITIALIZATION OF THE SECTION.
                               30   * E.C. PREREQUISITES
                               31   *      MACHINE . . . 2821 MUST BE AT MINIMUM E.C. LEVEL 124265.
                               32   *      PROGRAM . . . NONE
                               33   ********************************************************************
                               34   *
                               35   *
                               36   ********************************************************************
                               37   *                        TEST NUMBER DESCRIPTION
                               38   ********************************************************************
                               39   ********************************************************************
                               40   * TEST       DESCRIPTION
                               41   *
                               42   *
                               43   *                          ROUTINE 01
                               44   *
                               45   * 0010 - OPERATION ATTEMPTED
                               46   *        A TEST I-O IS ISSUED TO A READY DEVICE.
                               47   *
                               48   *        EXPECTED RESPONSE
                               49   *
                               50   *        EXPECT COND. CODE 0 (COMMAND ACCEPTED)
                               51   *
                               52   *        POSSIBLE FAILURE CAUSES
                               53   *
                               54   *        1. CONDITION CODE 2 INDICATES THE CHANNEL APPEARS TO BE BUSY.
                               55   *        2. CONDITION CODE 3 INDICATES THERE IS NO DEVICE FOR THE
                               56   *           ADDRESS USED.  THE DM UDT ENTRY COULD BE IN ERROR, OR THE
                               57   *           DEVICE MAY BE OFF LINE.
                               58   *        3. IF CONDITION CODE 1 IS SET, THE CSW MUST BE INSPECTED TO
                               59   *           DETERMINE THE CAUSE.  UNIT CHECK MIGHT BE DUE TO NOT READY
                               60   *           DEVICE.  CHANNEL OR DEVICE END INDICATES THAT AN INTERRUPT
                               61   *           WAS PENDING IN THE CHANNEL.
                               62   *
```


1403 PRINTER FUNCTION 1

```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                               63   *
                               64   *                          ROUTINE 02
                               65   *
                               66   * 0020 - OPERATION ATTEMPTED
                               67   *
                               68   *        A SENSE START I-O IS ISSUED TO READY DEVICE.
                               69   *
                               70   *        EXPECTED RESPONSE
                               71   *
                               72   *        EXPECT COND. CODE 0 (COMMAND ACCEPTED)
                               73   *
                               74   *        POSSIBLE FAILURE CAUSES
                               75   *
                               76   *        1. CONDITION CODE 2 COULD BE DUE TO A PENDING CHANNEL END, OR
                               77   *           A BUSY CHANNEL.
                               78   *        2. IF CONDITION CODE 1 WAS SET, THE CSW MUST BE INSPECTED TO
                               79   *           DETERMINE THE CAUSE.  DEVICE END WITH DEVICE BUSY INDICATES
                               80   *           A DEVICE END WAS PENDING IN THE DEVICE.
                               81   *
                               82   *
                               83   * 0030 - OPERATION ATTEMPTED
                               84   *
                               85   *        A TEST I-O TO PENDING CHANNEL AND DEVICE END FROM PREVIOUS
                               86   *        SENSE IS ISSUED.
                               87   *
                               88   *        EXPECTED RESPONSE
                               89   *
                               90   *        EXPECT COND. CODE 1 AND CHANNEL END DEVICE END BOTH IN THE CSW
                               91   *        FROM THE PREVIOUS SENSE I/O COMMAND.
                               92   *
                               93   *        POSSIBLE FAILURE CAUSES
                               94   *
                               95   *        1. CONDITION CODE 2 INDICATES THE CHANNEL IS BUSY.
                               96   *        2. FAILURE TO RECEIVE CHANNEL AND DEVICE END COULD INDICATE
                               97   *           THE DEVICE FAILED TO PRESENT ENDING STATUS.
                               98   *
                               99   *
                              100   * 0040 - OPERATION ATTEMPTED
                              101   *
                              102   *        ANOTHER TIO IS GIVEN.
                              103   *
                              104   *        EXPECTED RESPONSE
                              105   *
                              106   *        EXPECT COND. CODE 0.  DEVICE SHOULD BE CLEAR OF PENDING
                              107   *        INTERRUPTS.
                              108   *
                              109   *        POSSIBLE FAILURE CAUSES
                              110   *
                              111   *        1. CONDITION CODE 1 WITH UNIT CHECK IN THE CSW COULD INDICATE
                              112   *           A NOT READY DEVICE.  CHANNEL OR DEVICE END INDICATES THE
                              113   *           PREVIOUS TIO FAILED TO CLEAR THEM.
                              114   *
                              115   *
                              116   *                          ROUTINE 03
                              117   *
                              118   * 0050 - OPERATION ATTEMPTED
                              119   *
                              120   *        A SENSE SIO IS ISSUED.
                              121   *
                              122   *        EXPECTED RESPONSE
                              123   *
                              124   *        EXPECT CHANNEL END DEVICE END TOGETHER.
                              125   *
                              126   *        POSSIBLE FAILURE CAUSES
```

```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                             127  *
                             128  *       1. FAILURE TO RECEIVE CHANNEL AND DEVICE END INDICATES THAT
                             129  *          ENABLING THE CHANNEL FOR I-O INTERRUPTS FAILED TO BRING IN
                             130  *          THE DEVICE STATUS.
                             131  *
                             132  *
                             133  * 0060 - OPERATION ATTEMPTED
                             134  *
                             135  *       TEST I-O IS ISSUED.
                             136  *
                             137  *       EXPECTED RESPONSE
                             138  *
                             139  *       EXPECT COND. CODE 0.  DEVICE SHOULD BE CLEAR OF PENDING
                             140  *       INTERRUPTS.
                             141  *
                             142  *
                             143  *                          ROUTINE 04
                             144  *
                             145  * 0070 - OPERATION ATTEMPTED
                             146  *
                             147  *       A NOP SIO IS ISSUED TO READY DEVICE.
                             148  *
                             149  *       EXPECTED RESPONSE
                             150  *
                             151  *       EXPECT COND. CODE 1 WITH CHANNEL END DEVICE END STORED IN
                             152  *       THE CSW.  NO INTERRUPT SHOULD OCCUR.
                             153  *
                             154  *
                             155  * 0080 - OPERATION ATTEMPTED
                             156  *
                             157  *       IF UCS PRINTER A PRE-CONDITION LOAD IS ISSUED.
                             158  *
                             159  *       EXPECTED RESPONSE
                             160  *
                             161  *       THIS COMMAND ACTS LIKE A NOP.  EXPECT COND. CODE 1 WITH
                             162  *       CHANNEL END DEVICE END STORED IN THE CSW.  NO INTERRUPTS
                             163  *       SHOULD OCCUR.
                             164  *       ************************************************************
                             165  *       NOTE...THIS TEST DOES  N O T  PRINTOUT IF THE CORRECT PRINTOUT
                             166  *              SWITCH IS ON AND THE TEST DEVICE IS  N O T  A UCS
                             167  *              PRINTER.
                             168  *       ************************************************************
                             169  *
                             170  *
                             171  * 0090 - OPERATION ATTEMPTED
                             172  *
                             173  *       IF UCS PRINTER A BLOCK DATA CHECK IS ISSUED.
                             174  *
                             175  *       EXPECTED RESPONSE
                             176  *
                             177  *       THIS COMMAND ACTS LIKE A NOP.  EXPECT COND. CODE 1 WITH
                             178  *       CHANNEL END DEVICE END STORED IN THE CSW.  NO INTERRUPTS
                             179  *       SHOULD OCCUR.
                             180  *       ************************************************************
                             181  *       NOTE...THIS TEST DOES  N O T  PRINTOUT IF THE CORRECT PRINTOUT
                             182  *              SWITCH IS ON AND THE TEST DEVICE IS  N O T  A UCS
                             183  *              PRINTER.
                             184  *       ************************************************************
                             185  *
                             186  *
                             187  * 0100 - OPERATION ATTEMPTED
                             188  *
                             189  *       IF UCS PRINTER AN ALLOW DATA CHECK IS ISSUED.
                             190  *
```



```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                             191  *       EXPECTED RESPONSE
                             192  *
                             193  *       THIS COMMAND ACTS LIKE A NOP.  EXPECT COND. CODE 1 WITH
                             194  *       CHANNEL END DEVICE END STORED IN THE CSW.  NO INTERRUPTS
                             195  *       SHOULD OCCUR.
                             196  *       ************************************************************
                             197  *       NOTE...THIS TEST DOES  N O T  PRINTOUT IF THE CORRECT PRINTOUT
                             198  *              SWITCH IS ON AND THE TEST DEVICE IS  N O T  A UCS
                             199  *              PRINTER.
                             200  *       ************************************************************
                             201  *
                             202  *                          ROUTINE 05
                             203  *
                             204  *
                             205  * 0110 - OPERATION ATTEMPTED
                             206  *
                             207  *       A DIAGNOSTIC WRITE IS ISSUED WITH COUNT OF 131.
                             208  *
                             209  *       EXPECTED RESPONSE
                             210  *
                             211  *       EXPECT CHANNEL END WITH INCORRECT LENGTH RECORD AND THEN
                             212  *       DEVICE END.
                             213  *
                             214  *
                             215  * 0120 - OPERATION ATTEMPTED
                             216  *
                             217  *       A DIAGNOSTIC WRITE IS ISSUED WITH COUNT OF 131 WITH SLI FLAG.
                             218  *
                             219  *       EXPECTED RESPONSE
                             220  *
                             221  *       EXPECT CHANNEL END AND THEN DEVICE END.  INCORRECT LENGTH
                             222  *       RECORD SHOULD BE BLOCKED.
                             223  *
                             224  *
                             225  * 0130 - OPERATION ATTEMPTED
                             226  *
                             227  *       A DIAGNOSTIC READ IS ISSUED WITH COUNT OF 131.
                             228  *
                             229  *       EXPECTED RESPONSE
                             230  *
                             231  *       EXPECT CHANNEL END DEVICE END AND INCORRECT LENGTH RECORD
                             232  *       ALL TOGETHER.
                             233  *
                             234  *
                             235  * 0140 - OPERATION ATTEMPTED
                             236  *
                             237  *       A DIAGNOSTIC READ IS ISSUED WITH COUNT OF 131 WITH SLI FLAG.
                             238  *
                             239  *       EXPECTED RESPONSE
                             240  *
                             241  *       EXPECT CHANNEL END DEVICE END TOGETHER.  INCORRECT LENGTH
                             242  *       RECORD SHOULD BE BLOCKED.
                             243  *
                             244  *
                             245  * 0150 - OPERATION ATTEMPTED
                             246  *
                             247  *       A DIAGNOSTIC WRITE IS ISSUED WITH COUNT OF 133.
                             248  *
                             249  *       EXPECTED RESPONSE
                             250  *
                             251  *       EXPECT CHANNEL END, INCORRECT LENGTH RECORD, AND RESIDUAL
                             252  *       COUNT OF 1.  THEN DEVICE END.
                             253  *
                             254  *
```

```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                             255  * 0160 - OPERATION ATTEMPTED
                             256  *
                             257  *        A DIAGNOSTIC WRITE IS ISSUED WITH COUNT OF 133 WITH SLI FLAG.
                             258  *
                             259  *        EXPECTED RESPONSE
                             260  *
                             261  *        EXPECT CHANNEL END WITH RESIDUAL COUNT OF 1 AND THEN DEVICE
                             262  *        END.
                             263  *
                             264  *
                             265  * 0170 - OPERATION ATTEMPTED
                             266  *
                             267  *        A DIAGNOSTIC READ IS ISSUED WITH COUNT OF 133.
                             268  *
                             269  *        EXPECTED RESPONSE
                             270  *
                             271  *        EXPECT CHANNEL END, DEVICE END, INCORRECT LENGTH, AND
                             272  *        RESIDUAL COUNT OF 1 ALL TOGETHER.
                             273  *
                             274  *
                             275  * 0180 - OPERATION ATTEMPTED
                             276  *
                             277  *        A DIAGNOSTIC READ IS ISSUED WITH COUNT OF 133 WITH SLI FLAG.
                             278  *
                             279  *        EXPECTED RESPONSE
                             280  *
                             281  *        EXPECT CHANNEL END DEVICE END WITH RESIDUAL COUNT OF 1
                             282  *        ALL TOGETHER.
                             283  *
                             284  *
                             285  *                          ROUTINE 06
                             286  *
                             287  * 0190 - OPERATION ATTEMPTED
                             288  *
                             289  *        A DIAGNOSTIC WRITE IS ISSUED.
                             290  *
                             291  *        EXPECTED RESPONSE
                             292  *
                             293  *        EXPECT COND. CODE 0.  NO INTERRUPTS ARE CLEARED.
                             294  *
                             295  *
                             296  * 0200 - OPERATION ATTEMPTED
                             297  *
                             298  *        ANOTHER DIAGNOSTIC WRITE IS ISSUED.
                             299  *
                             300  *        EXPECTED RESPONSE
                             301  *
                             302  *        EXPECT COND. CODE 2 BECAUSE CHANNEL END OF PREVIOUS WRITE WAS
                             303  *        N O T  CLEARED.
                             304  *
                             305  *
                             306  * 0210 - OPERATION ATTEMPTED
                             307  *
                             308  *        A HALT I-O IS ISSUED.
                             309  *
                             310  *        EXPECTED RESPONSE
                             311  *
                             312  *        EXPECT COND. CODE 0
                             313  *
                             314  *
                             315  * 0220 - OPERATION ATTEMPTED
                             316  *
                             317  *        A TEST I-O IS ISSUED.
                             318  *
```



```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                             319  *        EXPECTED RESPONSE
                             320  *
                             321  *        EXPECT COND. CODE 1 AND CHANNEL END FROM PREVIOUS DIAGNOSTIC
                             322  *        WRITE SHOULD BE IN THE CSW.
                             323  *
                             324  *
                             325  * 0230 - OPERATION ATTEMPTED
                             326  *
                             327  *        A HALT I-O IS ISSUED.
                             328  *
                             329  *        EXPECTED RESPONSE
                             330  *
                             331  *        EXPECT ZERO CSW AND COND. CODE 1.
                             332  *
                             333  *
                             334  * 0240 - OPERATION ATTEMPTED
                             335  *
                             336  *        ANOTHER DIAGNOSTIC WRITE IS ISSUED.
                             337  *
                             338  *        EXPECTED RESPONSE
                             339  *
                             340  *        EXPECT DEVICE BUSY AND DEVICE END.  COND. CODE 1 SHOULD OCCUR
                             341  *        BECAUSE DEVICE END SHOULD STILL BE PENDING.
                             342  *
                             343  *
                             344  * 0250 - OPERATION ATTEMPTED
                             345  *
                             346  *        A HALT I-O IS ISSUED.
                             347  *
                             348  *        EXPECTED RESPONSE
                             349  *
                             350  *        EXPECT A ZEROED CSW AND A COND. CODE OF 1.
                             351  *
                             352  *
                             353  * 0260 - OPERATION ATTEMPTED
                             354  *
                             355  *        A TEST I-O IS ISSUED.
                             356  *
                             357  *        EXPECTED RESPONSE
                             358  *
                             359  *        EXPECT COND. CODE  1 BECAUSE THE DEVICE SHOULD BE CLEARED OF
                             360  *        PENDING INTERRUPTS.
                             361  *
                             362  *
                             363  *                          ROUTINE 07
                             364  *
                             365  * 0270 - OPERATION ATTEMPTED
                             366  *
                             367  *        A NOP SIO IS ISSUED TO A NOT READY DEVICE.
                             368  *
                             369  *        EXPECTED RESPONSE
                             370  *
                             371  *        EXPECT UNIT CHECK ALONE AND COND. CODE OF 1.  A SENSE IS
                             372  *        ISSUED AND INTERVENTION REQUIRED SHOULD BE IN THE SENSE BYTE.
                             373  *
                             374  *
                             375  * 0280 - OPERATION ATTEMPTED
                             376  *
                             377  *        A TEST I-O IS ISSUED TO A NOT READY DEVICE.
                             378  *
                             379  *        EXPECTED RESPONSE
                             380  *
                             381  *        EXPECT UNIT CHECK ALONE AND COND. CODE OF 1.  A SENSE IS
                             382  *        ISSUED AND INTERVENTION REQUIRED SHOULD BE IN THE SENSE BYTE.
```

```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                             383  *
                             384  *
                             385  * 0290 - OPERATION ATTEMPTED
                             386  *
                             387  *        ISSUE A HALT I-O TO NOT READY DEVICE.
                             388  *
                             389  *        EXPECTED RESPONSE
                             390  *
                             391  *        EXPECT A ZEROED CSW WITH COND. CODE 1.
                             392  *
                             393  *
                             394  * 0300 - OPERATION ATTEMPTED
                             395  *
                             396  *        A NOP SIO IS ISSUED TO A NOT AVAILABLE DEVICE. (OFF LINE)
                             397  *
                             398  *        EXPECTED RESPONSE
                             399  *
                             400  *        COND. CODE 3 SHOULD BE SET (NOT OPERATIONAL)
                             401  *
                             402  *
                             403  * 0310 - OPERATION ATTEMPTED
                             404  *
                             405  *        A TEST I-O IS ISSUED TO A NOT AVAILABLE DEVICE. (OFF LINE)
                             406  *
                             407  *        EXPECTED RESPONSE
                             408  *
                             409  *        COND. CODE 3 SHOULD BE SET (NOT OPERATIONAL)
                             410  *
                             411  *
                             412  * 0320 - OPERATION ATTEMPTED
                             413  *
                             414  *        A HALT I-O IS ISSUED TO A NOT AVAILABLE DEVICE. (OFF LINE)
                             415  *
                             416  *        EXPECTED RESPONSE
                             417  *
                             418  *        COND. CODE 3 SHOULD BE SET (NOT OPERATIONAL).
                             419  *
                             420  *
                             421  * 0330 - OPERATION ATTEMPTED
                             422  *
                             423  *        A TEST I-O TO A DEVICE THAT JUST WENT FROM NOT READY TO READY.
                             424  *
                             425  *        EXPECTED RESPONSE
                             426  *
                             427  *        EXPECT DEVICE END ALONE, WITH A COND. CODE 1.
                             428  *
                             429  *
                             430  * 0340 - OPERATION ATTEMPTED
                             431  *
                             432  *        A SKIP TO 1 IMMEDIATE IS ISSUED TO A DEVICE WHOSE CARRIAGE WAS
                             433  *        JUST RESTORED.
                             434  *
                             435  *        EXPECTED RESPONSE
                             436  *
                             437  *        EXPECT CHANNEL END AND THEN DEVICE END - NO CARRIAGE MOTION
                             438  *        SHOULD OCCUR SINCE THE CARRIAGE IS ALREADY AT CHANNEL 1.
                             439  *
                             440  *
                             441  * 0350 - OPERATION ATTEMPTED
                             442  *
                             443  *        A PRINT AND SPACE SUPPRESS IS ISSUED.
                             444  *
                             445  *        EXPECTED RESPONSE
                             446  *
```



```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                             447  *        EXPECT CHANNEL END AND THEN DEVICE END.
                             448  *        NOTE...NO HAMMERS WILL BE FIRED.
                             449  *
                             450  *
                             451  * 0360 - OPERATION ATTEMPTED
                             452  *
                             453  *        A SKIP TO 1 IMMEDIATE IS ISSUED.
                             454  *
                             455  *        EXPECTED RESPONSE
                             456  *
                             457  *        EXPECT CHANNEL END AND THEN DEVICE END.  PREVIOUS PRINT AND
                             458  *        SPACE SUPPRESS SHOULD HAVE RESET THE CARRIAGE LATCHES, AND
                             459  *        THE CARRAIGE SHOULD SKIP TO THE NEXT CHANNEL 1.
                             460  *
                             461  *
                             462  *                          ROUTINE 08
                             463  *
                             464  * 0370 - OPERATION ATTEMPTED
                             465  *
                             466  *        A DIAGNOSTIC WRITE WITH A COUNT OF 32 IS DATA CHAINED TO AN
                             467  *        INVALID COMMAND WITH A COUNT OF 100.
                             468  *
                             469  *        EXPECTED RESPONSE
                             470  *
                             471  *        EXPECT CHANNEL END AND THEN DEVICE END.  NO ERRORS SHOULD
                             472  *        OCCUR BECAUSE THE SECOND COMMAND SHOULD NOT BE INSPECTED.
                             473  *
                             474  *
                             475  *                          ROUTINE 09
                             476  *
                             477  * 0380 - OPERATION ATTEMPTED
                             478  *
                             479  *        A NOP IS COMMAND CHAINED TO ANOTHER NOP WITH A COUNT OF 1.
                             480  *
                             481  *        EXPECTED RESPONSE
                             482  *
                             483  *        EXPECT CHANNEL END DEVICE END AND RESIDUAL COUNT OF 1 TOGETHER
                             484  *        EXPECT COND. CODE 0 ON THE SIO BECAUSE OF THE CHAIN FLAG.
                             485  *        THE ADDRESS OF THE SECOND CCW PLUS 8 IS IN THE CSW.
                             486  *
                             487  *
                             488  *                          ROUTINE 10
                             489  *
                             490  * 0390 - OPERATION ATTEMPTED
                             491  *
                             492  *        A DIAGNOSTIC CHECK READ IS ISSUED.
                             493  *
                             494  *        EXPECTED RESPONSE
                             495  *
                             496  *        EXPECT CHANNEL AND DEVICE END TOGETHER.
                             497  *
                             498  *
                             499  *                          ROUTINE 11
                             500  *
                             501  * 0400 - OPERATION ATTEMPTED
                             502  *
                             503  *        A PRINT AND SKIP TO 1 IS ISSUED.  THIS TEST ACCEPTS ONLY
                             504  *        CHANNEL END INTERRUPT AND GOES TO TEST 0410 BEFORE DEVICE
                             505  *        END IS CLEARED.
                             506  *
                             507  *        EXPECTED RESPONSE
                             508  *
                             509  *        EXPECT CHANNEL END ONLY.
                             510  *
```

```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                             511  *
                             512  * 0410 - OPERATION ATTEMPTED
                             513  *
                             514  *        A TEST I-O IS ISSUED TO A DEVICE WITH CHANNEL END CLEARED, AND
                             515  *        DEVICE END HAS NOT OCCURED YET.
                             516  *
                             517  *        EXPECTED RESPONSE
                             518  *
                             519  *        EXPECT DEVICE BUSY AND THEN DEVICE END DUE TO THE OPERATION
                             520  *        OF THE PREVIOUS TEST 0400 WHICH LEFT A DEVICE END PENDING.
                             521  *        EXPECT COND. CODE 1.  DEVICE END FROM PREVIOUS SKIP IS NOW
                             522  *        CLEARED BY ENABLING FOR INTERRUPTS.
                             523  *
                             524  *
                             525  * 0420 - OPERATION ATTEMPTED
                             526  *
                             527  *        A PRINT AND SKIP TO 1 IS ISSUED.
                             528  *        THIS TEST ACCEPTS ONLY CHANNEL END INTERRUPT AND GOES TO
                             529  *        TEST 0430 BEFORE DEVICE END IS CLEARED.
                             530  *
                             531  *        EXPECTED RESPONSE
                             532  *
                             533  *        EXPECT CHANNEL END ONLY.
                             534  *
                             535  *
                             536  * 0430 - OPERATION ATTEMPTED
                             537  *
                             538  *        A START I-O IS ISSUED TO A DEVICE WITH CHANNEL END CLEARED AND
                             539  *        DEVICE END HAS NOT OCCURRED YET.
                             540  *
                             541  *        EXPECTED RESPONSE
                             542  *
                             543  *        EXPECT DEVICE BUSY AND THEN DEVICE END DUE TO THE OPERATION
                             544  *        OF THE PREVIOUS TEST 0420 WHICH LEFT A DEVICE END PENDING.
                             545  *        EXPECT COND. CODE 1.  DEVICE END FROM PREVIOUS SKIP IS NOW
                             546  *        CLEARED BY ENABLING FOR INTERRUPTS.
                             547  *
                             548  *
                             549  * 0440 - OPERATION ATTEMPTED
                             550  *
                             551  *        A PRINT AND SKIP TO 1 IS ISSUED, AND ONLY CHANNEL END IS TAKEN
                             552  *        THIS TEST ACCEPTS ONLY CHANNEL END INTERRUPT AND GOES TO
                             553  *        TEST 0450 BEFORE DEVICE END IS CLEARED.
                             554  *
                             555  *        EXPECTED RESPONSE
                             556  *
                             557  *        EXPECT CHANNEL END ONLY.
                             558  *
                             559  *
                             560  * 0450 - OPERATION ATTEMPTED
                             561  *
                             562  *        A HALT I-O IS ISSUED TO A DEVICE WITH CHANNEL END CLEARED AND
                             563  *        DEVICE END HAS NOT OCCURRED YET.
                             564  *
                             565  *        EXPECTED RESPONSE
                             566  *
                             567  *        EXPECT A ZEROED CSW AND COND. CODE 1.  DEVICE END FROM
                             568  *        PREVIOUS SKIP IS NOW CLEARED BY ENABLING FOR INTERRUPTS.
                             569  *
                             570  *
                             571  *                          ROUTINE 12
                             572  *
                             573  * 0460 - OPERATION ATTEMPTED
                             574  *
```



```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                             575  *        ISSUE A DIAGNOSTIC WRITE AND CLEAR ONE INTERRUPT.
                             576  *
                             577  *        EXPECTED RESPONSE
                             578  *
                             579  *        EXPECT COND. CODE 0.  THIS TEST CLEARS CHANNEL END ONLY.
                             580  *
                             581  *
                             582  * 0480 - OPERATION ATTEMPTED
                             583  *
                             584  *        ISSUE AN INVALID COMMAND TO A DEVICE WITH DEVICE END PENDING.
                             585  *
                             586  *        EXPECTED RESPONSE
                             587  *
                             588  *        EXPECT DEVICE BUSY AND DEVICE END TOGETHER, AND A COND. CODE
                             589  *        OF 1.  SENSE IS ISSUED AND NO BITS ARE EXPECTED TO BE SET.
                             590  *
                             591  *
                             592  ********************************************************************************
                             593  ********************                                    ********************
                             594  * SECTION PREFACE ************************************ SECTION PREFACE *
                             595  ********************                                    ********************
01000  F8305000              596  SECNO    DC     XL4'F8305000'          PROGRAM,SECTION AND REVISION NOS.  *
01004  00000000              597  SNSW     DC     XL4'00'                SECTION SENSE SWITCHES             *
01008  0000                  598           DC     XL2'00'                                                   *
0100A  0000                  599  ICM      DC     XL2'00'                INTERRUPTION CONDITION MASK        *
0100C  00                    600  SDMF     DC     XL1'00'                SECTION DM FLAGS                   *
0100D  01                    601  NIOU     DC     XL1'01'                NUMBER OF UNIT TABLE ENTRYS        *
0100E  C0                    602  FLAG1    DC     X'C0'                  EXCLUSIVE CPU                      *
0100F  00                    603  FLAG2    DC     X'00'                  I/O INT ARE ERR, EXT INT TO PROG   *
01010  0104000000            604  INPSW    DC     X'0104000000'          DISABLED, SPVSR STATE, NO PGM MASK *
01015  001954                605           DC     AL3(ROUT01)            ADR OF 1ST ROUTINE PREFIX          *
01018  0000000000000000      606  EXOPSW   DC     XL8'0'                 SECTION OLD EXTERNAL PSW           *
01020  0000000000000000      607  SVOPSW   DC     XL8'00'                CLEAR ALL OLD PSWS                 *
01028  0000000000000000      608  PGOPSW   DC     XL8'00'                PROGRAM OLD PSW                    *
01030  0000000000000000      609  MCOPSW   DC     XL8'00'                MACHINE CHECK OLD PSW              *
01038  0000000000000000      610  IOOPSW   DC     XL8'00'                I/O OLD PSW                        *
01040  0000000000000000      611  CSW      DC     XL8'00'                CHANNEL STATUS WORD                *
01048  00000000              612  CAW      DC     XL4'00'                CAW                                *
0104C  0000000000000000      613           DC     XL12'00'               RESERVED FOR DM USE                *
01054  00000000                                                                                             *
01058  0004000000            614  EXNPSW   DC     X'0004000000'          EXTERNAL NEW PSW                   *
0105D  000000                615  SRET     DC     XL3'0'                 ADR OF EXT INTRPT ROUTINE          *
01060  0000000000000000      616  SVNPSW   DC     XL8'00'                SUPERVISOR NEW PSW                 *
01068  0000000000000000      617  PGNPSW   DC     XL8'00'                PROGRAM NEW PSW                    *
01070  0000000000000000      618  MCNPSW   DC     XL8'00'                MACHINE CHECK NEW PSW              *
01078  01040000              619  IONPSW   DC     XL4'01040000'          I/O NEW PSW                        *
0107C  0000120C              620           DC     AL4(IRETRN)            ADDRESS OF I/O INTRPT ROUTINE      *
01080                        621           DS     96C                    96 BYTE REG DUMP AREA FOR DM USE   *
010E0  83                    622  UNIT1    DC     X'83'                  UNIT TYPE - 1419 MICR              *
010E1  00                    623  U1OP     DC     X'00'                  OPTIONAL FEATURES BYTE             *
010E2  8000                  624  U1ADDR   DC     X'8000'                FLAGS AND CHAN/UNIT ADDRESS        *
                             625  ********************************************************************************

                             627  *                          1403 SENSE BYTE
                             628  ********************************************************************************
                             629  *       BIT   MEANING
                             630  *        0    COMMAND REJECT
                             631  *        1    INTERVENTION REQUIRED
                             632  *        2    BUS OUT CHECK
                             633  *        3    EQUIPMENT CHECK - HAMMER FIRE CHECK
                             634  *        4    DATA CHECK - UCS PRINTERS ONLY - UNCOMPARABLE CHARACTER
                             635  *        5    BUFFER PARITY CHECK - REFERS TO UCS BUFFER
                             636  *        6    NOT USED
                             637  *        7    CHANNEL 9
```

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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                             638  ********************************************************************************
                             639  ********************************************************************************
                             640  *                          1403 DEVICE STATUS
                             641  ********************************************************************************
                             642  *      BIT   MEANING
                             643  *       0    ATTENTION - NOT USED
                             644  *       1    STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
                             645  *       2    CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
                             646  *       3    DEVICE BUSY
                             647  *       4    CHANNEL END
                             648  *       5    DEVICE END
                             649  *       6    UNIT CHECK
                             650  *       7    UNIT EXCEPTION - CHANNEL 12
                             651  ********************************************************************************
                             652  ********************************************************************************
                             653  *                     1403 DIAGNOSTIC CHECK READ DATA
                             654  ********************************************************************************
                             655  *      BIT   MEANING
                             656  *       5    ON  - THE PRINT LINE COMPLETE BIT HAS BEEN SET FOR THIS
                             657  *                  POSITION.
                             658  *            OFF - ON BASIC PRINTERS, A COMPARE BETWEEN THE DATA BEING
                             659  *                  PRINTED, AND THE PRINT CHARACTER GENERATOR DID NOT
                             660  *                  OCCUR IN THIS POSITION, AND THE CHARACTER WAS NOT
                             661  *                  CONSIDERED A VALID UNPRINTABLE.
                             662  *
                             663  *                  ON UCS PRINTERS, A COMPARE BETWEEN THE DATA BUFFER
                             664  *                  AND THE UNIVERSAL CHARACTER SET BUFFER DID NOT OCCUR
                             665  *                  AND THE CHARACTER WAS NOT CONSIDERED A NULL OR BLANK
                             666  *
                             667  *       6    ON  - THE PRINT CHECK PLANE FOR THIS POSITION WAS SET ON.
                             668  *                  THIS PLANE IS SET BY---
                             669  *                  1. A HAMMER FIRE AND AN EQUAL CHECK.
                             670  *                  2. NO HAMMER FIRE AND NO EQUAL CHECK.
                             671  *                  3. LINE FULL, NOT VALID UNCOMPARABLE CHARACTER, AND
                             672  *                     NOT A PRINT LINE COMPLETE BIT IN THIS POSITION.
                             673  *            OFF - THE PRINT CHECK PLANE FOR THIS POSITION IS NOT SET.
                             674  *
                             675  *       7    ON  - A PARITY CHECK IN THE DATA BUFFER WAS DETECTED IN
                             676  *                  THIS POSITION.
                             677  *
                             678  *            OFF - THIS POSITION OF THE DATA BUFFER HAS CORRECT PARITY.
                             679  ********************************************************************************
                             680  *                          PARAMETERS USED TO ENTER
                             681  *                          THE I-O HANDLER ROUTINE
                             682  ********************************************************************************
                             683  *      BAL   R11,ISIO              LINK TO I-O HANDLER
                             684  *      DC    XL2'0000'             CONTROL SWITCHES
                             685  *      DC    X'0014'               TEST NO. IN DEC EXPRESSED IN HEX
                             686  *      DC    X'F0'                 EXPECTED COND. CODE
                             687  *      DC    X'00'                 EXPECTED SENSE DATA
                             688  *      DC    AL2(ADR-BASE+REG)     ADDR. OF EXPECTED CSW IF NEEDED
                             689  ********************************************************************************
                             690  ********************************************************************************
                             691  *                          I-O HANDLER CONTROL SWITCHES
                             692  *                          2 BYTE PARAMETER FOLLOWING BAL
                             693  ********************************************************************************
                             694  * SWITCH     DESCRIPTION
                             695  *   0  ----  OFF - ISSUE AN I-O COMMAND
                             696  *             ON  - DO NOT ISSUE AN I-O COMMAND
                             697  *   1  ----  OFF - ENABLE
                             698  *             ON  - DO NOT ENABLE
                             699  *   2  ----  OFF - EXPECT NO INTERRUPT
                             700  *             ON  - EXPECT AN INTERRUPT
                             701  *   3  ----  OFF - DO NOT EXPECT 2 INTERRUPTS
```



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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                             702  *             ON  - EXPECT 2 INTERRUPTS
                             703  *   4  ----   OFF - EXPECT NO CSWS
                             704  *             ON  - EXPECT A CSW
                             705  *   5  ----   OFF - DO NOT EXPECT 2 CSWS
                             706  *             ON  - EXPECT 2 CSWS
                             707  *   6  ----   OFF - ALWAYS TRY TO ISSUE SENSE
                             708  *             ON  - SENSE ON UNIT CHECK ONLY
                             709  *   7  ----  OFF - GIVE HALT OPTION ON DETECTED ERROR
                             710  *            ON  - RETURN WITHOUT HALT OPTION
                             711  *
                             712  *   8  ----  OFF - DO NOT ISSUE DIAGNOSTIC READ.
                             713  *            ON  - ISSUE DIAGNOSTIC READ IF UNIT CHECK.
                             714  *
                             715  *   9  ----  OFF - DO NOT ISSUE DIAGNOSTIC CHECK READ.
                             716  *            ON  - ISSUE DIAGNOSTIC CHECK READ IF UNIT CHECK.
                             717  *
                             718  *  10  ----  OFF - PRINT HEADER
                             719  *            ON  - DO NOT PRINT HEADER
                             720  *
                             721  ********************************************************************************
                             722  ********************************************************************************
                             723  *                          SWITCHES USED BY I-O HANDLER
                             724  ********************************************************************************
                             725  * SWITCH     DESCRIPTION
                             726  *   0  ----  OFF - NO HANGUP ON INTERFACE
                             727  *             ON  - HANGUP OCCURRED
                             728  *   1  ----  OFF - NO CSWS STORED
                             729  *             ON  - ONE CSW STORED
                             730  *   2  ----  OFF - SECOND CSW NOT RECIEVED
                             731  *             ON  - SECOND CSW RECIEVED
                             732  *   3  ----  OFF - DID NOT ENABLE
                             733  *             ON  - ENABLED ONCE
                             734  *   4  ----  OFF - DID NOT ENABLE TWICE
                             735  *             ON  - ENABLED TWICE
                             736  *   5  ----  OFF - NO SENSE DATA RECIEVED
                             737  *             ON  - SENSE DATA RECIEVED
                             738  *   6  ----  OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
                             739  *             ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
                             740  *   7  ----  OFF - NO ERROR DETECTED
                             741  *             ON  - AN ERROR WAS DETECTED
                             742  ********************************************************************************
                             743  *                          REGISTERS USED IN I-O HANDLER
                             744  ********************************************************************************
                             745  *      REG          COMMENTS
                             746  *       5    USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
                             747  *            PREVIOUS HANGUP ON INTERFACE DETECTED.
                             748  *
                             749  *       8    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
                             750  *
                             751  *       9    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
                             752  *
                             753  *       10   MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
                             754  *
                             755  *       11   MUST BE USED AS LINK REG TO THIS ROUTINE
                             756  *
                             757  *       12   MUST CONTAIN DEVICE ADDRESS
                             758  *
                             759  ********************************************************************************
010E4  0000                  760  ISW    DC    XL2'0'
                             761  ********************************************************************************
                             762  ********************************************************************************
                             763  *                          * I-O HANDLER SUB-ROUTINE *
                             764  ********************************************************************************
010E6  92 9E  F 1A6          765  IHIO   MVI   ISSUE,X'9E'          SET UP FOR HALT I-O
```

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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

010EA  92 C8  F 61D           766          MVI   IOPT1+21,X'C8'        MOVE -H- TO MESSAGE
010EE  92 C8  F 588           767          MVI   IOADDR+12,X'C8'
010F2  92 9E  F 15C           768          MVI   ILOOP,X'9E'
010F6  47 F0  F 11E           769          BC    UNC,IEYEOH            BR. UNCONDITIONAL
010FA  92 9D  F 1A6           770  ITIO    MVI   ISSUE,X'9D'          SET UP FOR TEST I-O
010FE  92 9D  F 15C           771          MVI   ILOOP,X'9D'
01102  92 E3  F 61D           772          MVI   IOPT1+21,X'E3'        MOVE -T- TO MESSAGE
01106  92 E3  F 588           773          MVI   IOADDR+12,X'E3'
0110A  47 F0  F 11E           774          BC    UNC,IEYEOH            BR. UNCONDITIONAL
0110E  92 9C  F 1A6           775  ISIO    MVI   ISSUE,X'9C'          SET UP FOR START I-O
01112  92 9C  F 15C           776          MVI   ILOOP,X'9C'
01116  92 E2  F 61D           777          MVI   IOPT1+21,X'E2'        MOVE -S- TO MESSAGE
0111A  92 E2  F 588           778          MVI   IOADDR+12,X'E2'
0111E  D2 01  F 604  B 002    779  IEYEOH  MVC   ITSTNO+5(2),2(R11)   SAVE TEST NUMBER
01124  90 AB  F 668           780          STM   R10,R11,ISLAVE        SAVE REG 10 AND REG 11
01128  90 89  F 548           781          STM   R8,R9,ISAVE           SAVE REGS 8 AND 9
0112C  50 AD  0 048           782          ST    R10,HCAW(R13)         STORE COMMAND ADDRESS
01130  D7 07  D 040  D 040    783          XC    HCSW(8,R13),HCSW(R13)
01136  95 30  E 181           784          CLI   SYSMOD(R14),X'30'     CHECK FOR MODEL 30
0113A  47 60  F 144           785          BC    UNEQ,MOD44            BR. IF NOT
0113E  D7 0B  0 080  0 080    786          XC    LOGOUT(12),LOGOUT     CLEAR MOD 30 LOGOUT AREA
01144  91 80  8 000           787  MOD44   TM    0(R11),X'80'          CHECK CONTROL SWITCH FOR NO I-O
01148  47 10  F 1DC           788          BC    ALL,INOW              BR. IF ON
0114C  91 C0  F 004           789          TM    SNSW,X'C0'
01150  47 80  F 198           790          BC    NONE,JOHN
                              791  ********************************************************************************
                              792  *                              SENSE SWITCH LOOPS
                              793  ********************************************************************************
01154  91 80  F 004           794  ITRY1   TM    SNSW,X'80'            CHECK SECTION SENSE SWITCH 0
01158  47 80  F 164           795          BC    NONE,ITRY2            BR. IF OFF
0115C  9C 00  C 000           796  ILOOP   SIO   0(R12)                SIO, TIO, OR HIO
01160  47 F0  F 154           797          BC    UNC,ITRY1             BR. UNCONDITIONAL
01164  91 40  F 004           798  ITRY2   TM    SNSW,X'40'            CHECK SECTION SENSE SWITCH 1
01168  47 80  F 184           799          BC    NONE,IHI              BR. IF OFF
0116C  9D 00  C 000           800  IHANG   TIO   0(R12)                TEST I-O
01170  47 70  F 154           801          BC    NCC0,ITRY1            BR. IF NOT COND. CODE 0
01174  91 40  F 004           802          TM    SNSW,X'40'            CHECK SECTION SENSE SWITCH 1
01178  47 80  F 184           803          BC    NONE,IHI              BR. IF OFF
0117C  9C 00  C 000           804          SIO   0(R12)                START I-O
01180  47 F0  F 16C           805          BC    UNC,IHANG             BR. UNCONDITIONAL
01184  58 1E  0 198           806  IHI     L     R1,WT(14)
01188  88 10  0 003           807          SRL   R1,3
0118C  9D 00  C 000           808  GREG    TIO   0(R12)
01190  47 80  F 198           809          BC    CC0,JOHN
01194  46 10  F 18C           810          BCT   R1,GREG
01198  D7 01  F 0E4  F 0E4    811  JOHN    XC    ISW(2),ISW
0119E  96 80  F 0E4           812          OI    ISW,X'80'
011A2  92 E7  F 577           813          MVI   IACTCC+5,C'X'         MOVE IN A -X-
011A6  9C 00  C 000           814  ISSUE   SIO   0(R12)                I-O COMMAND- SIO, TIO, OR HIO
011AA  47 80  F 1D8           815          BC    CC0,IZERO             BR. IF COND. CODE 0
011AE  47 40  F 1C6           816          BC    CC1,IONE              BR. IF COND. CODE 1
011B2  47 20  F 1BE           817          BC    CC2,ITWO              BR. IF COND. CODE 2
011B6  92 F3  F 577           818          MVI   IACTCC+5,X'F3'        INDICATE COND. CODE 3
011BA  47 F0  F 1DC           819          BC    UNC,INOW              BR. UNCONDITIONAL
011BE  92 F2  F 577           820  ITWO    MVI   IACTCC+5,X'F2'        INDICATE COND. CODE 2
011C2  47 F0  F 1DC           821          BC    UNC,INOW              BR. UNCONDITIONAL
011C6  92 F1  F 577           822  IONE    MVI   IACTCC+5,X'F1'        INDICATE COND. CODE 1
011CA  D2 07  F 63A  D 040    823          MVC   ICSW1(8),HCSW(R13)    SAVE CSW
011D0  96 40  F 0E4           824          OI    ISW,X'40'             INDICATE 1 CSW
011D4  47 F0  F 1DC           825          BC    UNC,INOW              BR. UNCONDITIONAL
011D8  92 F0  F 577           826  IZERO   MVI   IACTCC+5,X'F0'        INDICATE COND. CODE 0
011DC  94 7F  F 0E4           827  INOW    NI    ISW,X'7F'             TURN OFF HANG UP SWITCH
011E0  91 40  8 000           828          TM    0(R11),X'40'          CHECK CONTROL SWITCH FOR NO ENABLE
011E4  47 10  F 280           829          BC    ALL,ISEN              BR. IF ON
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

011E8  96 10  F 0E4           830          OI    ISW,X'10'             INDICATE ENABLED ONCE
011EC  58 9E  0 198           831  IWAIT   L     R9,WT(R14)            LOAD DM WAIT FACTOR
011F0  88 90  0 003           832          SRL   R9,3                  ADJUST
011F4  96 80  F 0E4           833          OI    ISW,X'80'             TURN ON HANG UP SW
011F8  80 00  F 65B           834          SSM   MSK1                  ENABLE
011FC  46 90  F 1FC           835          BCT   R9,*                  WAIT
01200  80 00  F 65C           836          SSM   MSK2                  DISABLE
01204  94 7F  F 0E4           837          NI    ISW,X'7F'             TURN OFF HANG SW
01208  47 F0  F 280           838          BC    UNC,ISEN              BR. UNCONDITIONAL
                              839  ********************************************************************************
                              840  *                        ALL I-O INTERRUPTS RETURN HERE
                              841  ********************************************************************************
0120C  49 C0  F 03A           842  IRETRN CH     R12,IOOPSW+2          COMPARE FOR CURRENT I-O ADDRESS
01210  47 60  F 22E           843          BC    UNEQ,IUIO             BR. IF UNEQUAL
01214  94 7F  F 0E4           844          NI    ISW,X'7F'             RESET HANG UP SW
01218  91 40  F 0E4           845          TM    ISW,X'40'
0121C  47 10  F 25E           846          BC    ALL,ISV2              BR. IF 1 CSW ALREADY STORED
01220  D2 07  F 63A  F 040    847          MVC   ICSW1(8),HCSW(R15)    SAVE CSW 1
01226  96 40  F 0E4           848          OI    ISW,X'40'             INDICATE 1 CSW STORED
0122A  47 F0  F 268           849          BC    UNC,INT3              BR. UNCONDITIONAL
0122E  D2 07  F 550  F 040    850  IUIO    MVC   WORK(8),HCSW(R15)
01234  0A DD                  851          SVC   X'DD'                 CONVERT ADDRESS
01236  0003                   852          DC    AL2(3)
01238  0039                   853          DC    AL2(IOOPSW+1-SECNO)
0123A  0662                   854          DC    AL2(IUNEX+5-SECNO)
0123C  0A D0                  855          SVC   X'D0'                 PRINT UNEXPECTED INTERRUPT DEVICE
0123E  64                     856          DC    X'64'                 ADDRESS
0123F  08                     857          DC    X'08'
01240  F65D                   858          DC    AL2(IUNEX-SECNO+REG)
01242  D2 02  F 5AE  F 5A7    859          MVC   IBLAH+1(3),ICSW       MOVE -CSW- TO MESSAGE
01248  92 1A  F 40B           860          MVI   ICNT,X'1A'            ADJUST COUNT
0124C  D2 02  F 5C4  F 5C7    861          MVC   IBLAH+23(3),IACT      MOVE -ACT- TO MESSAGE
01252  45 90  F 3F4           862          BAL   R9,ICOUT              BR. TO OUTPUT CSW
01256  96 02  F 0E4           863          OI    ISW,X'02'             INDICATE UIO
0125A  47 F0  F 4CA           864          BC    UNC,IPASS             BR. UNCONDITIONAL
0125E  D2 07  F 642  F 040    865  ISV2    MVC   ICSW2(8),HCSW(R15)    SAVE CSW 2
01264  96 20  F 0E4           866          OI    ISW,X'20'             INDICATE 2 CSWS STORED
01268  91 10  8 000           867  INT3    TM    0(R11),X'10'          CHECK CTRL SW FOR 2 INTR EXPECTED
0126C  47 80  F 280           868          BC    NONE,ISEN             BR. IF NOT
01270  91 08  F 0E4           869          TM    ISW,X'08'
01274  47 10  F 280           870          BC    ALL,ISEN              BR. IF ALREADY ENABLED TWICE
01278  96 08  F 0E4           871          OI    ISW,X'08'             INDICATE ENABLED TWICE
0127C  47 F0  F 1EC           872          BC    UNC,IWAIT
01280  91 02  8 000           873  ISEN    TM    0(R11),X'02'          CHECK CONTROL SWITCH FOR SNS ON UC
01284  47 80  F 2A8           874          BC    NONE,IDOSNS           BR. IF OFF TO ISSUE SENSE
01288  91 40  F 0E4           875          TM    ISW,X'40'
0128C  47 80  F 2FE           876          BC    NONE,IBSN             BR. IF NO CSW STORED TO BYPASS SENSE
01290  91 02  F 63E           877          TM    ICSW1+4,X'02'         CHECK FOR UNIT CHECK
01294  47 10  F 2A8           878          BC    ALL,IDOSNS            IF YES BR. TO ISSUE SENSE
01298  91 20  F 0E4           879          TM    ISW,X'20'             CHECK FOR SECOND CSW
0129C  47 80  F 2FE           880          BC    NONE,IBSN             BR. IF NOT TO BYPASS SENSE
012A0  91 02  F 646           881          TM    ICSW2+4,X'02'         CHECK FOR UNIT CHECK
012A4  47 80  F 2FE           882          BC    NONE,IBSN             BR. IF NOT TO BYPASS SENSE
012A8  58 9E  0 198           883  IDOSNS  L     R9,WT(R14)            LOAD DM WAIT FACTOR
012AC  88 90  0 004           884          SRL   R9,4                  ADJUST
012B0  41 80  F 650           885          LA    R8,ISENSE             LOAD SENSE COMMAND ADDRESS
012B4  50 8D  0 048           886          ST    R8,HCAW(R13)          STORE IN CAW
012B8  9C 00  C 000           887          SIO   0(R12)                ISSUE SENSE
012BC  47 70  F 34C           888          BC    NCC0,INDER            BR. IF NOT ACCEPTED
012C0  9D 00  C 000           889  ITIOLP  TIO   0(R12)                TEST I-O
012C4  47 40  F 2E8           890          BC    CC1,ILOKE             BR. IF CSW STORED
012C8  46 90  F 2C0           891  ITIC    BCT   R9,ITIOLP
012CC  47 F0  F 2FE           892          BC    UNC,IBSN              BR. UNCONDITIONAL
012D0  91 40  F 0E4           893  INOEX1  TM    ISW,X'40'
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1403 PRINTER FUNCTION 1

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LOCAT  OBJECT CODE          STMT    SOURCE STATEMENT

012D4  47 10  F 34C         894           BC    ALL,INDER          BR. IF CSW STORED
012D8  47 F0  F 350         895           BC    UNC,IDUNCK         BR. UNCONDITIONAL
012DC  91 20  F 0E4         896   INOEX2  TM    ISW,X'20'
012E0  47 10  F 34C         897           BC    ALL,INDER          BR. IF CSW 2 STORED
012E4  47 F0  F 350         898           BC    UNC,IDUNCK         BR. UNCONDITIONAL
012E8  95 0C  D 044         899   ILOKE   CLI   HCSW+4(R13),X'0C'  CHECK FOR CE DE ONLY
012EC  47 70  F 2C8         900           BC    NCCO,ITIC          BR. IF NOT
012F0  96 04  F 0E4         901           OI    ISW,X'04'          INDICATE SENSE DATA RECIEVED
012F4  D5 00  F 5DD  B 005  902           CLC   IACSNS+5(1),5(R11) COMPARE FOR EXPECTED SENSE
012FA  47 60  F 34C         903           BC    UNEQ,INDER         BR. IF UNEQUAL
012FE  D5 00  F 577  B 004  904   IBSN    CLC   IACTCC+5(1),4(R11) COMPARE FOR EXPECTED COND. CODE
01304  47 60  F 34C         905           BC    UNEQ,INDER         BR. IF UNEQUAL
01308  91 08  B 000         906           TM    0(R11),X'08'
0130C  47 80  F 2D0         907           BC    NONE,INOEX1        BR. IF NO CSW EXPECTED
01310  91 40  F 0E4         908           TM    ISW,X'40'
01314  47 80  F 34C         909           BC    NONE,INDER         BR. IF NO CSW RECIEVED
01318  48 8B  0 006         910           LH    R8,6(R11)          LOAD CSW ADDR
0131C  40 80  F 324         911           STH   R8,ICCSW1+4        STORE IN COMPARE INSTR.
01320  D5 07  F 63A  F 63A  912   ICCSW1  CLC   ICSW1(8),ICSW1     COMPARE FOR EXPECTED CSW
01326  47 60  F 34C         913           BC    UNEQ,INDER         BR. IF UNEQUAL
0132A  91 04  B 000         914           TM    0(R11),X'04'
0132E  47 80  F 2DC         915           BC    NONE,INOEX2        BR. IF NO CSW 2 EXPECTED
01332  91 20  F 0E4         916           TM    ISW,X'20'
01336  47 80  F 34C         917           BC    NONE,INDER         BR. IF NO CSW 2 RECIEVED
0133A  41 88  0 008         918           LA    R8,8(R8)           UPDATE TO SECOND CSW
0133E  40 80  F 346         919           STH   R8,ICCSW2+4
01342  D5 07  F 642  F 642  920   ICCSW2  CLC   ICSW2(8),ICSW2     COMPARE FOR EXPECTED CSW 2
01348  47 80  F 350         921           BC    EQ,IDUNCK          BR. IF EQUAL
0134C  96 01  F 0E4         922   INDER   OI    ISW,X'01'          INDICATE AN ERROR
01350  92 64  F 380         923   IDUNCK  MVI   IFLAG1,X'64'       SET UP FOR ERROR PRINTOUT
01354  92 C0  F 510         924           MVI   IFLAG2,X'C0'
01358  91 01  F 0E4         925           TM    ISW,X'01'          CHECK FOR A DETECTED ERROR
0135C  47 10  F 370         926           BC    ALL,IOUTIT         BR. IF ERROR DETECTED
01360  91 01  F 004         927           TM    SNSW,X'01'         CHECK SECTION SENSE SWITCH 7
01364  47 80  F 52C         928           BC    NONE,ILEAVE        BR. IF OFF
01368  92 24  F 380         929           MVI   IFLAG1,X'24'       SET UP FOR CORRECT PRINTOUT
0136C  92 80  F 510         930           MVI   IFLAG2,X'80'
01370  D2 01  F 604  B 002  931   IOUTIT  MVC   ITSTNO+5(2),2(R11) MOVE TEST NUMBER TO PRINT
01376  0A DD               932           SVC   X'DD'              CONVERT TEST NUMBER
01378  0002                933           DC    AL2(2)
0137A  0604                934           DC    AL2(ITSTNO+5-SECNO)
0137C  0604                935           DC    AL2(ITSTNO+5-SECNO)
0137E  0A D0               936           SVC   X'D0'              PRINT TEST NUMBER
01380  64                  937   IFLAG1  DC    X'64'
01381  09                  938           DC    X'09'
01382  F5FF                939           DC    AL2(ITSTNO-SECNO+REG)
01384  41 80  0 004         940           LA    R8,4               ADJUST LINK ADDRESS FOR PRINTOUT
01388  1B 88               941           SR    R11,R8
0138A  50 80  F 590         942           ST    R11,ILINK+5
0138E  0A DD               943           SVC   X'DD'              CONVERT LINK ADDRESS
01390  0003                944           DC    AL2(3)
01392  0591                945           DC    AL2(ILINK+6-SECNO)
01394  0590                946           DC    AL2(ILINK+5-SECNO)
01396  0A D0               947           SVC   X'D0'              PRINT LINK ADDRESS
01398  E0                  948           DC    X'E0'
01399  10                  949           DC    X'10'
0139A  F58B                950           DC    AL2(ILINK-SECNO+REG)
0139C  41 BB  0 004         951           LA    R11,4(R11)
013A0  91 80  B 000         952           TM    0(R11),X'80'
013A4  47 10  F 426         953           BC    ALL,IOCSW          BR. IF NO I-O COMMAND ISSUED
013A8  0A DD               954           SVC   X'DD'              CONVERT I-O ADDRESS
013AA  0003                955           DC    AL2(3)
013AC  0658                956           DC    AL2(IOADR-SECNO)
013AE  0581                957           DC    AL2(IOADDR+5-SECNO)
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LOCAT  OBJECT CODE          STMT    SOURCE STATEMENT

013B0  0A D0               958           SVC   X'D0'              PRINT I-O ADDRESS
013B2  E0                  959           DC    X'E0'
013B3  0F                  960           DC    X'0F'
013B4  F57C                961           DC    AL2(IOADDR-SECNO+REG)
013B6  95 9C  F 1A6        962           CLI   ISSUE,X'9C'        COMPARE FOR SIO COMMAND
013BA  47 60  F 410        963           BC    UNEQ,ICCOUT        BR. IF NOT
013BE  50 A0  F 5A0        964           ST    R10,ICAW+5         STORE CCW ADDR.
013C2  0A DD               965           SVC   X'DD'              CONVERT CAW
013C4  0003                966           DC    AL2(3)
013C6  05A1                967           DC    AL2(ICAW+6-SECNO)
013C8  05A0                968           DC    AL2(ICAW+5-SECNO)
013CA  0A D0               969           SVC   X'D0'              PRINT CAW
013CC  E0                  970           DC    X'E0'
013CD  08                  971           DC    X'08'
013CE  F59B                972           DC    AL2(ICAW-SECNO+REG)
013D0  D2 02  F 5AE  F 5AA 973           MVC   IBLAH+1(3),ICCW    MOVE -CCW- TO MESSAGE
013D6  92 16  F 408        974           MVI   ICNT,X'16'         ADJUST COUNT
013DA  D2 07  F 550  A 000 975   ICWOUT MVC   WORK(8),0(R10)      MOVE CCW TO WORK AREA
013E0  45 90  F 3F4        976           BAL   R9,ICOUT           BR. TO OUTPUT CCW
013E4  91 C0  A 004        977           TM    4(R10),X'C0'       CHECK FOR ANY CHAIN FLAGS
013E8  47 80  F 410        978           BC    NONE,ICCOUT        BR. IF NONE
013EC  41 AA  0 008        979           LA    R10,8(R10)         UPDATE TO NEXT CCW
013F0  47 F0  F 3DA        980           BC    UNC,ICWOUT         BR. UNCONDITIONAL
013F4  0A DD               981   ICOUT   SVC   X'DD'              CONVERT
013F6  0008                982           DC    AL2(8)
013F8  0550                983           DC    AL2(WORK-SECNO)
013FA  0550                984           DC    AL2(WORK-SECNO)
013FC  D2 07  F 5B2  F 550 985           MVC   IBLAH+5(8),WORK    MOVE TO MESSAGE
01402  D2 07  F 5BB  F 558 986           MVC   IBLAH+14(8),WORK+8
01408  0A D0               987           SVC   X'D0'              PRINT
0140A  E0                  988           DC    X'E0'
0140B  1A                  989   ICNT    DC    X'1A'
0140C  F5AD                990           DC    AL2(IBLAH-SECNO+REG)
0140E  07 F9               991           BCR   UNC,R9             RETURN VIA REG 9
01410  D2 00  F 56D  B 004 992   ICCOUT MVC   IEXPCC+5(1),4(R11)  MOVE EXP CC TO MESSAGE
01416  58 A0  F 668        993           L     R10,ISLAVE         RESTORE REG 10
0141A  0A D0               994           SVC   X'D0'              PRINT EXPECTED COND. CODE
0141C  E0                  995           DC    X'E0'
0141D  0A                  996           DC    X'0A'
0141E  F568                997           DC    AL2(IEXPCC-SECNO+REG)
01420  0A D0               998           SVC   X'D0'              PRINT ACTUAL COND. CODE
01422  E0                  999           DC    X'E0'
01423  0A                 1000           DC    X'0A'
01424  F572               1001           DC    AL2(IACTCC-SECNO+REG)
01426  D2 02  F 5AE  F 5A7 1002   IOCSW  MVC   IBLAH+1(3),ICSW    MOVE -CSW- TO MESSAGE
0142C  92 1A  F 408        1003          MVI   ICNT,X'1A'         ADJUST COUNT
01430  91 08  B 000        1004          TM    0(R11),X'08'
01434  47 80  F 458        1005          BC    NONE,IDIDI         BR. IF NO CSW EXPECTED
01438  D2 02  F 5C4  F 5CA 1006          MVC   IBLAH+23(3),IEXP   MOVE -EXP- TO MESSAGE
0143E  48 8B  0 006        1007          LH    R8,6(R11)
01442  40 80  F 452        1008          STH   R8,ICHNG1+4
01446  41 88  0 008        1009          LA    R8,8(R8)
0144A  40 80  F 482        1010          STH   R8,ICHNG2+4
0144E  D2 07  F 550  F 550 1011   ICHNG1 MVC   WORK(8),WORK       MOVE EXPECTED CSW TO WORK AREA
01454  45 90  F 3F4        1012          BAL   R9,ICOUT           BR. TO OUTPUT EXPECTED CSW
01458  91 40  F 0E4        1013   IDIDI  TM    ISW,X'40'
0145C  47 80  F 470        1014          BC    NONE,IMORST        BR. IF NO CSW STORED
01460  D2 02  F 5C4  F 5C7 1015          MVC   IBLAH+23(3),IACT   MOVE -ACT- TO MESSAGE
01466  D2 07  F 550  F 63A 1016          MVC   WORK(8),ICSW1      MOVE ACTUAL CSW TO WORK AREA
0146C  45 90  F 3F4        1017          BAL   R9,ICOUT           BR. TO OUTPUT ACTUAL CSW
01470  91 04  B 000        1018   IMORST TM    0(R11),X'04'
01474  47 80  F 488        1019          BC    NONE,IDID          BR. IF NOT EXPECTING 2 CSWS
01478  D2 02  F 5C4  F 5CA 1020          MVC   IBLAH+23(3),IEXP   MOVE -EXP- TO MESSAGE
0147E  D2 07  F 550  F 550 1021   ICHNG2 MVC   WORK(8),WORK       MOVE EXPECTED CSW TO WORK AREA
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

01484  45 90  F 3F4         1022           BAL   R9,ICOUT            BR. TO OUTPUT EXPECTED CSW 2
01488  91 20  F 0E4         1023   IDID    TM    ISW,X'20'
0148C  47 80  F 4A0         1024           BC    NONE,IPAS           BR. IF NO SECOND CSW STORED
01490  D2 02  F 5C4  F 5C7  1025           MVC   IBLAH+23(3),IACT    MOVE -ACT- TO MESSAGE
01496  D2 07  F 550  F 642  1026           MVC   WORK(8),ICSW2       MOVE CSW TO WORK AREA
0149C  45 90  F 3F4         1027           BAL   R9,ICOUT
014A0  D2 00  F 5D2  B 005  1028   IPAS    MVC   IEXSNS+5(1),5(R11)  MOVE EXP SENSE TO MESSAGE
014A6  91 04  F 0E4         1029           TM    ISW,X'04'
014AA  47 80  F 4CA         1030           BC    NONE,IPASS          BR. IF NO SENSE DATA RECIEVED
014AE  0A DD                1031           SVC   X'DD'               CONVERT EXPECTED SENSE
014B0  0001                 1032           DC    AL2(1)
014B2  05D2                 1033           DC    AL2(IEXSNS+5-SECNO)
014B4  05D2                 1034           DC    AL2(IEXSNS+5-SECNO)
014B6  0A D0                1035           SVC   X'D0'               PRINT EXPECTED SENSE
014B8  E0                   1036           DC    X'E0'
014B9  0B                   1037           DC    X'0B'
014BA  F5CD                 1038           DC    AL2(IEXSNS-SECNO+REG)
014BC  0A DD                1039           SVC   X'DD'
014BE  0001                 1040           DC    AL2(1)
014C0  05DD                 1041           DC    AL2(IACSNS+5-SECNO)
014C0  05DD                 1041           DC    AL2(IACSNS+5-SECNO)
014C2  05DD                 1042           DC    AL2(IACSNS+5-SECNO)
014C4  0A D0                1043           SVC   X'D0'               PRINT ACTUAL SENSE DATA
014C6  E0                   1044           DC    X'E0'
014C7  0B                   1045           DC    X'0B'
014C8  F5D8                 1046           DC    AL2(IACSNS-SECNO+REG)
014CA  95 30  E 181         1047   IPASS   CLI   SYSMOD(R14),X'30'  CHECK FOR MODEL 30
014CE  47 60  F 50E         1048           BC    UNEQ,IOPOUT         BR. IF NOT
014D2  D2 0B  F 550  0 080  1049           MVC   WORK(12),LOGOUT     MOVE LOGOUT TO WORK AREA
014D8  0A DD                1050           SVC   X'DD'               CONVERT
014DA  000C                 1051           DC    AL2(12)
014DC  0550                 1052           DC    AL2(WORK-SECNO)
014DE  0550                 1053           DC    AL2(WORK-SECNO)
014E0  D2 01  F 5E8  F 550  1054           MVC   IOLOG+5(2),WORK     MOVE LOG OUT TO MESSAGE
014E6  D2 05  F 5EB  F 552  1055           MVC   IOLOG+8(6),WORK+2
014EC  D2 05  F 5F2  F 55A  1056           MVC   IOLOG+15(6),WORK+10
014F2  D2 05  F 5F9  F 562  1057           MVC   IOLOG+22(6),WORK+18
014F8  0A D0                1058           SVC   X'D0'               PRINT LOG OUT
014FA  E0                   1059           DC    X'E0'
014FB  1C                   1060           DC    X'1C'
014FC  F5E3                 1061           DC    AL2(IOLOG-SECNO+REG)
014FE  91 02  F 0E4         1062           TM    ISW,X'02'
01502  47 80  F 50E         1063           BC    NONE,IOPOUT         BR. IF NOT UIO
01506  94 FD  F 0E4         1064           NI    ISW,X'FD'           RESET UIO SWITCH
0150A  47 F0  F 1EC         1065           BC    UNC,IWAIT           BR. UNCONDITIONAL
0150E  0A D0                1066   IOPOUT  SVC   X'D0'               PRINT LOOP OPTIONS
01510  C0                   1067   IFLAG2  DC    X'C0'
01511  32                   1068           DC    X'32'
01512  F608                 1069           DC    AL2(IOPT1-SECNO+REG)
01514  0A D0                1070           SVC   X'D0'               SPACE A LINE
01516  A0                   1071           DC    X'A0'
01517  01                   1072           DC    X'01'
01518  F588                 1073           DC    AL2(ILINK-SECNO+REG)
0151A  50 AD  0 048         1074           ST    R10,HCAW(R13)       STORE CAW
0151E  91 C0  F 004         1075           TM    SNSW,X'C0'          CHECK SECTION SENSE SWITCH 0 AND 1
01522  47 50  F 154         1076           BC    ANY,ITRY1           BR. IF ANY ON
01526  91 01  F 0E5         1077           TM    ISW+1,X'01'
0152A  07 15                1078           BCR   ALL,R5              RETURN VIA REG 5 IF HANG UP
0152C  91 08  B 000         1079   ILEAVE  TM    0(R11),X'08'
01530  47 80  F 538         1080           BC    NONE,IUP            BR. IF NO CSW EXPECTED
01534  41 BB  0 002         1081           LA    R11,2(R11)          UPDATE LINK ADDRESS FOR RETURN
01538  41 BB  0 006         1082   IUP     LA    R11,6(R11)
0153C  98 89  F 548         1083           LM    R8,R9,ISAVE         RESTORE REGS 8 AND 9
01540  07 FB                1084           BCR   UNC,R11             RETURN VIA REG 11
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

01542  070007000700         1085           CNOP  0,8
01548  0000000000000000     1086   ISAVE   DC    XL8'0'
01550                       1087   WORK    DS    24C
01568  40C3C34040E740C5     1088   IEXPCC  DC    C' CC  X EXP'
01570  E7D7
01572  40C3C34040E740C1     1089   IACTCC  DC    C' CC  X ACT'
0157A  C3E3
0157C  40C1C4D940E7E7E7     1090   IOADDR  DC    C' ADR XXXXXX XIO'
01584  E7E7E740E7C9D6
0158B  00                   1091           DC    X'00'
0158C                       1092           CNOP  0,4
0158B                       1093           ORG   *-1
0158B  40C1C4D940E7E7E7     1094   ILINK   DC    C' ADR XXXXXX LINK'
01593  E7E7E740D3C9D5D2
0159B  00                   1095           DC    X'00'
0159C                       1096           CNOP  0,4
0159B                       1097           ORG   *-1
0159B  40C3C1E640E7E7E7     1098   ICAW    DC    C' CAW XXXXXX '
015A3  E7E7E740
015A7  C3E2E6               1099   ICSW    DC    C'CSW'
015AA  C3C3E6               1100   ICCW    DC    C'CCW'
015AD  40C3E2E640E7E7E7     1101   IBLAH   DC    C' CSW XXXXXXXX XX'
015B5  E7E7E7E7E740E7E7
015BD  E7E7E7E7E7E740C5     1102           DC    C'XXXXXX EXP'
015C5  E7D7
015C7  C1C3E3               1103   IACT    DC    C'ACT'
015CA  C5E7D7               1104   IEXP    DC    C'EXP'
015CD  40E2D5E240E7E740     1105   IEXSNS  DC    C' SNS XX EXP'
015D5  C5E7D7
015D8  40E2D5E240E7E740     1106   IACSNS  DC    C' SNS XX ACT'
015E0  C1C3E3
015E3  40D3D6C740E7E740     1107   IOLOG   DC    C' LOG XX XXXXXX X'
015EB  E7E7E7E7E7E740E7
015F3  E7E7E7E7E740E7E7     1108           DC    C'XXXXX XXXXXX'
015FB  E7E7E7E7
015FF  40E3E2E340E7E7E7     1109   ITSTNO  DC    C' TST XXXX'
01607  E7
01608  40E2E240F040D6D5     1110   IOPT1   DC    C' SS 0 ON FOR LOO'
01610  40C6D6D940D3D6D6
01618  D740D6D540E7C9D6     1111           DC    C'P ON XIO, SS 1 0'
01620  6B40E2E240F140D6
01628  D540C6D6D940E3C9     1112           DC    C'N FOR TIO SIO LO'
01630  D640E2C9D640D3D6
01638  D6D7                 1113           DC    C'OP'
0163A  0000000000000000     1114   ICSW1   DC    XL8'0'
01642  0000000000000000     1115   ICSW2   DC    XL8'0'
0164A  000000000000
01650  040015DD00000001     1116   ISENSE  CCW   X'04',IACSNS+5,X'00',1
01658  0011A6               1117   IOADR   DC    AL3(ISSUE)
0165B  FE                   1118   MSK1    DC    X'FE'
0165C  01                   1119   MSK2    DC    X'01'
0165D  40E4C9D640E7E7E7     1120   IUNEX   DC    C' UIO XXXXXX'
01665  E7E7E7
01668  0000000000000000     1121   ISLAVE  DC    XL8'0'              REGISTER SAVE AREA
01670  0600168000000084     1122   DCKRD   CCW   X'06',CKAR,X'00',132
01678  00001678             1123   CRDCSW  DC    A(CRDCSW)
0167C  0C000000             1124           DC    X'0C000000'
01680                       1125   CKAR    DS    132C
01704                       1126   DRAR    DS    132C
01788  0200170400000084     1127   RDCCW   CCW   X'02',DRAR,X'00',132
                            1128   ********************************************************************
                            1129   *                    INITIALIZE ROUTINE
                            1130   ********************************************************************
01790  1B DD                1131   INIT    SR    R13,R13             ZERO REG 13
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

01792  91 40  E 196        1132           TM    406(R14),X'40'       CHECK FOR FORCED PROBLEM STATE
01796  47 80  F 79C        1133           BC    NONE,NITWIT          BR. IF NOT
0179A  18 DF               1134           LR    R13,R15              SET UP FOR PROBLEM STATE
0179C  58 C0  F 0E0        1135  NITWIT   L     R12,UNIT1            LOAD REG 12 WITH UNIT TABLE ENTRY
017A0  54 C0  F 8C8        1136           N     R12,MOD50            AND OUT UNUSED BITS
017A4  49 C0  F 810        1137           CH    R12,SAVDEV           COMPARE FOR CURRENT DEVICE ADDRESS
017A8  47 80  F 7C2        1138           BC    EQ,BLOOP             BR. IF EQUAL
017AC  40 C0  F 810        1139           STH   R12,SAVDEV           SAVE CURRENT DEVICE ADDRESS
017B0  0A D0               1140           SVC   X'D0'
017B2  24                  1141           DC    X'24'
017B3  27                  1142           DC    X'27'
017B4  F82C                1143           DC    AL2(STL-SECNO+REG)
017B6  0A D0               1144           SVC   X'D0'
017B8  80                  1145           DC    X'80'
017B9  39                  1146           DC    X'39'
017BA  F853                1147           DC    AL2(CEMSG-SECNO+REG)
017BC  0A DA               1148           SVC   X'DA'                HALT FOR SS ALTERATION
017BE  9D 00  C 000        1149           TIO   0(R12)               CLEAR PENDING INTERRUPT
017C2  91 80  F 0E4        1150  BLOOP    TM    ISW,X'80'            CHECK FOR HANG UP
017C6  47 10  F 7E0        1151           BC    ALL,HANGUP           BR. IF DETECTED
017CA  92 40  F 8CD        1152           MVI   PRAR,X'40'           CLEAR LOAD  AREA
017CE  D2 00  F 812  F 003 1153           MVC   RTSAV(1),SECNO+3     SAVE ROUTINE NUMBER
017D4  D2 82  F 8CE  F 8CD 1154           MVC   PRAR+1(131),PRAR
017DA  41 A0  F F18        1155           LA    R10,CCW
017DE  07 F4               1156           BCR   UNC,R4               RETURN VIA REG 4
017E0  D2 00  F 003  F 812 1157  HANGUP   MVC   SECNO+3(1),RTSAV      MOVE RTN NO. THAT HANG WAS FOUND
017E6  98 AB  F 668        1158           LM    R10,R11,ISLAVE       RESTORE REGS 10 AND 11
017EA  94 7F  F 0E4        1159           NI    ISW,X'7F'
017EE  96 01  F 0E5        1160           OI    ISW+1,X'01'
017F2  0A D0               1161           SVC   X'D0'                PRINT
017F4  64                  1162           DC    X'64'                -PREVIOUS HANGUP DETECTED-
017F5  1A                  1163           DC    X'1A'
017F6  F88E                1164           DC    AL2(HUNG-SECNO+REG)
017F8  0A D0               1165           SVC   X'D0'
017FA  A019                1166           DC    X'A019'
017FC  F813                1167           DC    AL2(CLUIN-SECNO+REG)
017FE  45 50  F 2A8        1168           BAL   R5,IDOSNS            BR. TO OUTPUT AVAILABLE INFO
01802  92 01  F 003        1169           MVI   SECNO+3,X'01'        RESTORE TO ROUTINE 01
01806  94 FE  F 0E5        1170           NI    ISW+1,X'FE'
0180A  47 F0  F 7C2        1171           BC    UNC,BLOOP
0180E  07 00               1172           CNOP  0,4
01810  FFFF                1173  SAVDEV   DC    X'FFFF'
01812  00                  1174  RTSAV    DC    X'00'
01813  40E2C5C540C4C5E2    1175  CLUIN    DC    C' SEE DESCRIPTION'
0181B  C3D9C9D7E3C9D6D5
01823  60C3D6D4D4C5D5E3    1176           DC    C'-COMMENTS'
0182B  E2
0182C  40C9C640E2E3D340    1177  STL      DC    C' IF STL FEATURE,'
01834  C6C5C1E3E4D9C56B
0183C  40C4C9E2C5D5C7C1    1178           DC    C' DISENGAGE STL H'
01844  C7C540E2E3D340C8
0184C  C1D9C4E6C1D9C5      1179           DC    C'ARDWARE'
01853  40C9D5E2E3C1D3D3    1180  CEMSG    DC    C' INSTALL CARRIAG'
0185B  40C3C1D9D9C9C1C7
01863  C540E3C1D7C56B40    1181           DC    C'E TAPE, CE OUTPU'
0186B  C3C540D6E4E3D7E4
01873  E340D4E4E2E340D5    1182           DC    C'T MUST NOT BE TE'
0187B  D6E340C2C540E3C5
01883  E2E340C4C5E5C9C3    1183           DC    C'ST DEVICE'
0188B  C5
0188C  0A DA               1184           SVC   X'DA'
0188E  40D7D9C5E5C9D6E4    1185  HUNG     DC    C' PREVIOUS HANG U'
01896  E240C8C1D5C740E4
0189E  D740C4C5E3C5C3E3    1186           DC    C'P DETECTED'
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1403 PRINTER FUNCTION 1

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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

018A6  C5C4
018A8                      1187           CNOP  0,4
018A8  0000000000000000    1188  SAVEIT   DC    XL16'0'
018B0  0000000000000000
018B8  0000000000000000    1189  SAVIT    DC    XL12'0'
018C0  00000000
018C4  00000000            1190  SAV10    DC    XL4'0'
018C8  00003FFF            1191  MOD50    DC    X'00003FFF'
018CC  40                  1192           DC    X'40'
018CD                      1193  PRAR     DS    132C
01951  00
01952  07 00               1194           CNOP  0,4
                           1195  ********************************************************************
                           1196  * ROUTINE 01 - ISSUE A TEST I-O TO AN AVAILABLE AND IDLE DEVICE.
                           1197  *              EXPECT CONDITION CODE 0.
                           1198  ********************************************************************
01954  01                  1199  ROUT01   DC    X'01'                ROUTINE NUMBER
01955  000968              1200           DC    AL3(ROUT02-SECNO)    ADDRESS OF NEXT ROUTINE
01958  45 40  F 790        1201           BAL   R4,INIT              BR. TO INITIALIZE
0195C  45 B0  F 0FA        1202  G001     BAL   R11,ITIO             BR. TO ISSUE TEST I-O
01960  0200                1203           DC    X'0200'              CTRL SWITCHES
01962  0010                1204           DC    X'0010'              T  E  S  T     N  U  M  B  E  R
01964  F000                1205           DC    X'F000'              EXP COND. CODE AND SENSE
01966  0A D6               1206           SVC   X'D6'                ROUTINE EXIT
01968                      1207           CNOP  0,4
                           1208  ********************************************************************
                           1209  * ROUTINE 02 - ISSUE SENSE COMMAND -04-. EXPECT COND. CODE 0 ON THE SIO
                           1210  *              ISSUE A TEST I-O. EXPECT COND. CODE 1, AND CHANNEL AND
                           1211  *              DEVICE END IN THE CSW. ISSUE TEST I-O. EXPECT CONDITION
                           1212  *              CODE 0
                           1213  ********************************************************************
01968  02                  1214  ROUT02   DC    X'02'                ROUTINE NUMBER
01969  0009A4              1215           DC    AL3(ROUT03-SECNO)    ADDRESS OF NEXT ROUTINE
0196C  45 40  F 790        1216           BAL   R4,INIT              BR. TO INITIALIZE
01970  41 A0  F 650        1217  G002     LA    R10,ISENSE           LOAD SENSE CCW ADDRESS
01974  45 B0  F 10E        1218           BAL   R11,ISIO             BR. TO ISSUE SENSE SIO
01978  4200                1219           DC    X'4200'              CTRL SWITCHES
0197A  0020                1220           DC    X'0020'              T  E  S  T     N  U  M  B  E  R
0197C  F000                1221           DC    X'F000'              EXP COND. CODE AND SENSE
0197E  58 9E  0 198        1222           L     R9,WT(R14)
01982  88 90  0 003        1223           SRL   R9,3
01986  46 90  F 986        1224           BCT   R9,*                 DELAY
0198A  45 B0  F 0FA        1225           BAL   R11,ITIO             BR. TO ISSUE TEST I-O
0198E  0A00                1226           DC    X'0A00'              CTRL SWITCHES
01990  0030                1227           DC    X'0030'              T  E  S  T     N  U  M  B  E  R
01992  F100                1228           DC    X'F100'              EXP COND. CODE AND SENSE
01994  FF04                1229           DC    AL2(SNSCSW-SECNO+REG) EXP CSW ADDRESS
01996  45 B0  F 0FA        1230           BAL   R11,ITIO             BR. TO ISSUE TEST I-O
0199A  0200                1231           DC    X'0200'              CTRL SWITCHES
0199C  0040                1232           DC    X'0040'              T  E  S  T     N  U  M  B  E  R
0199E  F000                1233           DC    X'F000'              EXP COND. CODE AND SENSE
019A0  0A D6               1234           SVC   X'D6'                ROUTINE EXIT
019A2  07 00               1235           CNOP  0,4
                           1236  ********************************************************************
                           1237  * ROUTINE 03 - ISSUE SENSE COMMAND -04-. ENABLE FOR AN EXPECTED CHANNEL
                           1238  *              DEVICE END INTERRUPT. ISSUE TIO. EXPECT COND. CODE 0.
                           1239  ********************************************************************
019A4  03                  1240  ROUT03   DC    X'03'                ROUTINE NUMBER
019A5  0009C8              1241           DC    AL3(ROUT04-SECNO)    ADDRESS OF NEXT ROUTINE
019A8  45 40  F 790        1242           BAL   R4,INIT              BR. TO INITIALIZE
019AC  41 A0  F 650        1243  G003     LA    R10,ISENSE           SET UP FOR SENSE COMMAND
019B0  45 B0  F 10E        1244           BAL   R11,ISIO             BR. TO ISSUE SENSE SIO
019B4  3A00                1245           DC    X'3A00'              CTRL SWITCHES
019B6  0050                1246           DC    X'0050'              T  E  S  T     N  U  M  B  E  R
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

019B8  F000                 1247           DC    X'F000'                 EXP COND. CODE AND SENSE
019BA  FF04                 1248           DC    AL2(SNSCSW-SECNO+REG)   EXP CSW ADDRESS
019BC  45 B0  F 0FA         1249           BAL   R11,ITIO                BR. TO ISSUE TEST I-O
019C0  0200                 1250           DC    X'0200'                 CTRL SWITCHES
019C2  0060                 1251           DC    X'0060'                 T E S T   N U M B E R
019C4  F000                 1252           DC    X'F000'                 EXP COND. CODE AND SENSE
019C6  0A D6                1253           SVC   X'D6'                   ROUTINE EXIT
019C8                       1254           CNOP  0,4
                            1255     ********************************************************************
                            1256     * ROUTINE 04 - ISSUE NOP -03-. EXPECT COND. CODE 1 ON THE SIO, WITH
                            1257     *              CHANNEL AND DEVICE END STORED IN THE CSW. NO INTERRUPT
                            1258     *              SHOULD OCCUR. IF PRINTER HAS UCS FEATURE, ISSUE THE
                            1259     *              PRECONDITION LOAD COMMAND -EB-, THE BLOCK DATA CHECK
                            1260     *              COMMAND -73-, AND THE ALLOW DATA CHECK COMMAND -7B-.
                            1261     *              EXPECT SAME RESULTS AS NOP.
                            1262     ********************************************************************
019C8  04                   1263     ROUT04 DC     X'04'                   ROUTINE NUMBER
019C9  000A1C               1264           DC    AL3(ROUT05-SECNO)       ADDRESS OF NEXT ROUTINE
019CC  45 40  F 790         1265           BAL   R4,INIT                 BR. TO INITIALIZE
019D0  92 03  F F18         1266     G004  MVI   CCW,X'03'                SET UP FOR NOP
019D4  45 B0  F 10E         1267           BAL   R11,ISIO                BR. TO ISSUE NOP SIO
019D8  0A00                 1268           DC    X'0A00'                 CTRL SWITCHES
019DA  0070                 1269           DC    X'0070'                 T E S T   N U M B E R
019DC  F100                 1270           DC    X'F100'                 EXP COND. CODE AND SENSE
019DE  FF0C                 1271           DC    AL2(NOPCSW-SECNO+REG)   EXP CSW ADDRESS
019E0  91 10  F 0E1         1272           TM    UNIT1+1,X'10'           CHECK FOR UCS FEATURE
019E4  47 80  F A18         1273           BC    NONE,END03              BR. IF NOT DEFINED
019E8  92 EB  F F18         1274           MVI   CCW,X'EB'               SET UP FOR PRE-CONDITION LOAD
019EC  45 B0  F 10E         1275           BAL   R11,ISIO                BR. TO ISSUE SIO
019F0  0A00                 1276           DC    X'0A00'                 CTRL SWITCHES
019F2  0080                 1277           DC    X'0080'                 T E S T   N U M B E R
019F4  F100                 1278           DC    X'F100'                 EXP COND. CODE AND SENSE
019F6  FF0C                 1279           DC    AL2(NOPCSW-SECNO+REG)   EXP CSW ADDRESS
019F8  92 73  F F18         1280           MVI   CCW,X'73'               SET UP FOR BLOCK DATA CHECK
019FC  45 B0  F 10E         1281           BAL   R11,ISIO                BR. TO ISSUE SIO
01A00  0A00                 1282           DC    X'0A00'                 CTRL SWITCHES
01A02  0090                 1283           DC    X'0090'                 T E S T   N U M B E R
01A04  F100                 1284           DC    X'F100'                 EXP COND. CODE AND SENSE
01A06  FF0C                 1285           DC    AL2(NOPCSW-SECNO+REG)   EXP CSW ADDRESS
01A08  92 7B  F F18         1286           MVI   CCW,X'7B'               SET UP FOR ALLOW DATA CHECK
01A0C  45 B0  F 10E         1287           BAL   R11,ISIO                BR. TO ISSUE SIO
01A10  0A00                 1288           DC    X'0A00'                 CTRL SWITCHES
01A12  0100                 1289           DC    X'0100'                 T E S T   N U M B E R
01A14  F100                 1290           DC    X'F100'                 EXP COND. CODE AND SENSE
01A16  FF0C                 1291           DC    AL2(NOPCSW-SECNO+REG)   EXP CSW ADDRESS
01A18  0A D6                1292     END03 SVC   X'D6'                   ROUTINE EXIT
01A1A  07 00                1293           CNOP  0,4
                            1294     ********************************************************************
                            1295     * ROUTINE 05 - ISSUE DIAGNOSTIC WRITE -05-, WITH A COUNT OF 131. EXPECT
                            1296     *              INCORRECT LENGTH RECORD TO BE INDICATED. ISSUE SAME
                            1297     *              COMMAND WITH SLI FLAG. EXPECT INCORRECT LENGTH TO BE
                            1298     *              SUPPRESSED. ISSUE DIAGNOSTIC READ -02-, WITH COUNT OF
                            1299     *              131. EXPECT INCORRECT LENGTH TO BE INDICATED. ISSUE SAME
                            1300     *              COMMAND WITH SLI FLAG. EXPECT INCORRECT LENGTH TO BE
                            1301     *              SUPPRESSED. REPEAT ABOVE TESTS WITH A LONG COUNT OF 133.
                            1302     ********************************************************************
01A1C  05                   1303     ROUT05 DC     X'05'                   ROUTINE NUMBER
01A1D  000AD8               1304           DC    AL3(ROUT06-SECNO)       ADDRESS OF NEXT ROUTINE
01A20  45 40  F 790         1305           BAL   R4,INIT                 BR. TO INITIALIZE
01A24  41 A0  F EE8         1306     G005  LA    R10,SHORT               LOAD ADDR OF SHORT COUNT CCW
01A28  92 05  F EE8         1307           MVI   SHORT,X'05'             SET UP FOR DIAGNOSTIC WRITE
01A2C  45 B0  F 10E         1308           BAL   R11,ISIO                BR. TO ISSUE SIO
01A30  3C00                 1309           DC    X'3C00'                 CTRL SWITCHES
01A32  0110                 1310           DC    X'0110'                 T E S T   N U M B E R
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

01A34  F000                 1311           DC    X'F000'                 EXP COND. CODE AND SENSE
01A36  FEF0                 1312           DC    AL2(SHRT-SECNO+REG)     EXP CSW ADDRESS
01A38  41 A0  F E90         1313           LA    R10,SSLI                SET UP FOR SHORT WRITE WITH SLI FLAG
01A3C  92 05  F E90         1314           MVI   SSLI,X'05'              SET UP FOR DIAGNOSTIC WRITE
01A40  45 B0  F 10E         1315           BAL   R11,ISIO                BR. TO ISSUE SIO
01A44  3C00                 1316           DC    X'3C00'                 CTRL SWITCHES
01A46  0120                 1317           DC    X'0120'                 T E S T   N U M B E R
01A48  F000                 1318           DC    X'F000'                 EXP COND. CODE AND SENSE
01A4A  FE98                 1319           DC    AL2(SSLIST-SECNO+REG)   EXP CSW ADDRESS
01A4C  92 02  F EE8         1320           MVI   SHORT,X'02'             SET UP FOR DIAGNOSTIC READ
01A50  41 A0  F EE8         1321           LA    R10,SHORT               SET UP FOR SHORT READ
01A54  45 B0  F 10E         1322           BAL   R11,ISIO                BR. TO ISSUE SIO
01A58  3800                 1323           DC    X'3800'                 CTRL SWITCHES
01A5A  0130                 1324           DC    X'0130'                 T E S T   N U M B E R
01A5C  F000                 1325           DC    X'F000'                 EXP COND. CODE AND SENSE
01A5E  FEA8                 1326           DC    AL2(RDSHRT-SECNO+REG)   EXP CSW ADDRESS
01A60  92 02  F E90         1327           MVI   SSLI,X'02'              SET UP FOR DIAGNOSTIC READ
01A64  41 A0  F E90         1328           LA    R10,SSLI                SET UP FOR SHORT READ WITH SLI FLAG
01A68  45 B0  F 10E         1329           BAL   R11,ISIO                BR. TO ISSUE SIO
01A6C  3800                 1330           DC    X'3800'                 CTRL SWITCHES
01A6E  0140                 1331           DC    X'0140'                 T E S T   N U M B E R
01A70  F000                 1332           DC    X'F000'                 EXP COND. CODE AND SENSE
01A72  FE80                 1333           DC    AL2(RSSLI-SECNO+REG)    EXP CSW ADDRESS
01A74  41 A0  F EB8         1334           LA    R10,WRLNG               SET UP FOR LONG COUNT
01A78  92 05  F EB8         1335           MVI   WRLNG,X'05'             SET UP FOR DIAGNOSTIC WRITE
01A7C  92 40  F ECD         1336           MVI   ALNG+5,X'40'            EXP INCORRECT LENGTH
01A80  45 B0  F 10E         1337           BAL   R11,ISIO                BR. TO ISSUE SIO
01A84  3C00                 1338           DC    X'3C00'                 CTRL SWITCHES
01A86  0150                 1339           DC    X'0150'                 T E S T   N U M B E R
01A88  F000                 1340           DC    X'F000'                 EXP COND. CODE AND SENSE
01A8A  FEC8                 1341           DC    AL2(ALNG-SECNO+REG)     EXP CSW ADDRESS
01A8C  41 A0  F EC0         1342           LA    R10,LNGSLI              SET UP FOR LONG COUNT WITH SLI
01A90  92 05  F EC0         1343           MVI   LNGSLI,X'05'            SET UP FOR DIAGNOSTIC WRITE
01A94  45 B0  F 10E         1344           BAL   R11,ISIO                BR. TO ISSUE SIO
01A98  3C00                 1345           DC    X'3C00'                 CTRL SWITCHES
01A9A  0160                 1346           DC    X'0160'                 T E S T   N U M B E R
01A9C  F000                 1347           DC    X'F000'                 EXP COND. CODE AND SENSE
01A9E  FF38                 1348           DC    AL2(ALNS-SECNO+REG)     EXP CSW ADDRESS
01AA0  92 00  F ECD         1349           MVI   ALNG+5,X'00'            EXP NO INCORRECT LENGTH
01AA4  41 A0  F EB8         1350           LA    R10,WRLNG
01AA8  92 02  F EB8         1351           MVI   WRLNG,X'02'             SET UP FOR DIAGNOSTIC READ
01AAC  92 40  F EDD         1352           MVI   BLNG+5,X'40'            EXP INCORRECT LENGTH
01AB0  45 B0  F 10E         1353           BAL   R11,ISIO                BR. TO ISSUE LONG READ
01AB4  3800                 1354           DC    X'3800'                 CTRL SWITCHES
01AB6  0170                 1355           DC    X'0170'                 T E S T   N U M B E R
01AB8  F000                 1356           DC    X'F000'                 EXP COND. CODE AND SENSE
01ABA  FED8                 1357           DC    AL2(BLNG-SECNO+REG)     EXP CSW  ADDRESS
01ABC  92 00  F EDD         1358           MVI   BLNG+5,X'00'            EXP NO INCORRECT LENGTH
01AC0  41 A0  F EC0         1359           LA    R10,LNGSLI
01AC4  92 02  F EC0         1360           MVI   LNGSLI,X'02'            SET UP FOR DIAGNOSTIC READ
01AC8  45 B0  F 10E         1361           BAL   R11,ISIO                BR. TO ISSUE SIO
01ACC  3800                 1362           DC    X'3800'                 CTRL SWITCHES
01ACE  0180                 1363           DC    X'0180'                 T E S T   N U M B E R
01AD0  F000                 1364           DC    X'F000'                 EXP COND. CODE AND SENSE
01AD2  FF48                 1365           DC    AL2(BLNS-SECNO+REG)     EXP CSW ADDRESS
01AD4  0A D6                1366           SVC   X'D6'                   ROUTINE EXIT
01AD6  07 00                1367           CNOP  0,4
                            1368     ********************************************************************
                            1369     * ROUTINE 06 - ISSUE DIAGNOSTIC WRITE -05-. CLEAR NO INTERRUPTS. TRY
                            1370     *              TO ISSUE ANOTHER SIO. EXPECT COND. CODE 2.  ISSUE A HIO.
                            1371     *              EXPECT CONDITION CODE 0.  ISSUE A TEST I-O
                            1372     *              EXPECT COND. CODE 1 WITH CHANNEL END IN THE CSW.  ISSUE
                            1373     *              ANOTHER HIO. EXPECT COND. CODE 1 WITH ZEROED CSW. ISSUE
                            1374     *              A SIO. EXPECT COND. CODE 1 WITH DEVICE BUSY AND DEVICE
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                            1375  *              END.  ISSUE HIO AGAIN. EXPECT SAME AS BEFORE. ISSUE A
                            1376  *              TEST I-O.  EXPECT COND. CODE 0.
                            1377  ********************************************************************
01AD8  06                   1378  ROUT06 DC     X'06'              ROUTINE NUMBER
01AD9  000B58               1379         DC     AL3(ROUT07-SECNO)  ADDRESS OF NEXT ROUTINE
01ADC  45 40  F 790         1380         BAL    R4,INIT            BR. TO INITIALIZE
01AE0  D2 07  F F18  F DC0  1381  GO06   MVC    CCW(8),DWR         SET UP FOR DIAGNOSTIC WRITE
01AE6  45 B0  F 10E         1382         BAL    R11,ISIO           BR. TO ISSUE SIO
01AEA  4200                 1383         DC     X'4200'            CTRL SWITCHES
01AEC  0190                 1384         DC     X'0190'            T E S T   N U M B E R
01AEE  F000                 1385         DC     X'F000'            EXP COND. CODE AND SENSE
01AF0  45 B0  F 10E         1386         BAL    R11,ISIO           BR. TO ISSUE SIO
01AF4  4200                 1387         DC     X'4200'            CTRL SWITCHES
01AF6  0200                 1388         DC     X'0200'            T E S T   N U M B E R
01AF8  F200                 1389         DC     X'F200'            EXP COND. CODE AND SENSE
01AFA  58 9E  0 198         1390         L      R9,WT(R14)         LOAD WAIT FACTOR
01AFE  88 90  0 004         1391         SRL    R9,4               ADJUST
01B02  46 90  F B02         1392         BCT    R9,*               LOOP UNTIL COUNT OF ZERO
01B06  45 B0  F 0E6         1393         BAL    R11,IHIO           BR. TO ISSUE HALT I-O
01B0A  4200                 1394         DC     X'4200'            CTRL SWITCH
01B0C  0210                 1395         DC     X'0210'            T E S T   N U M B E R
01B0E  F000                 1396         DC     X'F000'            EXP COND. CODE AND SENSE
01B10  45 B0  F 0FA         1397         BAL    R11,ITIO           BR. TO ISSUE TEST I-O
01B14  4A00                 1398         DC     X'4A00'            CTRL SWITCHES
01B16  0220                 1399         DC     X'0220'            T E S T   N U M B E R
01B18  F100                 1400         DC     X'F100'            EXP COND. CODE AND SENSE
01B1A  FF20                 1401         DC     AL2(NORM-SECNO+REG)  EXP CSW ADDRESS
01B1C  58 9E  0 198         1402         L      R9,WT(R14)         LOAD DM WAIT CONSTANT
01B20  88 90  0 004         1403         SRL    R9,4               ADJUST
01B24  46 90  F B24         1404         BCT    R9,*               DELAY
01B28  45 B0  F 0E6         1405         BAL    R11,IHIO           BR. TO ISSUE HALT I-O
01B2C  4A00                 1406         DC     X'4A00'            CTRL SWITCHES
01B2E  0230                 1407         DC     X'0230'            T E S T   N U M B E R
01B30  F100                 1408         DC     X'F100'            EXP COND COSE AND SENSE
01B32  FDF4                 1409         DC     AL2(CSW0-SECNO+REG)  EXP CSW ADDRESS
01B34  45 B0  F 10E         1410         BAL    R11,ISIO           BR. TO ISSUE SIO
01B38  0800                 1411         DC     X'0800'            CTRL SWITCHES
01B3A  0240                 1412         DC     X'0240'            T E S T   N U M B E R
01B3C  F100                 1413         DC     X'F100'            EXP COND. CODE AND SENSE
01B3E  FDC8                 1414         DC     AL2(DBZY-SECNO+REG)  EXP CSW ADDRESS
01B40  45 B0  F 0E6         1415         BAL    R11,IHIO           BR. TO ISSUE HALT I-O
01B44  4A00                 1416         DC     X'4A00'            CTRL SWITCHES
01B46  0250                 1417         DC     X'0250'            T E S T   N U M B E R
01B48  F100                 1418         DC     X'F100'            EXP COND CODE AND SENSE
01B4A  FDF4                 1419         DC     AL2(CSW0-SECNO+REG)  EXP CSW ADDRESS
01B4C  45 B0  F 0FA         1420         BAL    R11,ITIO           BR. TO ISSUE TEST I-O
01B50  4200                 1421         DC     X'4200'            CTRL SWITCHES
01B52  0260                 1422         DC     X'0260'            T E S T   N U M B E R
01B54  F000                 1423         DC     X'F000'            EXP COND CODE AND SENSE
01B56  0A D6                1424         SVC    X'D6'              ROUTINE EXIT
01B58                       1425         CNOP   0,4
                            1426  ********************************************************************
                            1427  * ROUTINE 07 - THIS ROUTINE IS BYPASSED UNLESS SECTION SENSE SWITCH 5
                            1428  *              IS ON. MAKE DEVICE NOT READY. ISSUE A NOP -03-. ISSUE
                            1429  *              A TIO. EXPECT COND. CODE 1, WITH UNIT CHECK STORED, AND
                            1430  *              INTERVENTION REQUIRED IN SENSE, FOR BOTH. ISSUE HIO.
                            1431  *              EXPECT COND. CODE 1, WITH 0 CSW STORED. MAKE DEVICE
                            1432  *              UNAVAILABLE. ISSUE NOP -03- SIO, A TIO, AND A HIO.
                            1433  *              EXPECT COND. CODE 3 ON EACH. MAKE DEVICE AVAILABLE AND
                            1434  *              READY. ISSUE TIO. EXPECT COND. CODE 1 WITH DEVICE END
                            1435  *              STORED DUE TO NOT READY TO READY. RESTORE CARRIAGE.
                            1436  *              ISSUE SKIP TO 1 IMMEDIATE. OBSERVE NO CARRIAGE MOTION.
                            1437  *              ISSUE PRINT AND SPACE SUPPRESS -01-. OBSERVE NO MOTION.
                            1438  *              ISSUE SKIP TO 1 IMMEDIATE. CARRIAGE SHOULD SKIP TO 1.
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

                            1439  ********************************************************************
01B58  07                   1440  ROUT07 DC     X'07'              ROUTINE NUMBER
01B59  000C50               1441         DC     AL3(ROUT08-SECNO)  ADDRESS OF NEXT ROUTINE
01B5C  91 04  F 004         1442         TM     SNSW,X'04'         CHECK SECTION SENSE SWITCH 5
01B60  47 10  F B6C         1443         BC     ALL,GO07-4         BR- IF ON
01B64  0A D0                1444  SOLONG SVC    X'D0'              PRINT -BYPASSED-
01B66  04                   1445         DC     X'04'
01B67  0E                   1446         DC     X'0E'
01B68  FDD0                 1447         DC     AL2(BYPASS-SECNO+REG)
01B6A  0A D6                1448         SVC    X'D6'              EXIT FROM ROUTINE
01B6C  45 40  F 790         1449         BAL    R4,INIT
01B70  0A D0                1450  GO07   SVC    X'D0'              PRINT -MAKE NOT READY-
01B72  24                   1451         DC     X'24'
01B73  0F                   1452         DC     X'0F'
01B74  FDDD                 1453         DC     AL2(MNR-SECNO+REG)
01B76  0A DA                1454         SVC    X'DA'              HALT TO PERFORM INTERVENTION
01B78  45 B0  F 10E         1455         BAL    R11,ISIO           BR. TO ISSUE SIO
01B7C  3800                 1456         DC     X'3800'            CTRL SWITCHES
01B7E  0270                 1457         DC     X'0270'            T E S T   N U M B E R
01B80  F140                 1458         DC     X'F140'            EXP COND. CODE AND SENSE
01B82  FDEC                 1459         DC     AL2(UC-SECNO+REG)  EXP CSW ADDRESS
01B84  45 B0  F 0FA         1460         BAL    R11,ITIO           BR. TO ISSUE TIO
01B88  3800                 1461         DC     X'3800'            CTRL SWITCHES
01B8A  0280                 1462         DC     X'0280'            T E S T   N U M B E R
01B8C  F140                 1463         DC     X'F140'            EXP COND. CODE AND SENSE
01B8E  FDEC                 1464         DC     AL2(UC-SECNO+REG)  EXP CSW ADDRESS
01B90  45 B0  F 0E6         1465         BAL    R11,IHIO           BR. TO ISSUE HIO
01B94  3800                 1466         DC     X'3800'            CTRL SWITCHES
01B96  0290                 1467         DC     X'0290'            T E S T   N U M B E R
01B98  F140                 1468         DC     X'F140'            EXP COND. CODE AND SENSE
01B9A  FDF4                 1469         DC     AL2(CSW0-SECNO+REG)
01B9C  0A D0                1470         SVC    X'D0'              PRINT -MAKE UNAVAILABLE-
01B9E  24                   1471         DC     X'24'
01B9F  11                   1472         DC     X'11'
01BA0  FE04                 1473         DC     AL2(MUA-SECNO+REG)
01BA2  0A DA                1474         SVC    X'DA'              HALT TO PERFORM INTERVENTION
01BA4  45 B0  F 10E         1475         BAL    R11,ISIO           BR. TO ISSUE SIO
01BA8  3200                 1476         DC     X'3200'            CTRL SWITCHES
01BAA  0300                 1477         DC     X'0300'            T E S T   N U M B E R
01BAC  F300                 1478         DC     X'F300'            EXP COND. CODE AND SENSE
01BAE  45 B0  F 0FA         1479         BAL    R11,ITIO           BR. TO ISSUE TIO
01BB2  3200                 1480         DC     X'3200'            CTRL SWITCHES
01BB4  0310                 1481         DC     X'0310'            T E S T   N U M B E R
01BB6  F300                 1482         DC     X'F300'            EXP. COND. CODE AND SENSE
01BB8  45 B0  F 0E6         1483         BAL    R11,IHIO           BR. TO ISSUE HIO
01BBC  3200                 1484         DC     X'3200'            CTRL SWITCHES
01BBE  0320                 1485         DC     X'0320'            T E S T   N U M B E R
01BC0  F300                 1486         DC     X'F300'            EXP COND. CODE AND SENSE
01BC2  0A D0                1487         SVC    X'D0'              PRINT -MAKE AVAILABLE, RESTORE,
01BC4  24                   1488         DC     X'24'                     READY-
01BC5  1F                   1489         DC     X'1F'
01BC6  FE15                 1490         DC     AL2(MRA-SECNO+REG)
01BC8  0A DA                1491         SVC    X'DA'              HALT TO PERFORM INTERVENTION
01BCA  45 B0  F 0FA         1492         BAL    R11,ITIO           BR. TO ISSUE TIO
01BCE  3800                 1493         DC     X'3800'            CTRL SWITCHES
01BD0  0330                 1494         DC     X'0330'            T E S T   N U M B E R
01BD2  F100                 1495         DC     X'F100'            EXP COND. CODE AND SENSE
01BD4  FF28                 1496         DC     AL2(DONLY-SECNO+REG)  EXP CSW ADDRESS
01BD6  D2 01  F E3D  F E58  1497         MVC    ONCM+9(2),NO       MOVE -NO- TO MESSAGE
01BDC  0A D0                1498         SVC    X'D0'              PRINT -OBSERVE NO CARRIAGE MOTION-
01BDE  24                   1499         DC     X'24'
01BDF  24                   1500         DC     X'24'
01BE0  FE34                 1501         DC     AL2(ONCM-SECNO+REG)
01BE2  0A D0                1502         SVC    X'D0'              PRINT -SKIP TO 1 IMMED'
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1403 PRINTER FUNCTION 1

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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

018E4  A0                   1503         DC    X'A0'
018E5  10                   1504         DC    X'10'
018E6  FE5A                 1505         DC    AL2(SKIP-SECNO+REG)
018E8  0A DA                1506         SVC   X'DA'                HALT TO READ INSTRUCTIONS
018EA  92 8B  F F18         1507         MVI   CCW,X'8B'            SET UP SKIP TO 1 IMMEDIATE
018EE  45 B0  F 10E         1508         BAL   R11,ISIO             BR. TO ISSUE SIO
018F2  3C00                 1509         DC    X'3C00'              CTRL SWITCHES
018F4  0340                 1510         DC    X'0340'              T E S T   N U M B E R
018F6  F100                 1511         DC    X'F100'              EXP COND. CODE AND SENSE
018F8  FF50                 1512         DC    AL2(IMCSW-SECNO+REG)
018FA  0A D0                1513         SVC   X'D0'                PRINT -OBSERVE NO CARRIAGE MOTION-
018FC  24                   1514         DC    X'24'
018FD  24                   1515         DC    X'24'
018FE  FE34                 1516         DC    AL2(ONCM-SECNO+REG)
01C00  0A D0                1517         SVC   X'D0'                PRINT -PRINT NO SPACE-
01C02  A0                   1518         DC    X'A0'
01C03  17                   1519         DC    X'17'
01C04  FE6A                 1520         DC    AL2(PNS-SECNO+REG)
01C06  0A DA                1521         SVC   X'DA'                HALT TO READ INSTRUCTIONS
01C08  D2 07  F F18  F DC0  1522         MVC   CCW(8),DWR
01C0E  92 01  F F18         1523         MVI   CCW,X'01'            SET UP PRINT NO SPACE
01C12  45 B0  F 10E         1524         BAL   R11,ISIO             BR. TO ISSUE SIO
01C16  3C00                 1525         DC    X'3C00'              CTRL SWITCHES
01C18  0350                 1526         DC    X'0350'              T E S T   N U M B E R
01C1A  F000                 1527         DC    X'F000'              EXP COND. CODE AND SENSE
01C1C  FF20                 1528         DC    AL2(NORM-SECNO+REG)  EXP CSW ADDRESS
01C1E  D2 01  F E3D  F E3C  1529         MVC   ONCM+9(2),ONCM+8     BLANK OUT -NO- IN MESSAGE
01C24  0A D0                1530         SVC   X'D0'                PRINT -OBSERVE    CARRIAGE MOTION-
01C26  24                   1531         DC    X'24'
01C27  24                   1532         DC    X'24'
01C28  FE34                 1533         DC    AL2(ONCM-SECNO+REG)
01C2A  0A D0                1534         SVC   X'D0'                PRINT -SKIP TO 1 IMMED-
01C2C  A0                   1535         DC    X'A0'
01C2D  10                   1536         DC    X'10'
01C2E  FE5A                 1537         DC    AL2(SKIP-SECNO+REG)
01C30  0A DA                1538         SVC   X'DA'                HALT TO READ INSTRUCTIONS
01C32  D2 07  F F18  F F60  1539         MVC   CCW(8),NOPCCW        SET UP FOR SKIP TO 1 IMMEDIATE
01C38  92 8B  F F18         1540         MVI   CCW,X'8B'
01C3C  45 B0  F 10E         1541         BAL   R11,ISIO             BR. TO ISSUE SIO
01C40  3C00                 1542         DC    X'3C00'              CTRL NUMBER
01C42  0360                 1543         DC    X'0360'              T E S T   N U M B E R
01C44  F100                 1544         DC    X'F100'              EXP COND. CODE AND SENSE
01C46  FF50                 1545         DC    AL2(IMCSW-SECNO+REG) EXP CSW ADDRESS
01C48  0A D0                1546         SVC   X'D0'
01C4A  04                   1547         DC    X'04'
01C4B  08                   1548         DC    X'08'
01C4C  FE81                 1549         DC    AL2(ENDRTN-SECNO+REG)
01C4E  0A D6                1550         SVC   X'D6'                ROUTINE EXIT
01C50                       1551         CNOP  0,4
                            1552 ********************************************************************
                            1553 * ROUTINE 08 - ISSUE DIAGNOSTIC WRITE -05-, WITH COUNT OF 32, DATA
                            1554 *               CHAINED TO ANOTHER CCW WITH A COUNT OF 100. THE SECOND
                            1555 *               CCW IS AN INVALID COMMAND. EXPECT NO UNUSUAL CONDITIONS.
                            1556 ********************************************************************
01C50  08                   1557 ROUT08 DC    X'08'                ROUTINE NUMBER
01C51  000C90               1558         DC    AL3(ROUT09-SECNO)    ADDRESS OF NEXT ROUTINE
01C54  45 40  F 790         1559         BAL   R4,INIT              BR. TO INITIALIZE
01C58  41 A0  F C70         1560 GO08    LA    R10,DWRDC            SET UP FOR DATA CHAIN
01C5C  45 B0  F 10E         1561         BAL   R11,ISIO             BR. TO ISSUE SIO
01C60  3C00                 1562         DC    X'3C00'              CTRL SWITCHES
01C62  0370                 1563         DC    X'0370'              T E S T   N U M B E R
01C64  F000                 1564         DC    X'F000'              EXP COND. CODE AND SENE
01C66  FC80                 1565         DC    AL2(DCCWS-SECNO+REG) EXP CSW ADDRESS
01C68  0A D6                1566         SVC   X'D6'                ROUTINE EXIT
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

01C6A  000000000000
01C70  050018CD80000020     1567 DWRDC  CCW   X'05',PRAR,X'80',32
01C78  000018CD00000064     1568        CCW   X'00',PRAR,X'00',100
01C80  00001C80             1569 DCCWS  DC    A(DCCWS)
01C84  08000000             1570        DC    X'08000000'
01C88  00000000             1571        DC    XL4'0'
01C8C  04000000             1572        DC    X'04000000'
01C90                       1573        CNOP  0,4
                            1574 ********************************************************************
                            1575 * ROUTINE 09 - COMMAND CHAIN A NOP -03-, TO ANOTHER NOP. EXPECT COND.
                            1576 *               CODE 0 ON THE SIO, DUE TO CHAIN FLAG. EXPECT CHANNEL
                            1577 *               AND DEVICE END INTERRUPT WITH ADDRESS OF THE SECOND
                            1578 *               CCW PLUS 8 STORED IN THE CSW.
                            1579 ********************************************************************
01C90  09                   1580 ROUT09 DC    X'09'                ROUTINE NUMBER
01C91  000CC8               1581        DC    AL3(ROUT10-SECNO)    ADDRESS OF NEXT ROUTINE
01C94  45 40  F 790         1582        BAL   R4,INIT              BR. TO INITIALIZE
01C98  41 A0  F CB0         1583 GO09   LA    R10,CHNNOP           SET UP TO CHAIN NOP
01C9C  45 B0  F 10E         1584        BAL   R11,ISIO             BR. TO ISSUE SIO
01CA0  3800                 1585        DC    X'3800'              CTRL SWITCHES
01CA2  0380                 1586        DC    X'0380'              T E S T   N U M B E R
01CA4  F000                 1587        DC    X'F000'              EXP COND. CODE AND SENSE
01CA6  FCC0                 1588        DC    AL2(CHNST-SECNO+REG) EXP CSW ADDRESS
01CA8  0A D6                1589        SVC   X'D6'                ROUTINE EXIT
01CAA  000000000000
01CB0  030018CD40000001     1590 CHNNOP CCW   X'03',PRAR,X'40',1
01CB8  030018CD00000001     1591        CCW   X'03',PRAR,X'00',1
01CC0  00001CC0             1592 CHNST  DC    A(CHNST)
01CC4  0C000001             1593        DC    X'0C000001'
01CC8                       1594        CNOP  0,4
                            1595 ********************************************************************
                            1596 * ROUTINE 10 - ISSUE DIAGNOSTIC CHECK READ -06-. EXPECT COND. CODE 0
                            1597 *               ON SIO, WITH CHANNEL AND DEVICE END INTERRUPT.
                            1598 ********************************************************************
01CC8  10                   1599 ROUT10 DC    X'10'                ROUTINE NUMBER
01CC9  000CF0               1600        DC    AL3(ROUT11-SECNO)    ADDRESS OF NEXT ROUTINE
01CCC  45 40  F 790         1601        BAL   R4,INIT              BR. TO INITIALIZE
01CD0  D2 07  F F18  F CE8  1602 GO10   MVC   CCW(8),DCRD           SET UP FOR DIAG. CHECK READ
01CD6  45 B0  F 10E         1603        BAL   R11,ISIO             BR. TO ISSUE SIO
01CDA  3800                 1604        DC    X'3800'              CTRL SWITCHES
01CDC  0390                 1605        DC    X'0390'              T E S T   N U M B E R
01CDE  F000                 1606        DC    X'F000'              EXP COND. CODE AND SENSE
01CE0  FF30                 1607        DC    AL2(NORD-SECNO+REG)  EXP CSW ADDRESS
01CE2  0A D6                1608        SVC   X'D6'                ROUTINE EXIT
01CE4  00000000
01CE8  060018CD00000084     1609 DCRD   CCW   X'06',PRAR,X'00',132
01CF0                       1610        CNOP  0,4
                            1611 ********************************************************************
                            1612 * ROUTINE 11 - ISSUE PRINT AND SKIP TO 1 -89-. CLEAR CHANNEL END.
                            1613 *               ISSUE TIO BEFORE DEVICE END OCCURS. EXPECT DEVICE BUSY.
                            1614 *               REPEAT FOR SIO. EXPECT SAME. REPEAT FOR HIO. EXPECT COND
                            1615 *               CODE 1 WITH ZEROED CSW.  EACH DEVICE END FROM THE PRINT
                            1616 *               AND SKIP TO 1 IS CLEARED BY ENABLING THE CHANNEL AFTER
                            1617 *               THE I-O OPERATION BETWEEN CHANNEL AND DEVICE END.  THIS
                            1618 *               ROUTINE WILL BE BYPASSED IF SECTION SENSE SWITCH 7 IS ON
                            1619 ********************************************************************
01CF0  11                   1620 ROUT11 DC    X'11'                ROUTINE NUMBER
01CF1  000D54               1621        DC    AL3(ROUT12-SECNO)    ADDRESS OF NEXT ROUTINE
01CF4  45 40  F 790         1622        BAL   R4,INIT
01CF8  D2 07  F F18  F CE8  1623 GO11   MVC   CCW(8),DCRD
01CFE  91 01  F 004         1624        TM    SNSW,X'01'           CHECK SECTION SENSE SWITCH 7
01D02  47 10  F 864         1625        BC    ALL,SOLONG           BR. IF ON TO BYPASS ROUTINE
01D06  92 89  F F18         1626        MVI   CCW,X'89'            SET UP PRINT AND SKIP TO 1
01D0A  45 B0  F 10E         1627        BAL   R11,ISIO             BR. TO ISSUE SIO
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

01D0E  2A00                 1628          DC    X'2A00'              CTRL SWITCHES
01D10  0400                 1629          DC    X'0400'              T E S T   N U M B E R
01D12  F000                 1630          DC    X'F000'              EXP COND. CODE AND SENSE
01D14  FF20                 1631          DC    AL2(NORM-SECNO+REG)  EXP CSW ADDRESS
01D16  45 B0  F 0FA         1632          BAL   R11,ITIO             BR. TO ISSUE TEST I-O
01D1A  3C00                 1633          DC    X'3C00'              CTRL SWITCHES
01D1C  0410                 1634          DC    X'0410'              T E S T   N U M B E R
01D1E  F100                 1635          DC    X'F100'              EXP COND. CODE AND SENSE
01D20  FDB0                 1636          DC    AL2(DBIZ-SECNO+REG)  EXP CSW ADDRESS
01D22  45 B0  F 10E         1637          BAL   R11,ISIO             BR. TO ISSUE SIO
01D26  2A00                 1638          DC    X'2A00'              CTRL SWITCHES
01D28  0420                 1639          DC    X'0420'              T E S T   N U M B E R
01D2A  F000                 1640          DC    X'F000'              EXP COND. CODE AND SENSE
01D2C  FF20                 1641          DC    AL2(NORM-SECNO+REG)  EXP CSW ADDRESS
01D2E  45 B0  F 10E         1642          BAL   R11,ISIO             BR. TO ISSUE SIO
01D32  3C00                 1643          DC    X'3C00'              CTRL SWITCHES
01D34  0430                 1644          DC    X'0430'              T E S T   N U M B E R
01D36  F100                 1645          DC    X'F100'              EXP COND. CODE AND SENSE
01D38  FDB0                 1646          DC    AL2(DBIZ-SECNO+REG)  EXP CSW ADDRESS
01D3A  45 B0  F 10E         1647          BAL   R11,ISIO             BR. TO ISSUE START I-O
01D3E  2A00                 1648          DC    X'2A00'              CTRL SWITCHES
01D40  0440                 1649          DC    X'0440'              T E S T   N U M B E R
01D42  F000                 1650          DC    X'F000'              EXP COND CODE AND SENSE
01D44  FF20                 1651          DC    AL2(NORM-SECNO+REG)  EXP CSW ADDRESS
01D46  45 B0  F 0E6         1652          BAL   R11,IHIO             BR. TO ISSUE HALT I-O
01D4A  3C00                 1653          DC    X'3C00'              CTRL SWITCHES
01D4C  0450                 1654          DC    X'0450'              T E S T   N U M B E R
01D4E  F100                 1655          DC    X'F100'              EXP COND CODE AND SENSE
01D50  FDF4                 1656          DC    AL2(CSW0-SECNO+REG)  EXP CSW ADDRESS
01D52  0A D6                1657          SVC   X'D6'                ROUTINE EXIT
01D54                       1658          CNOP  0,4
                            1659  ********************************************************************************
                            1660  ********************************************************************************
                            1661  * ROUTINE 12 - ISSUE A DIAGNOSTIC WRITE, AND CLEAR CHANNEL END ONLY.
                            1662  *              ISSUE AN INVALID COMMAND, EXPECT COND. CODE 1 WITH
                            1663  *              DEVICE BUSY AND DEVICE END ONLY.  ISSUE SENSE, NO BITS
                            1664  *              SHOULD BE SET.
                            1665  ********************************************************************************
01D54  12                   1666  ROUT12 DC    X'12'                ROUTINE NUMBER
01D55  00FFFF               1667         DC    X'00FFFF'            LAST ROUTINE
01D58  45 40  F 790         1668         BAL   R4,INIT              GO INITIALIZE
01D5C  D2 07  F F18  F DC0  1669  GO12   MVC   CCW(8),DWR           SET UP COMMAND
01D62  45 B0  F 10E         1670         BAL   R11,ISIO             GO TO I-O HANDLER- DIAG WRITE
01D66  2A00                 1671         DC    XL2'2A00'            CONTROL SWITCHES
01D68  0460                 1672         DC    X'0460'              T E S T   N U M B E R
01D6A  F0                   1673         DC    X'F0'                CONDITION CODE EXPECTED
01D6B  00                   1674         DC    X'00'                SENSE DATA EXPECTED
01D6C  FF20                 1675         DC    AL2(NORM-SECNO+REG)  ADDRESS OF CSW
01D6E  92 0C  F F18         1676         MVI   CCW,X'0C'            SET UP FOR INVALID COMMAND
01D72  58 4E  0 198         1677         L     R4,WT(R14)           LOAD WAIT FACTOR
01D76  88 40  0 004         1678         SRL   R4,4                 ADJUST WAIT FACTOR
01D7A  46 40  F D7A         1679         BCT   R4,*                 WAIT
01D7E  45 B0  F 10E         1680         BAL   R11,ISIO             GO TO I-O HANDLER - INVALID COMMAND
01D82  3800                 1681         DC    XL2'3800'            EXPECTED A CSW
01D84  0480                 1682         DC    X'0480'              T E S T   N U M B E R
01D86  F1                   1683         DC    X'F1'                EXPECTED CONDITION CODE
01D87  00                   1684         DC    X'00'                EXPECTED SENSE
01D88  FDC8                 1685         DC    AL2(DBZY-SECNO+REG)  ADDRESS OF CSW
01D8A  0A D6                1686         SVC   X'D6'                ROUTINE EXIT
01D8C  00000000
01D90  030018CD40000001     1687  NOPTRN CCW   X'03',PRAR,X'40',1
01D98  08001D9000000001     1688         CCW   X'08',NOPTRN,X'00',1
01DA0  0000000000000000     1689  R12CSW DC    XL8'0'
01DA8  00001DA0             1690         DC    A(R12CSW)
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

01DAC  0C000000             1691          DC    X'0C000000'
01DB0  00000000             1692  DBIZ    DC    XL4'0'
01DB4  10000000             1693          DC    X'10000000'
01DB8  00000000             1694          DC    XL4'0'
01DBC  04000000             1695          DC    X'04000000'
01DC0  050018CD00000084     1696  DWR     CCW   X'05',PRAR,X'00',132
01DC8  00000000             1697  DBZY    DC    XL4'0'
01DCC  14000000             1698          DC    X'14000000'
01DD0  40D9E3D540C2E8D7     1699  BYPASS  DC    C' RTN BYPASSED'
01DD8  C1E2E2C5C4
01DDD  40D4C1D2C540D5D6     1700  MNR     DC    C' MAKE NOT READY'
01DE5  E340D9C5C1C4E8
01DEC  00000000             1701  UC      DC    XL4'0'
01DF0  02000000             1702          DC    X'02000000'
01DF4  0000000000000000     1703  CSW0    DC    XL8'0'
01DFC  00000000             1704          DC    XL4'0'
01E00  04000000             1705          DC    X'04000000'
01E04  40D4C1D2C540E4D5     1706  MUA     DC    C' MAKE UNAVAILABL'
01E0C  C1E5C1C9D3C1C2D3
01E14  C5                   1707          DC    C'E'
01E15  40D4C1D2C540C1E5     1708  MRA     DC    C' MAKE AVAILABLE,'
01E1D  C1C9D3C1C2D3C56B
01E25  40D9C5E2E3D6D9C5     1709          DC    C' RESTORE, READY'
01E2D  6B40D9C5C1C4E8
01E34  40D6C2E2C5D9E5C5     1710  ONCM    DC    C' OBSERVE-NO CARR'
01E3C  60D5D640C3C1D9D9
01E44  C9C1C7C540D4D6E3     1711          DC    C'IAGE MOTION EXPE'
01E4C  C9D6D540C5E7D7C5
01E54  C3E3C5C4             1712          DC    C'CTED'
01E58  D5D6                 1713  NO      DC    C'NO'
01E5A  40E2D2C9D740E3D6     1714  SKIP    DC    C' SKIP TO 1 IMMED'
01E62  40F140C9D4D4C5C4
01E6A  40D7D9C9D5E340C2     1715  PNS     DC    C' PRINT BLANKS, N'
01E72  D3C1D5D2E26B40D5
01E7A  D640E2D7C1C3C5       1716          DC    C'O SPACE'
01E81  40C5D5C440D6C640     1717  ENDRTN  DC    C' END OF RTN'
01E89  D9E3D5
                            1718  ********************************************************************************
01E8C  00000000
01E90  050018CD20000083     1719  SSLI    CCW   X'05',PRAR,X'20',131
01E98  00001E98             1720  SSLIST  DC    A(SSLI+8)
01E9C  08000000             1721          DC    X'08000000'
01EA0  00000000             1722          DC    XL4'0'
01EA4  04000000             1723          DC    X'04000000'
01EA8  00001EF0             1724  RDSHRT  DC    A(SHORT+8)
01EAC  0C400000             1725          DC    X'0C400000'
01EB0  00001E98             1726  RSSLI   DC    A(SSLI+8)
01EB4  0C000000             1727          DC    X'0C000000'
01EB8  050018CD00000085     1728  WRLNG   CCW   X'05',PRAR,X'00',133
01EC0  050018CD20000085     1729  LNGSLI  CCW   X'05',PRAR,X'20',133
01EC8  00001EC0             1730  ALNG    DC    A(WRLNG+8)
01ECC  08400001             1731          DC    X'08400001'
01ED0  00000000             1732          DC    XL4'0'
01ED4  04000000             1733          DC    X'04000000'
01ED8  00001EC0             1734  BLNG    DC    A(WRLNG+8)
01EDC  0C400001             1735          DC    X'0C400001'
01EE0  0C000000             1736          DC    X'0C000000'
01EE4  00000000
01EE8  050018CD00000083     1737  SHORT   CCW   X'05',PRAR,X'00',131
01EF0  00001EF0             1738  SHRT    DC    A(SHORT+8)
01EF4  08400000             1739          DC    X'08400000'
01EF8  00000000             1740          DC    XL4'0'
01EFC  04000000             1741          DC    X'04000000'
01F00  00                   1742          DC    X'00'
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LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

01F01  00
01F02  07 00                1743             CNOP  0,4
01F03                       1744             ORG   *-1
01F03  00
01F04  00001658             1745  SNSCSW     DC    A(ISENSE+8)
01F08  0C000000             1746             DC    X'0C000000'
01F0C  00000000             1747  NOPCSW     DC    XL4'0'
01F10  0C000000             1748             DC    X'0C000000'
01F14  00000000
01F18  030018CD00000001     1749  CCW        CCW   X'03',PRAR,X'00',1
01F20  00001F20             1750  NORM       DC    A(NORM)
01F24  08000000             1751             DC    X'08000000'
01F28  00000000             1752  DONLY      DC    XL4'0'
01F2C  04000000             1753             DC    X'04000000'
01F30  00001F20             1754  NORD       DC    A(NORM)
01F34  0C000000             1755             DC    X'0C000000'
01F38  00001EC8             1756  ALNS       DC    A(ALNG)
01F3C  08000001             1757             DC    X'08000001'
01F40  00000000             1758             DC    XL4'0'
01F44  04000000             1759             DC    X'04000000'
01F48  00001EC8             1760  BLNS       DC    A(ALNG)
01F4C  0C000001             1761             DC    X'0C000001'
01F50  00000000             1762  IMCSW      DC    XL4'0'
01F54  08000000             1763             DC    X'08000000'
01F58  00000000             1764             DC    XL4'0'
01F5C  04000000             1765             DC    X'04000000'
01F60  030018CD00000001     1766  NOPCCW     CCW   X'03',PRAR,X'00',1
00000                       1767  NEVER      EQU   0
00007                       1768  NCCO       EQU   7
0000F                       1769  UNC        EQU   15
00008                       1770  NONE       EQU   8
00004                       1771  SOME       EQU   4
00001                       1772  ALL        EQU   1
00005                       1773  ANY        EQU   5
00008                       1774  CC0        EQU   8
00004                       1775  CC1        EQU   4
00002                       1776  CC2        EQU   2
00001                       1777  CC3        EQU   1
00008                       1778  EQ         EQU   8
00004                       1779  LO         EQU   4
00002                       1780  HI         EQU   2
00006                       1781  UNEQ       EQU   6
0000C                       1782  EQLO       EQU   12
0000A                       1783  EQHI       EQU   10
00080                       1784  LOGOUT     EQU   X'80'
00181                       1785  SYSMOD     EQU   X'181'
0F000                       1786  REG        EQU   X'F000'
0005A                       1787  WHAT       EQU   90
00000                       1788  R0         EQU   0
00001                       1789  R1         EQU   1
00002                       1790  R2         EQU   2
00003                       1791  R3         EQU   3
00004                       1792  R4         EQU   4
00005                       1793  R5         EQU   5
00006                       1794  R6         EQU   6
00007                       1795  R7         EQU   7
00008                       1796  R8         EQU   8
00009                       1797  R9         EQU   9
0000A                       1798  R10        EQU   10
0000B                       1799  R11        EQU   11
0000C                       1800  R12        EQU   12
0000D                       1801  R13        EQU   13
0000E                       1802  R14        EQU   14
0000F                       1803  R15        EQU   15
```


1403 PRINTER FUNCTION 1

```
LOCAT  OBJECT CODE          STMT     SOURCE STATEMENT

00198                       1804  WT         EQU   408
00040                       1805  HCSW       EQU   64
00048                       1806  HCAW       EQU   72
001A0                       1807  DMSSW      EQU   X'01A0'
01954                       1808             END   ROUT01
```

1403 PRINTER FUNCTION 1

POST ASSEMBLY DATA

RELOCATION DICTIONARY

LOCATION	LENGTH
01015	3
0107C	4
01651	3
01658	3
01671	3
01678	4
01789	3
01C71	3
01C79	3
01C80	4
01C81	3
01C89	3
01CC0	4
01CE9	3
01D91	3
01D99	3
01DA8	4
01DC1	3
01E91	3
01E98	4
01EA8	4
01E80	4
01E89	3
01EC1	3
01EC8	4
01ED8	4
01EE9	3
01EF0	4
01F04	4
01F19	3
01F20	4
01F30	4
01F38	4
01F48	4
01F61	3

1403 PRINTER FUNCTION 1

LABEL CROSS-REFERENCE BY STATEMENT NUMBERS

LABEL	LEN	VALUE	DEFN	REFERENCES
ALL	1	000001	1772	0788 0829 0846 0870 0878 0894 0897 0926 0953 1078 1151 1443 1625
ALNG	4	001EC8	1730	1336 1341 1349 1756 1760
ALNS	4	001F38	1756	1348
ANY	1	000005	1773	1076
BLNG	4	001ED8	1734	1352 1357 1358
BLNS	4	001F48	1760	1365
BLOOP	4	0017C2	1150	1138 1171
BYPASS	13	001DD0	1699	1447
CAW	4	001048	0612	
CCW	8	001F18	1749	1155 1266 1274 1280 1286 1381 1507 1522 1523 1539 1540 1602 1623 1626 1669 1676
CC0	1	000008	1774	0809 0815
CC1	1	000004	1775	0816 0890
CC2	1	000002	1776	0817
CC3	1	000001	1777	
CEMSG	16	001853	1180	1147
CHNNOP	8	001CB0	1590	1583
CHNST	4	001CC0	1592	1588 1592
CKAR	1	001680	1125	1122
CLUIN	16	001813	1175	1167
CRDCSW	4	001678	1123	1123
CSW	8	001040	0611	
CSW0	8	001DF4	1703	1409 1419 1469 1656
DBIZ	4	001DB0	1692	1636 1646
DBZY	4	001DC8	1697	1414 1685
DCCWS	4	001C80	1569	1565 1569
DCKRD	8	001670	1122	
DCRD	8	001CE8	1609	1602 1623
DMSSW	1	0001A0	1807	
DONLY	4	001F28	1752	1496
DRAR	1	001704	1126	1127
DWR	8	001DC0	1696	1381 1522 1669
DWRDC	8	001C70	1567	1560
ENDRTN	11	001E81	1717	1549
END03	2	001A18	1292	1273
EQ	1	000008	1778	0921 1138
EQHI	1	00000A	1783	
EQLO	1	00000C	1782	
EXNPSW	5	001058	0614	
EXOPSW	8	001018	0606	
FLAG1	1	00100E	0602	
FLAG2	1	00100F	0603	
GO01	4	00195C	1202	
GO02	4	001970	1217	
GO03	4	0019AC	1243	
GO04	4	0019D0	1266	
GO05	4	001A24	1306	
GO06	6	001AE0	1381	
GO07	2	001B70	1450	1443
GO08	4	001C58	1560	
GO09	4	001C98	1583	
GO10	6	001CD0	1602	
GO11	6	001CF8	1623	
GO12	6	001D5C	1669	
GREG	4	00118C	0808	0810
HANGUP	6	0017E0	1157	1151
HCAW	1	000048	1806	0782 0886 1074
HCSW	1	000040	1805	0783 0783 0823 0847 0850 0865 0899
HI	1	000002	1780	
HUNG	16	00188E	1185	1164
IACSNS	11	0015D8	1106	0902 1041 1042 1046 1116

```
IACT         3 0015C7 1103    0861  1015  1025
IACTCC      10 001572 1089    0813  0818  0820  0822  0826  0904  1001
IBLAH       16 0015AD 1101    0859  0861  0973  0985  0986  0990  1002  1006  1015  1020  1025
IBSN         6 0012FE 0904    0876  0880  0882  0892
ICAW        12 00159B 1098    0964  0967  0968  0972
ICCOUT       6 001410 0992    0963  0978
ICCSW1       6 001320 0912    0911
ICCSW2       6 001342 0920    0919
ICCW         3 0015AA 1100    0973
ICHNG1       6 00144E 1011    1008
ICHNG2       6 00147E 1021    1010
ICM          2 00100A 0599
ICNT         1 00140B 0989    0860  0974  1003
ICOUT        2 0013F4 0981    0862  0976  1012  1017  1022  1027
ICSW         3 0015A7 1099    0859  1002
ICSW1        8 00163A 1114    0823  0847  0877  0912  0912  1016
ICSW2        8 001642 1115    0865  0881  0920  0920  1026
ICWOUT       6 0013DA 0975    0980
IDID         4 001488 1023    1019
IDIDI        4 001458 1013    1005
IDOSNS       4 0012A8 0883    0874  0878  1168
IDUNCK       4 001350 0923    0895  0898  0921
IEXP         3 0015CA 1104    1006  1020
IEXPCC      10 001568 1088    0992  0997
IEXSNS      11 0015CD 1105    1028  1033  1034  1038
IEYEOH       6 00111E 0779    0769  0774
IFLAG1       1 001380 0937    0923  0929
IFLAG2       1 001510 1067    0924  0930
IHANG        4 00116C 0800    0805
IHI          4 001184 0806    0799  0803
IHIO         4 0010E6 0765    1393  1405  1415  1465  1483  1652
ILEAVE       4 00152C 1079    0928
ILINK       16 00158B 1094    0942  0945  0946  0950  1073
ILOKE        4 0012E8 0899    0890
ILOOP        4 00115C 0796    0768  0771  0776
IMCSW        4 001F50 1762    1512  1545
IMORST       4 001470 1018    1014
INDER        4 00134C 0922    0888  0894  0897  0903  0905  0909  0913  0917
INIT         2 001790 1131    1201  1216  1242  1265  1305  1380  1449  1559  1582  1601  1622  1668
INOEX1       4 0012D0 0893    0907
INOEX2       4 0012DC 0896    0915
INOW         4 0011DC 0827    0788  0819  0821  0825
INPSW        5 001010 0604
INT3         4 001268 0867    0849
IOADDR      15 00157C 1090    0767  0773  0778  0957  0961
IOADR        3 001658 1117    0956
IOCSW        6 001426 1002    0953
IOLOG       16 0015E3 1107    1054  1055  1056  1057  1061
IONE         4 0011C6 0822    0816
IONPSW       4 001078 0619
IOOPSW       8 001038 0610    0842  0853
IOPOUT       2 00150E 1066    1048  1063
IOPT1       16 001608 1110    0766  0772  0777  1069
IOUTIT       6 001370 0931    0926
IPAS         6 0014A0 1028    1024
IPASS        4 0014CA 1047    0864  1030
IRETRN       4 00120C 0842    0620
ISAVE        8 001548 1086    0781  1083
ISEN         4 001280 0873    0829  0838  0868  0870
ISENSE       8 001650 1116    0885  1217  1243  1745
ISIO         4 00110E 0775    1218  1244  1267  1275  1281  1287  1308  1315  1322  1329  1337  1344  1353
                              1361  1382  1386  1410  1455  1475  1508  1524  1541  1561  1584  1603  1627
                              1627  1637  1642  1647  1670  1680
ISLAVE       8 001668 1121    0780  0993  1158
ISSUE        4 0011A6 0814    0765  0770  0775  0962  1117
```



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ISV2         6 00125E 0865    0846
ISW          2 0010E4 0760    0811  0811  0812  0824  0827  0830  0833  0837  0844  0845  0848  0863  0866
                              0869  0871  0875  0879  0893  0896  0901  0908  0916  0922  0925  1013  1023
                              1023  1029  1062  1064  1077  1150  1159  1160  1170
ITIC         4 0012C8 0891    0900
ITIO         4 0010FA 0770    1202  1225  1230  1249  1397  1420  1460  1479  1492  1632
ITIOLP       4 0012C0 0889    0891
ITRY1        4 001154 0794    0797  0801  1076
ITRY2        4 001164 0798    0795
ITSTNO       9 0015FF 1109    0779  0931  0934  0935  0939
ITWO         4 00118E 0820    0817
IUIO         6 00122E 0850    0843
IUNEX       11 00165D 1120    0854  0858
IUP          4 001538 1082    1080
IWAIT        4 0011EC 0831    0872  1065
IZERO        4 0011D8 0826    0815
JOHN         6 001198 0811    0790  0809
LNGSLI       8 001EC0 1729    1342  1343  1359  1360
LO           1 000004 1779
LOGOUT       1 000080 1784    0786  0786  1049
MCNPSW       8 001070 0618
MCOPSW       8 001030 0609
MNR         15 001DDD 1700    1453
MOD44        4 001144 0787    0785
MOD50        4 0018C8 1191    1136
MRA         16 001E15 1708    1490
MSK1         1 00165B 1118    0834
MSK2         1 00165C 1119    0836
MUA         16 001E04 1706    1473
NCCO         1 000007 1768    0801  0888  0900
NEVER        1 000000 1767
NIOU         1 00100D 0601
NITWIT       4 00179C 1135    1133
NO           2 001E58 1713    1497
NONE         1 000008 1770    0790  0795  0799  0803  0868  0874  0876  0880  0882  0907  0909  0915  0917
                              0928  0978  1005  1014  1019  1024  1030  1063  1080  1133  1273
NOPCCW       8 001F60 1766    1539
NOPCSW       4 001F0C 1747    1271  1279  1285  1291
NOPTRN       8 001D90 1687    1688
NORD         4 001F30 1754    1607
NORM         4 001F20 1750    1401  1528  1631  1641  1651  1675  1750  1754
ONCM        16 001E34 1710    1497  1501  1516  1529  1529  1533
PGNPSW       8 001068 0617
PGOPSW       8 001028 0608
PNS         16 001E6A 1715    1520
PRAR         1 0018CD 1193    1152  1154  1154  1567  1568  1590  1591  1609  1687  1696  1719  1728  1729
                              1737  1749  1766
RDCCW        8 001788 1127
RDSHRT       4 001EA8 1724    1326
REG          1 00F000 1786    0858  0939  0950  0961  0972  0990  0997  1001  1038  1046  1061  1069  1073
                              1143  1147  1164  1167  1229  1248  1271  1279  1285  1291  1312  1319  1326
                              1326  1333  1341  1348  1357  1365  1401  1409  1414  1419  1447  1453  1459
                              1459  1464  1469  1473  1490  1496  1501  1505  1512  1516  1520  1528  1533
                              1533  1537  1545  1549  1565  1588  1607  1631  1636  1641  1646  1651  1656
                              1656  1675  1685
ROUT01       1 001954 1199    0605  1808
ROUT02       1 001968 1214    1200
ROUT03       1 0019A4 1240    1215
ROUT04       1 0019C8 1263    1241
ROUT05       1 001A1C 1303    1264
ROUT06       1 001AD8 1378    1304
ROUT07       1 001B58 1440    1379
ROUT08       1 001C50 1557    1441
ROUT09       1 001C90 1580    1558
ROUT10       1 001CC8 1599    1581
```

1403 PRINTER FUNCTION 1

ROUT11	1	001CF0	1620	1600											
ROUT12	1	001D54	1666	1621											
RSSLI	4	001EB0	1726	1333											
RTSAV	1	001812	1174	1153	1157										
R0	1	000000	1788												
R1	1	000001	1789	0806	0807	0810									
R10	1	00000A	1798	0780	0782	0964	0975	0977	0979	0979	0993	1074	1155	1158	1217	1243
				1306	1313	1321	1328	1334	1342	1350	1359	1560	1583			
R11	1	00000B	1799	0779	0780	0787	0828	0867	0873	0902	0904	0906	0910	0914	0931	0941
				0942	0951	0951	0952	0992	1004	1007	1018	1028	1079	1081	1081	1082
				1082	1082	1084	1158	1202	1218	1225	1230	1244	1249	1267	1275	1281
				1281	1287	1308	1315	1322	1329	1337	1344	1353	1361	1382	1386	1393
				1393	1397	1405	1410	1415	1420	1455	1460	1465	1475	1479	1483	1492
				1492	1508	1524	1541	1561	1584	1603	1627	1632	1637	1642	1647	1652
R12	1	00000C	1800	0796	0800	0804	0808	0814	0842	0887	0889	1135	1136	1137	1139	1149
R12CSW	8	001DA0	1689	1690												
R13	1	00000D	1801	0782	0783	0783	0823	0886	0899	1074	1131	1131	1134			
R14	1	00000E	1802	0784	0831	0883	1047	1132	1222	1390	1402	1677				
R15	1	00000F	1803	0847	0850	0865	1134									
R2	1	000002	1790													
R3	1	000003	1791													
R4	1	000004	1792	1156	1201	1216	1242	1265	1305	1380	1449	1559	1582	1601	1622	1668
				1677	1678	1679										
R5	1	000005	1793	1078	1168											
R6	1	000006	1794													
R7	1	000007	1795													
R8	1	000008	1796	0781	0885	0886	0910	0911	0918	0918	0919	0940	0941	1007	1008	1009
				1009	1010	1083										
R9	1	000009	1797	0781	0831	0832	0835	0862	0883	0884	0891	0976	0991	1012	1017	1022
				1027	1083	1222	1223	1224	1390	1391	1392	1402	1403	1404		
SAVDEV	2	001810	1173	1137	1139											
SAVEIT	16	0018A8	1188													
SAVIT	12	001888	1189													
SAV10	4	0018C4	1190													
SDMF	1	00100C	0600													
SECNO	4	001000	0596	0853	0854	0858	0934	0935	0939	0945	0946	0950	0956	0957	0961	0967
				0968	0972	0983	0984	0990	0997	1001	1033	1034	1038	1041	1042	1046
				1046	1052	1053	1061	1069	1073	1143	1147	1153	1157	1164	1167	1169
				1169	1200	1215	1229	1241	1248	1264	1271	1279	1285	1291	1304	1312
				1312	1319	1326	1333	1341	1348	1357	1365	1379	1401	1409	1414	1419
				1419	1441	1447	1453	1459	1464	1469	1473	1490	1496	1501	1505	1512
				1641	1646	1651	1656	1675	1685							
SHORT	8	001EE8	1737	1306	1307	1320	1321	1724	1738							
SHRT	4	001EF0	1738	1312												
SKIP	16	001E5A	1714	1505	1537											
SNSCSW	4	001F04	1745	1229	1248											
SNSW	4	001004	0597	0789	0794	0798	0802	0927	1075	1442	1624					
SOLONG	2	001864	1444	1625												
SOME	1	000004	1771													
SRET	3	00105D	0615													
SSLI	8	001E90	1719	1313	1314	1327	1328	1720	1726							
SSLIST	4	001E98	1720	1319												
STL	16	00182C	1177	1143												
SVNPSW	8	001060	0616													
SVOPSW	8	001020	0607													
SYSMOD	1	000181	1785	0784	1047											
UC	4	001DEC	1701	1459	1464											
UNC	1	00000F	1769	0769	0774	0797	0805	0819	0821	0825	0838	0849	0864	0872	0892	0895
				0898	0980	0991	1065	1084	1156	1171						
UNEQ	1	000006	1781	0785	0843	0903	0905	0913	0963	1048						
UNIT1	1	0010E0	0622	1135	1272											
U1ADDR	2	0010E2	0624													
U1OP	1	0010E1	0623													
WHAT	1	00005A	1787													
WORK	1	001550	1087	0850	0975	0983	0984	0985	0986	1011	1011	1016	1021	1021	1026	1049

1403 PRINTER FUNCTION 1

			1052	1053	1054	1055	1056	1057		
WRLNG	8	001EB8 1728	1334	1335	1350	1351	1730	1734		
WT	1	000198 1804	0806	0831	0883	1222	1390	1402	1677	
XF8305	1	001000 0003								

NO STATEMENTS FLAGGED IN THIS ASSEMBLY

1403 PRINTER FUNCTION 1

OBJECT DECK LIST. PERIODS CORRESPOND TO BLANK COLUMNS.

COLS. 1 THROUGH 20	COLS. 21 THROUGH 40	COLS. 41 THROUGH 60	COLS. 61 THROUGH 80
BESD.....AA..AAXF83 9 YQ Y9 99 9	05..AAAA.AGQ..... YYQY Y8Z 9999 99	840	105.131812..83050001
BTXT.AAA..A8..AA8A&A 9 YQY Y9 Y9 Q Y 999 9 9 Z 9	AAAAAAAAAA&AADAAAAJD YYYYYYYYY9-Y99YYYY8R 999999999 9 99999	AAAAAAAAAAAAAAAAAAAA YYYYYYYYYYYYYYYYYYYY 99999999999999999999	AAAAAAAAAAAA83050002 YYYYYYYYYYYY 999999999999
BTXT.AA8..A8..AAAAAA 9 YQ9 Y9 Y9YYYY 99 9 9 9999	AAAAAAAAAAAAAAAAAAAA YYYYYYYYYYYYYYYYYYYY 99999999999999999999	AAAAAAAAADAAAAAAAAAA YYYYYYYYY9YYYYYYYYYY 999999999 9999999999	AAAAAAAAAAAA83050003 YYYYYYYYYYYY 999999999999
BTXT.AA&..AA..AAAAAA 9 YQ- YQ Y9YYYY 990 99 9 9999	AAAAADAAAAKD..... YYYY99YYYY98 9999 9999 9	.....	83050004
BTXT.AAS..A8..AACAAA 9 YQ8 Y9 Y90YYY 99 9 9 9 9	AABF1OBH6NBH5HBF1MGO YY-Q O- 8- O-Q 8Z 99 9	1OBE1OBE1MBT6NBT5HGO 8-Q O-Q 8- 8- OZ 9 9	1OBD1OBD1MBS83050005 8-Q O-Q 8- 9
BTXT.AJQ..A8..AA6NBS 9 Y99 Y9 Y9 8- 9 9 9 9	5HKA6DABAL6QAI5H&NAH 0 9 9Q9QY ZQO Z YYZ 0 9	PG-.-.EAJAG-1DPCAAAA 90 O -QZOZ Z 8YYYY Z 99 9	AAAAGA1DA&OD83050006 -YQYZQ Q-- 9 09 9 9
BTXT.AJ&..A8..AAGA1H 9 Y9 Y9 Y9ZY - 9 9 9	AAODGA1MDA&AGO1DA.OD -Y 9ZY ZQY-YZ R- 9 9 9	GA1DEA&AG&1DA.ODGA1D ZY OQY-YZ- R- 9ZY O 9 9 O	DA&AGO1UHOAH83050007 QY-YZ 8R89- 9 9 9
BTXT.AJH..A8..AAHAAC 9 Y9O Y9 Y9OQY9 9 9 9 99	EA&AGA1HFA1DPAOUOUFA QY-YZY -ZQ Y 9 -Y 9 9 9	OUBX5GDA&AGA1QG.1FGJ - RQY-YZY Z ZY 0 9 9 9	1FB35GGO1DB283050008 Q- RZ Q- 0 0 9
BTXT.AJ&..A8..AA5GGO 9 Y9- Y9 Y9 RZ 9 9 9 O	1DB15GKG62-.F.OUGO1D Q- R 9 8O - Z Q 9 O 9 9	BO5GD7OUA.AAGA2AFAOU - R-8 - QYZQ Y-Q O 09 9 9	HFAHHAACFAOU83050009 RQ9-OQY9-Y 9
BTXT.AJ8..A8..AAAA6L 9 Y9 Y9 Y9YY 8 9 9 9 9	FA1DAA6MD7OUGO2AA&O2 ZQ QYY 8-8 Z Y8- 8 Z 9 9	G-2WD7OUA.OUGA2OKG62 Z 8-8 - ZQ 8 9 8 9 9 9	O.F.OUGO2QKG83050010 - Z Z 9
BTXT.AKA..A8..AA5&O. 9 Y9Q Y9 Y9 9 Z 9 9	BEACA1FKB-MC6NKB5O5P 8QY9Y89Z8OZ8 8 9 Y O 999 99 9 9	BK4CKB5D5GEA34FBOUGO -8 8 9 ZQ -9 Z 9 9	4BKG6BO.FJOU83050011 Y 9 Z -Y 9 9
BTXT.AKQ..A8..AAAAAA 9 Y9Z Y9 Y9-QQY 9 9 9 909	GA2AAHOUGA2AFHOUGO1M ZY Y-9 ZQ Y-9 Z Y 9 9	ABAAGA2QA.OUGA2FAB66 -9QYZY O- ZY Q-9 8 09 Z 9	GA2QAJOUGA2F83050012 ZQ O-Y ZY Q 9 9 Z
BTXT.AKJ..A8..AAAB6F 9 Y9Y Y9 Y9-9 Z 9 9 9	GA2FHFAHHAADAA6&&EAH ZY QRQ9-OQY9ZY YYZ Z 9 9	DA&AG&3DEA&AG.2YFA2& QY-YZ- 8QY-YZ ZQ - 9 9 O 9 9	GO2FA.OUGA3D83050013 Z Q- ZQ 8 Z 9
BTXT.AKQ..A8..AAGO3& 9 Y9 Y9 Y9Z 9 9 9	AJOUGA3DGO3&ED-DG&2H -Y ZQ 8Z -8OZZ- 9 9 9 O	FDOUNA5EAEG-3DNA5GAD -9 Y QQ9Z 8 Y RQ9 9 9O 9 OO	G-3DAHAAGA2-83050014 Z 8-9QYZY O 09

1403 PRINTER FUNCTION 1

BTXT.ALA..A8..AAA.OU 9 Y9Q Y9 Y9- 9 9 9	GA3DHCAF.A3UNG6262G- ZY 8ZYY9 Y 9 9 8 8Z 9 9 9	3DADAAGA2DAJOUGA3DAH 8-9QYZY Q-Y ZY 8ZO 09 9 9	AH.A3FNG6B6B83050015 Y9 Y Z 9 Z Z 9
BTXT.ALH..A8..AAGA3& 9 Y9Z Y9 Y9ZY 9 9 9	FAOUBM3AB&5AAAOUGA3& -9 -Z Y-- Q-9 ZQ - 9 9 O	AAODGA5UBU3ABA5AKA6D -9 9ZY 8-9 Y-Y Q 9 9 9 9	ABBEABFDFDB-83050016 Q98QY9999980 O 999 9
BTXT.ALA..A8..AAMA5G 9 Y9Y Y9 Y9Z8 Q 9 9 9 9 Z	AAADLH&A5ABEACEAEAB- ZYY98- Q Q8QY99-9Q8O 9 9O O 999 9	SA5CACADAAAAGA4WBEAC 8Q YZQY9-YQYZQ 98QY9 9 09 09 9 999	FHEAB-SG54ED83050017 9R9O8088 8-Q 9 9
BTXT.ALH..A8..AA1OG- 9 Y9- Y9 Y9 OZ 9 O 9 9	4A&J5JBEACEJEJB-SC5C Q Y Y8QY99O9Y8088 Q 9 999 9 9	KB5O5KBO4CKG5&JAEA34 9 Y Y-9 8 9 YYZQ 9 9	A&JDGA4AAKAH83050018 --Y9ZY QZYY9 9 9
BTXT.ALO..A8..AAGO3B 9 Y9 Y9 Y9Z Q 9 9 9 9	BEAHE&E&KG5B5&KG5C5H 8QY99 9 9 - 9 Q R 999 O O	B-SK5NG9KA5VADHJ6QB- 8O88 Y9 Y 8Q9RY Z8O 9 9 9 O 9	SB5QB-SB5BKB83050019 88 Z8088 R 9 9 9 9 O
BTXT.AMY..A8..AA5O5P 9 Y99 Y9 Y9 Y O 9 9 9	BK4CAHAAGA4HKB5D5BHC -8 8-9QYZY R 9 YZY 9 9 O9 9	AF.A4BAHAH.A4BKG5&5& Y9 Y RZOY9 Y O 9 9 9	EA34A.OUGA4&83050020 ZQ - ZY - O
BTXT.AM-..A8..AAKB5D 9 Y9 Y9 Y9 9 9 9 9	5GKG5&62EA34ADAAGA4H 9 8ZQ -9QYZY O 9 O9	KB5D5BKG5&5&EA34AJOU 9 Y 9 ZQ -Y 9 9	GA4JKB5D5GKG83050021 ZY Y 9 9
BTXT.AMH..A8..AA5&6B 9 Y9- Y9 Y9 Z 9 9 9	EA34KA5KAEADOUGA4BBE ZQ Y Q9-9 ZY Y8Q 9 O 999	AAEKEKB-SC5EBEAAEEEE Y99 9 8088 Y8QY99Q9Q 9 9 9 9999 9 9	B-SC5QEAJAG-83050022 8088 -QZOZ 9 9 Z
BTXT.AM-..A8..AA5FKC 9 Y9O Y9 Y9 8 8 9 9 9 9 9	5&AABEADE&E&KA5Y5&KE YY8QY89 9 9 9 9 9999	5L5BKE525KKE595KB-SM Y R 9 8 9 Z8088 9 9 9	5TABOUGA5FDE83050023 -9 ZY 8-Q 9 Z
BTXT.ANH..A8..AAOUGO 9 Y99 Y9 Y9 Z 9 9 9	1MB-&26HB-JA5C&NAHA& Y8O-9 98OY9 Y YYZ-- 99 9 9	ODG&1DAAOVGNAHAAGA58 9Z R-9 99-9QYZY 9 09	ACABACAFHI5H83050024 ZQY9ZQY9-O Z 09 09
BTXT.AN...AA..AAGCGA 9 Y9 YQ Y99Q9Y 9 99 9 Z 9	GAGAAAAAAAAA..... 9Y9YYYYYYYYY 9 999999999	.....	83050025
BTXT.ANQ..AU..AA.CC. 9 Y9Z Y9 Y9 9 9 9	.X.EXP.CC..X.ACT.ADR	.XXXXXX.XIOA..... Y 9	83050026
BTXT.ANC..AJ..AA.ADR 9 Y9Y Y9 Y9 9 9 9	.XXXXXX.LINKA..... Y 9	.....	83050027
BTXT.ANC..A8..AA.CAW 9 Y9Q Y9 Y9 9 9 9	.XXXXXX.CSWCCW.CSW.X	XXXXXXX.XXXXXXXX.EXP	ACTEXP.SNS.X83050028
BTXT.ANL..A8..AAX.EX 9 Y9 Y9 Y9 9 9 9	P.SNS.XX.ACT.LOG.XX.	XXXXXX.XXXXXX.XXXXXX	.TST.XXXX.SS83050029
BTXT.AOC..A8..AA.O.O 9 Y98 Y9 Y9 9 9 9 9	N.FOR.LOOP.ON.XIOT.S 8	S.1.ON.FOR.TIO.SIO.L	OOPAAAAAAAAA83050030 YYYYYYYYY 999999999

1403 PRINTER FUNCTION 1

```
BTXT.AQC..A8..AAAAAA     AAAAAAAAADANEAAAAAJO     FA.UIO.XXXXXXAAAAAAA     AFAOAAAADAAO83050031
9    Y9Z  Y9  Y9YYYY     YYYYYYYYY9Y9QYYY9Y9O     Q9            YYYYYYY     Y9Y9YYYYOYY9
     9    9   9 9999     999999999 9 9999 9       Z             9999999     9 9  999 99

BTXT.AO3..AE..AAHDAA     A.....................     ......................83050032
9    Y98  Y9  Y9R8YY     Y
     9    9   9 0999     9

BTXT.APH..A8..AABAPD     AAADLEA.JFGA7DQGH&OS     D&8HA&8AGA7B.&8AB-UX     8UB-A18CBBEA83050033
9    Y9O  Y9  Y99Y99     YYYO8Q- Z-ZY Q9QR- 8     R-  8- QZY   - Q8099     88OY8 R8QQY
     9    9   9  9      999 99          9           9       99           99  9  99 9

BTXT.AP&..A8..AA&AAA     OUGA7SB.8EKA8KOCKB8F     8EAJGQG4KAOC8KHL6QD7     OUFAOVB-MK8F83050034
9    Y9-  Y9  Y9-Y-Y       ZQ 8-  Y Y 9 9 O Y     YZYQ99  Y 9 9-Y Z-8       -9  8OZ8 Y
     9    9   9  9           9     9 9       9     9 Z   9                      9  9

BTXT.AP8..A8..AAB-JJ     8LE&2QBAOCDFOVGO7BGA     GGA.SEE.DESCRIPTION-     COMMENTS.IF.83050035
9    Y9   Y9  Y980Y8     9Z  O-9 9-Q  Z   9Y     QQY
     9    9   9 9  9               Z       9     ZZ9

BTXT.AQA..A8..AASTL.     FEATURET.DISENGAGE.S     TL.HARDWARE.INSTALL.     CARRIAGE.TAP83050036
9    Y9Q  Y9  Y9                 8
     9 Z  9   9

BTXT.AQQ..A8..AAET.C     E.OUTPUT.MUST.NOT.BE     .TEST.DEVICEBB.PREVI     OUS.HANG.UP.83050037
9    Y9Z  Y9  Y9 8                                          8Q
     9    9   9                                          99

BTXT.AQJ..AV..AADETE     CTEDAAAAAAAAAAAAAAAAA     AAAAAAAAAAAAAAAAAAA7G     ......................83050038
9    Y9Y  Y8  Y9                 YYYYYYYYYYYYYYYYY     YYYYYYYYYYYYYYYYY8Q
     9    99  9                  99999999999999999     99999999999999999Z

BTXT.AJA..A8..AAAGAA     AAQE.7AEAOBBAAAOABOB     AAME.7AAJ6&EA1FBAAJO     AHFAHHAACFA983050039
9    Y8R  Y9  Y9Y9Y9     Y8ZZ  QZQ Q9YYQ Y8 9     Y8OZ  QZY  ZQ 8ZYYY     YRQ9-OQY9ZQ
     99   9   9 9 9      99       O Z 999 99     99          O 9 999      9       9

BTXT.AJI..A8..AAFEAO     BBAAA1AGDEAOBBAA.OAB     OGACAAHE.7AAJ6&EA1F2     AA&OAGDEAOBB83050040
9    Y8O  Y9  Y9OZQ     Q8YYQ YQ9ZQ Q9YY  Y8     9Y9Y8 Z  QZY  ZQ 88     YY  YQ9ZQ Q9
     99   9   9   O     Z999Z 9Z  O Z 99  99       9 99             O 99     99  9Z  O Z

BTXT.AJA..A8..AAAA-O     ABODABME.7ABCGQEA1FB     AA&1AGDAAOJGABQBLGQE     A1FBAAA1AGDB83050041
9    Y8   Y9  Y9YY      Y8 9Y88Z  Q-9Q9ZQ 88     YY- YQ8-O ZZYQ9-YQ9Z     Q 88YYY YQ8-
     99   9   9 99      99  999       Z  O 99     990 9Z9 9    Z  9Z          O 9999  9Z9

BTXT.AJ9..A8..AACGQE     A1FBAAA1AGDB3GQEA1FB     AAA1AGDBOGAEABQE.7AA     JFYBEFYEA1F483050042
9    Y8   Y9  Y9RQ9Z     Q 88YYQ YQ8-8Q9ZQ 88     Y9Y YQ88 9Y9Y8 Z  QZ     YQ -9Q ZQ 88
     99   9   9 OZ       O 9999  9Z9  Z  O 99     9 9 9Z99  9 99            Z   Z  O 99

BTXT.AK1..A8..AAAAAO     AFOAJFABEFAEA1F4AAJO     AFHBBFYAJFYEA1F8AAAO     AFQBBFAAJFAE83050043
9    Y89  Y9  Y9Y9Q     YQ ZYQQ-9QQZQ 88Y9Y      YQ--9Q ZYQ ZQ 89Y9Q      YQO-9QQZYQQZ
     99   9   9 9 9     9Z   Z   Z  O 999 9     9Z   Z   Z  O 9 9 Z      9Z   Z   Z

BTXT.AK/..A8..AAA1F8     AA.OAFAAJFHBEFHB.FEE     A1F4AA&OAFHAJF&BEF&E     A1F4AA-OAG8B83050044
9    Y88  Y9  Y9Q 89     Y9  YQQZYQ--9Q-- QYZ     Q 88Y9  YQ ZYQ--9Q-Z     Q 88Y9  YQ9-
     99   9   9 O 9     9   9ZO  ZO  ZO  Z9       O 999   9Z   Z   Z      O 999   9Z

BTXT.AKJ..A8..AAAFEA     JFHBBFHB.FEEA1F8AA&O     AFQBAFEAJF&BBF&EA1F8     AAAOAGHBOGAF83050045
9    Y8O  Y9  Y9YQYZ     YQ--9Q-- QQZQ 89Y9-     YQ -YQQZYQ--9Q-ZQ 89     Y9Y YQZ8 9Y9
     99   9   9 9Z9      ZO  ZO  Z9 O 9 9 O     9Z  9Z9  Z   Z  O 9      9   9Z 9  9

BTXT.AKR..A8..AAACHE     .7AKGGQE&EA1FBAAAOAE     A1FBABA2AHFAHHAADFAC     BEAOWBABAOAE83050046
9    Y8   Y9  Y9Y8RZ       Q 9Q9Q-ZQ 8ZY9Q YZ       Q 8ZY9Y YRQ9-OQY9ZQO     9ZQ  ZY9Q YZ
     99   9   9 99          Z Z  O 9 9   9         O 9 9 9 9       9   Z       O   9 9 9
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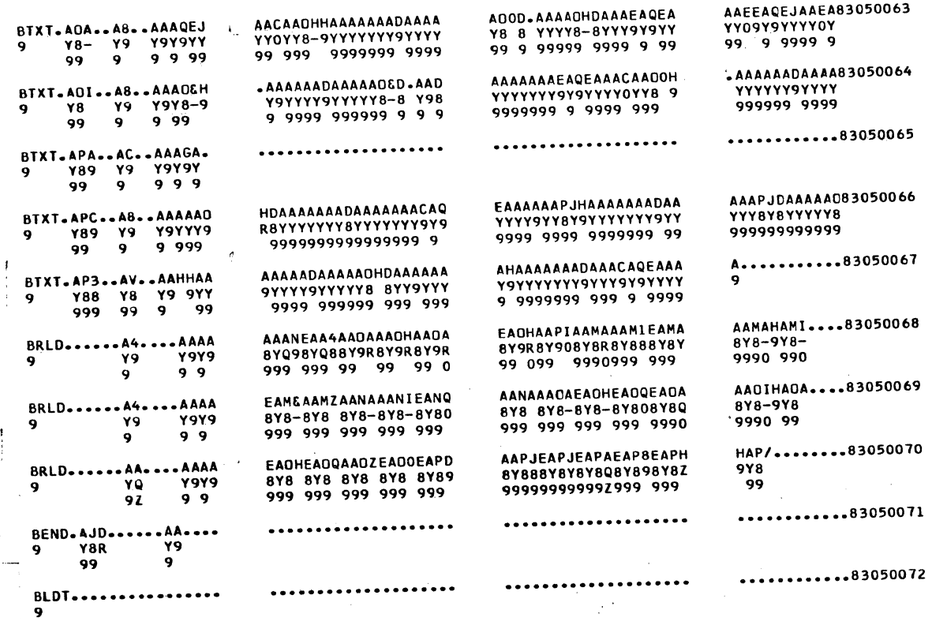
1403 PRINTER FUNCTION 1

```
BTXT.ALJ..A8..AAAOBB     ABJ1AGJHFAHHAADFACUE     AOWBABA1AE4EA1FHAB.1     AEHEAOWBAB&183050047
9    Y89  Y9  Y9Q Q8     Y9Y YQYRQ9-OQY9ZQQ9Z     Q  8Y9Q YQ ZQ 89Y9          YQ ZQ  8Y9
     99   9   9 O Z      9 9 9Z9       9   Z      O   9 Z 9Z  O 9 9           9Z O   9

BTXT.ALA..A8..AAAE4E     AOBBAB-OABOGAD&ADODG     ACUB-DFE-BOE.7AB-UGE     EBBEA1F8AB&183050048
9    Y88  Y9  Y9YQ Z     Q QZY9  Y8 9Y8 -9 9Z     QQ88098QO8 Z  Q8098Q     Q8QZQ 89Y9-
     99   9   9 9Z       0 Z 9   99  99           9Z 9  9Z 9       9  9Z     999 0 9 9 0

BTXT.ALA..A8..AA.EME     AOB8ABA1.EMEAOW8ABA1     .E4B-UJFDBBEA1F2ACA3     AEAOB2ACA3AE83050049
9    Y80  Y9  Y9 QYZ     Q Q9Y9Y  QYZQ  9Y9Q      Q 8099Q98QZQ 89Y9Y       YZQ Q9Y9Q YZ
     99   9   9  Z9      O Z 9    Z9 O   9        Z 9   Z 99 O 9 9 9     9 O Z 9 9 9

BTXT.ALI..A8..AAAOW2     ACJ3AB-UPFNBBEAOB8AC     A1AGYKAF5FHB-UUF4B-J     AFKBBBCGQEA183050050
9    Y8-  Y9  Y9Q  9     Y9Y Y8O98Q98QZQ Q9Y9     Q YQ9 9Q8QR8099Q98OY     QQ88Q-YQ9ZQ
     990  9   9 O       9 9 99  9Z 99 O Z 9      Z 9Z   Z9Z 9   Z 9       9Z 99  Z  O

BTXT.ALl..A8..AAF4AC     .1AG&B-UUF4B-JPF&BBK     GGQE&BAGQEA1F4AC&OAG     JKAF5F4B-UUF83050051
9    Y8   Y9  Y988Y9     YQ 8099Q98OY9Q-8Q        9Q9Q--9Q9ZQ 88Y9  YQ     Y 9Q8Q88099Q
     99   9   9 999      9Z 9   Z 9   Z 99        Z Z   Z  O 999   9Z     9  Z9Z99   Z

BTXT.AM/..A8..AA4B-J     AFKBBKGGQG-BCGQEA1F4     AC-1AG&B-DCFABOHADAE     .7AAJD&EA1F483050052
9    Y88  Y9  Y9980Y     QQ88Q 9Q9Q -YQ9ZQ 88     Y9  YQ 8098Q08 9Y8QZ       QZYQ-ZQ 88
     999  9   9  9       9Z 99  Z Z   Z  O 99     9   9Z 9  9Z 9  99           Z0 O 99

BTXT.AM/..A8..AAAC&O     ADABOAAAAAAEAQEAAAJA     AQEAAAMAAMAHAAAAAAAD     AAAAADHE.7AA83050053
9    Y8   Y9  Y9Y9-     YQY8 YYYYYY9Y9YYYYYY     Y9YYYYZYY8Y9YYYYYYY9     YYY8Y8 Z  QZ
     99   9   9 9 O     9Z 9 999999 9 9 9999     9 9999 999  9999999       999999

BTXT.AMI..A8..AAJDAE     A1F8ACAOAD&BOAAAAAAC     AQE.AAACAQEAAAAAAM&D     AAAAADOE.7AK83050054
9    Y8-  Y9  Y9YQQZ     Q 89Y9Y YQ-8 YYYYYY9     Y9Y YY99Y9YYYY9YY8-8     YY9QY8 Z  Q
     99   9   9  ZO      O 9 9   9Z 9 999999       9 9 99  9 9999 999 9     99 999

BTXT.AMJ..A8..AAGGQD     YEA1F8ACAOAGABOAAAAF     AQEAAADJAEDE.7AKGGQD     YAAODGACMBIG83050055
9    Y8   Y9  Y99Q9Q       ZQ 89Y9Q YQQ8 YYYY9     Y9YYYYO9Y8RZ  Q 9Q9Q      -9 9ZQQZ-OQ
     99   9   9  Z Z       0 9 9   9ZZ9 9999       9 9999  99        Z Z          9Z   Z

BTXT.ANA..A8..AAQEA1     FSADAOAGJEAOB4ADA1AE     AEA1FSADJOAGJEA1F4AD     A1AEAEA1FSAD83050056
9    Y88  Y9  Y99ZQ     88Y9Y YQYZQ Q8Y9Q YQ     QZQ 88Y9Y YQYZQ 88Y9     Q YQQZQ 88Y9
     999  9   9  O       999 9 9Z9 O Z99 9 9Z     O O 999 9 9Z9 O 999      Z 9ZO O 999

BTXT.ANA..A8..AA.OAG     JEAOW4AD&1AE4BOKAGGE     .7AKGGQE&EA1FSAD-OAG     JBDGQHFAHH.A83050057
9    Y8Z  Y9  Y9  YQ     YZQ  8Y9  YQ 8 9YQQZ     Q 9Q9Q-ZQ 88Y9  YQ       Y-8Q9R89-O Y
     99   9   9  9Z     9 O  99   9Z 9  9ZZ          Z Z  O 999   9Z     9 9Z       9

BTXT.AN1..A8..AADF.E     2EA1F8ADA1AEHBOAAAAC     AQE.AAAHANAAAAAAAAAA     AAAAANJDAAAA83050058
9    Y88  Y9  Y99Z Q     8ZQ 89Y9Y YQ 8 YYYY9     Y9Y YY99Y8QYYY9YYYYY     YYYYY8Y8YYYY
     99   9   9  Z       0 9 9   9Z 9 9999       9 9 99  99 999 99999     999999 99999

BTXT.ANA..A8..AAAAAA     AAAAAAADAAAEAQEAAADA     AAAMAAA.RTN.BYPASSED     .MAKE.NOT.RE83050059
9    Y8-  Y9  Y9YYYQ     YYYYYYYY9YYY9Y9YYYYOY     YYY9YYY
     990  9   9 9999     9999999 999 9 9999 9     999 999

BTXT.ANZ..A8..AAADYA     AAABAAAAAAAAAAAAAAAD     AAA.MAKE.UNAVAILABLE     .MAKE.AVAILA83050060
9    Y8   Y9  Y9   Y     YYY9YYYYYYYYYYYYYYY9     YYY
     99   9   9   9     999 999999999999999      999

BTXT.AO/..A8..AABLET     .RESTORET.READY.OBSE     RVE-NO.CARRIAGE.MOTI     ON.EXPECTEDN83050061
9    Y89  Y9  Y9   8           8
     99   9   9

BTXT.AOJ..A8..AAO.SK     IP.TO.1.IMMED.PRINT.     BLANKST.NO.SPACE.END     .OF.RTNAAAAE83050062
9    Y88  Y9  Y9                                        8                        YYYY9
     99   9   9                                                                 9999
```

1403 PRINTER FUNCTION 1



-----LAST PAGE-----

DATE 15MAR66 15NOV66 12OCT67
EC'S 125632 125655 131812

ID F830-5
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1403 PRINTER FUNCTION 2

```
                PROGRAM LENGTH = 3321 (DECIMAL)

                       PRINT ON,GEN,DATA
01000                  XF8315 START 4096
01000                         USING *,15
                    *
                    *
                    ********************************************************************************
                    * MODIFICATIONS
                    *
                    * REVISION LEVEL 5.  THIS REVISION DIFFERS FROM VERSION 4 AS FOLLOWS...
                    *     1.  PROGRAM HAS BEEN MODIFIED TO RUN WITH DM-44.
                    ********************************************************************************
                    * REVISION LEVEL 4.  THIS REVISION DIFFERS FROM VERSION 3 AS FOLLOWS...
                    *     1.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE -TEST NUMBERS-
                    *     2.  THE PROGRAM NOW INCLUDES TESTING PREVIOUSLY HANDLED BY
                    *         PROGRAM ID F833 WHICH IS NOW OBSOLETE.
                    * E.C. PREREQUISITES
                    *     MACHINE . . . 2821 MUST BE AT MINIMUM EC 125655
                    *     PROGRAM . . . NONE
                    * USE DESCRIPTION F830* AT EC 125655, DATED NOV 15, 1966 OR LATER.
                    ********************************************************************************
                    * REVISION LEVEL 3.  THIS REVISION DIFFERS FROM VERSION 2 AS FOLLOWS...
                    *     1.  THE PROGRAM HAS BEEN MODIFIED TO RESET THE BLOCK DATA CHECK
                    *         LATCH, ON UCS PRINTERS, DURING INITIALIZATION OF THE SECTION.
                    * E.C. PREREQUISITES
                    *     MACHINE . . . 2821 MUST BE AT MINIMUM E.C. LEVEL 124265.
                    *     PROGRAM . . . NONE
                    ********************************************************************************
                    *
                    *
                    ********************************************************************************
                    *                          TEST NUMBER DESCRIPTIONS
                    ********************************************************************************
                    ********************************************************************************
                    *
                    * TEST       DESCRIPTION
                    *
                    *
                    *                                ROUTINE 01
                    *
                    *
                    * 0010 - OPERATION ATTEMPTED
                    *
                    *        A SKIP TO 1 IMMEDIATE IS COMMAND CHAINED TO TWO SPACE 1
                    *        IMMEDIATE COMMANDS.
                    *
                    *        EXPECTED RESPONSE
                    *
                    *        THE FIRST SPACE COMMAND SHOULD DETECT A CHANNEL 9 HOLE IN
                    *        THE DIAGNOSTIC CARRIAGE TAPE.  THIS SHOULD BRING UP UNIT
                    *        CHECK AND BREAK THE COMMAND CHAIN.
                    *
                    *        POSSIBLE FAILURE CAUSES
                    *
                    *        1.  DIAGNOSTIC CARRIAGE TAPE NOT INSTALLED.
                    *        2.  CARRIAGE FAILED TO STOP AT CHANNEL 1.  LIFT CARRIAGE
                    *            BRUSHES AND VISUALLY CHECK TAPE POSITION.  THE CHANNEL 9
                    *            HOLE FOLLOWING THE CHANNEL 1 HOLE SHOULD BE 1 SPACE PAST
                    *            THE LOWER EMITTER CONTACT ROLE.
                    *        3.  CHANNEL 9 FAILED TO SET UNIT CHECK.
                    *
                    *
                    * 0020 - OPERATION ATTEMPTED
```


1403 PRINTER FUNCTION 2

```
                    *
                    *        A SKIP TO 1 IMMEDIATE IS ISSUED WITH BOTH THE CHAIN DATA, AND
                    *         CHAIN COMMAND FLAGS ON.
                    *
                    *        EXPECTED RESPONSE
                    *
                    *        THE CHAIN DATA FLAG SHOULD TAKE PRECEDENCE AND NO COMMAND
                    *        CHAINING SHOULD OCCUR.  SINCE THE COMMAND IS IMMEDIATE, AND NO
                    *        DATA IS TRANSFERED, NO DATA CHAINING SHOULD OCCUR EITHER.
                    *
                    *
                    * 0030 - OPERATION ATTEMPTED
                    *
                    *        A SKIP TO 4 IMMEDIATE IS COMMAND CHAINED TO TWO SPACE 1
                    *        IMMEDIATE COMMANDS.
                    *
                    *        EXPECTED RESPONSE
                    *
                    *        THE FIRST SPACE COMMAND SHOULD DETECT A
                    *        CHANNEL 12 HOLE IN THE DIAGNOSTIC CARRIAGE TAPE.  THIS SHOULD
                    *        BRING UP UNIT EXCEPTION, AND BREAK THE COMMAND CHAIN.
                    *
                    *        POSSIBLE FAILURE CAUSES
                    *
                    *        1.  DIAGNOSTIC CARRIAGE TAPE NOT INSTALLED.
                    *        2.  CARRIAGE FAILED TO STOP AT CHANNEL 4.  LIFT CARRIAGE
                    *            BRUSHES AND VISUALLY CHECK TAPE POSITION.  THE CHANNEL 12
                    *            HOLE FOLLOWING THE CHANNEL 4 HOLE SHOULD BE 1 SPACE PAST
                    *            THE LOWER EMITTER CONTACT ROLE.
                    *        3.  CHANNEL 12 FAILED TO SET UNIT EXCEPTION.
                    *
                    *
                    *                                ROUTINE 02
                    *
                    * 0040 - OPERATION ATTEMPTED
                    *
                    *        A DIAGNOSTIC READ, WITH THE COUNT EQUAL TO THE REQUIRED RECORD
                    *        LENGTH, IS DATA CHAINED TO A CCW WITH NO COMMAND BITS ON.
                    *
                    *        EXPECTED RESPONSE
                    *
                    *        THE SECOND COMMAND WOULD NOT APPEAR INVALID TO THE CHANNEL
                    *        BECAUSE THE DATA CHAIN FLAG IS SET ON.  INCORRECT LENGTH
                    *        RECORD SHOULD BE SET ON AT CHANNEL END TIME AND BREAK
                    *        THE CHAIN.
                    *
                    *
                    * 0050 - OPERATION ATTEMPTED
                    *
                    *        A DIAGNOSTIC READ WITH A COUNT LESS THAN THE RECORD LENGTH IS
                    *        DATA CHAINED TO COMPLETE TRANSFERING THE CORRECT RECORD LENGTH
                    *
                    *        EXPECTED RESPONSE
                    *
                    *        THE SECOND CCW COMMAND FIELD IS INVALID TO THE CHANNEL.  NO
                    *        CHANNEL PROGRAM CHECK SHOULD BE SET BECAUSE OF A DATA CHAIN
                    *        THE CHANNEL SHOULD NOT INSPECT THE COMMAND FIELD OF THE SECOND
                    *        CCW.
                    *
                    *                                ROUTINE 03
                    *
                    * 0060 - OPERATION ATTEMPTED
                    *
                    *        A NOP IS COMMAND CHAINED TO A  UCS PRE-CONDITION LOAD COMMAND.
```

```
129  *
130  *       EXPECTED RESPONSE
131  *
132  *       COMMAND REJECT SHOULD TURN ON UNIT CHECK DURING INITIAL
133  *       SELECTION OF THE PRE-CONDITION LOAD COMMAND, AND BREAK THE
134  *       CHAIN.  ON BASIC PRINTERS, COMMAND REJECT WILL OCCUR BECAUSE
135  *       THE COMMAND IS INVALID TO THE PRINTER.  ON UCS PRINTERS,
136  *       COMMAND REJECT WILL BE SET BECAUSE THE PRE-CONDITION LOAD
137  *       COMMAND IS NOT THE FIRST COMMAND IN A COMMAND CHAIN.
138  *
139  *
140  * 0070 - OPERATION ATTEMPTED
141  *
142  *       A NOP IS COMMAND CHAINED TO A UCS BLOCK DATA CHECK COMMAND.
143  *
144  *       EXPECTED RESPONSE
145  *
146  *       COMMAND REJECT SHOULD TURN ON UNIT CHECK DURING INITIAL
147  *       SELECTION OF THE BLOCK DATA CHECK COMMAND, AND BREAK THE CHAIN
148  *       ON BASIC PRINTERS, COMMAND REJECT WILL OCCUR BECAUSE THE
149  *       COMMAND IS INVALID TO THE PRINTER.  ON UCS PRINTERS, COMMAND
150  *       REJECT WILL BE SET BECAUSE THE BLOCK DATA CHECK COMMAND IS NOT
151  *       THE FIRST COMMAND IN A COMMAND CHAIN, AND THE PRE-CONDITION
152  *       LOAD LATCH IS NOT ON.
153  *
154  *
155  * 0080 - OPERATION ATTEMPTED
156  *
157  *       A NOP IS COMMAND CHAINED TO A UCS ALLOW DATA CHECK COMMAND.
158  *
159  *       EXPECTED RESPONSE
160  *
161  *       COMMAND REJECT SHOULD TURN ON UNIT CHECK DURING INITIAL
162  *       SELECTION OF THE ALLOW DATA CHECK COMMAND, AND BREAK THE CHAIN
163  *       ON BASIC PRINTERS, COMMAND REJECT WILL OCCUR BECAUSE THE
164  *       COMMAND IS INVALID TO THE PRINTER.  ON UCS PRINTERS, COMMAND
165  *       REJECT WILL BE SET BECAUSE THE ALLOW DATA CHECK COMMAND IS NOT
166  *       THE FIRST COMMAND IN A COMMAND CHAIN, AND THE PRE-CONDITION
167  *       LOAD LATCH IS NOT ON.
168  *
169  *                              ROUTINE 04
170  *
171  * 0090 - OPERATION ATTEMPTED
172  *
173  *       A LINE OF BLANKS IS PRINTED USING A PRINT AND NO SPACE.
174  *
175  *       EXPECTED RESPONSE
176  *
177  *       IF AN ERROR DETECTED ON THIS TEST, CONTINUE FOR FURTHER ERROR
178  *       INFORMATION.
179  *
180  *
181  * 0100 - OPERATION ATTEMPTED
182  *
183  *       A DIAGNOSTIC CHECK READ IS ISSUED.
184  *
185  *       EXPECTED RESPONSE
186  *
187  *       IF A UNIT CHECK OCCURRED ON PREVIOUS COMMAND, IT WILL
188  *       APPEAR HERE ALSO.  CONTINUE ON FOR FURTHER INFORMATION.
189  *
190  *
191  *
192  * 0110 - OPERATION ATTEMPTED
193  *
```



```
194  *       THE CHECK READ DATA IS SCANNED.
195  *
196  *       ************************************************************
197  *       NOTE...THIS TEST DOES  N O T  PRINT OUT IF THE CORRECT PRINT
198  *       OUT SWITCH IS SET ON, OR IF TEST 0100 ABOVE DETECTS NO ERROR.
199  *       ************************************************************
200  *
201  *       EXPECTED RESPONSE
202  *
203  *       ALL POSITIONS WITHOUT PRINT LINE COMPLETE BIT ON ARE OUTPUTED
204  *       IF SECTION SENSE SWITCHES 0 OR 1 ARE TURNED ON DURING HALT ON
205  *       THIS ERROR, THE PROGRAM IS SET UP TO LOOP ON THE PRINT CCW.
206  *
207  *
208  *                              ROUTINE 05
209  *
210  * 0120 - OPERATION ATTEMPTED
211  *
212  *       A  UCS PRE-CONDITION LOAD COMMAND IS COMMAND CHAINED TO A
213  *       BLOCK DATA CHECK COMMAND, WHICH IS FURTHER COMMAND CHAINED TO
214  *       AN ALLOW DATA CHECK COMMAND.
215  *
216  *       EXPECTED RESPONSE
217  *
218  *       EVEN THOUGH THE BLOCK DATA CHECK COMMAND IS NOT THE FIRST
219  *       COMMAND IN A COMMAND CHAIN, THE FACT THAT THE PRE-CONDITION
220  *       LOAD LATCH IS SET SHOULD BLOCK THE SETTING OF COMMAND REJECT
221  *       AND THE CCW SHOULD BE ACCEPTED AND EXECUTED.  SINCE THE BLOCK
222  *       DATA CHECK COMMAND SHOULD NOT RESET THE PRE-CONDITION LOAD
223  *       LATCH, THE ALLOW DATA CHECK COMMAND SHOULD ALSO BE ACCEPTED
224  *       AND EXECUTED.
225  *
226  *       POSSIBLE FAILURE CAUSES
227  *
228  *       1.  THE I-O OPTION PORTION OF DM UDT ENTRY INCORRECTLY DEFINES
229  *           UCS, AND TWO CHANNEL SWITCH FEATURES.
230  *       2.  IF COMMAND IS ACCEPTED, PROBLEM IN COMMAND DECODE CIRCUITS
231  *           COULD BE THE CAUSE.
232  *
233  *
234  * 0130 - OPERATION ATTEMPTED
235  *
236  *       A  UCS PRE-CONDITION LOAD COMMAND IS COMMAND CHAINED TO A
237  *       DIAGNOSTIC READ, WHICH IS FURTHER COMMAND CHAINED TO AN ALLOW
238  *       DATA CHECK COMMAND.
239  *
240  *       EXPECTED RESPONSE
241  *
242  *       THE DIAGNOSTIC READ SHOULD RESET THE UCS PRE-CONDITION
243  *       LOAD LATCH, SO THAT DURING INITIAL SELECTION OF
244  *       THE ALLOW DATA CHECK COMMAND, COMMAND REJECT SHOULD BREAK THE
245  *       CHAIN.  COMMAND REJECT SHOULD BE SET BECAUSE THE ALLOW DATA
246  *       CHECK WAS NOT THE FIRST COMMAND IN A COMMAND CHAIN, AND THE
247  *       PRE-CONDITION LOAD LATCH WAS NOT ON.
248  *
249  *
250  *                              ROUTINE 06
251  *
252  * 0140 - OPERATION ATTEMPTED
253  *
254  *       ISSUE A DIAGNOSTIC READ COMMAND.
255  *
256  *       EXPECTED RESPONSE
257  *
258  *       THIS COMMAND WILL INSURE THE RESET OF ANY OUTSTANDING
```

```
                *        COMMAND REJECT BEFORE PROCEEDING WITH THE TEST.
                *
                *
                * 0150 - OPERATION ATTEMPTED
                *
                *        A  UCS LOAD WITH FOLDING COMMAND IS ISSUED.
                *
                *        EXPECTED RESPONSE
                *
                *        COMMAND REJECT SHOULD OCCUR ON BASIC PRINTERS BECAUSE THE
                *        COMMAND IS INVALID TO THE PRINTER.  ON UCS PRINTERS THIS WILL
                *        OCCUR BECAUSE  THE PRE-CONDITION LOAD LATCH WAS NOT ON.
                *
                *
                * 0160 - OPERATION ATTEMPTED
                *
                *        A  UCS LOAD WITHOUT FOLDING COMMAND IS ISSUED.
                *
                *        EXPECTED RESPONSE
                *
                *        COMMAND REJECT SHOULD OCCUR ON BASIC PRINTERS BECAUSE THE
                *        COMMAND IS INVALID TO THE PRINTER.  ON UCS PRINTERS THIS WILL
                *        OCCUR BECAUSE THE PRE-CONDITION LOAD LATCH WAS NOT ON.
                *
                *                              ROUTINE 07
                *
                * 0170 - OPERATION ATTEMPTED
                *
                *        ALL COMMANDS THAT SHOULD BE INVALID TO THE PRINTER ARE ISSUED
                *
                *        EXPECTED RESPONSE
                *
                *        COND. CODE 1 WITH UNIT CHECK IN THE CSW SHOULD RESULT.
                *        COMMAND REJECT SHOULD BE SET IN THE SENSE BYTE.
                *
                *
                * 0180 - OPERATION ATTEMPTED
                *
                *        A BLANK PRINT WITH NO SPACE IS ISSUED.
                *
                *        EXPECTED RESPONSE
                *
                *        THE DEVICE SENSE LATCHES ARE RESET AFTER EACH INVALID COMMAND
                *
                ********************************************************************
                ********************                ********************
                * SECTION PREFACE ********************************** SECTION PREFACE *
                ********************                ********************
01000  F8315000 SECNO   DC    XL4'F8315000'       PROGRAM,SECTION AND REVISION NOS.  *
01004  00000000 SNSW    DC    XL4'00'             SECTION SENSE SWITCHES             *
01008  0000             DC    XL2'00'                                                *
0100A  0000     ICM     DC    XL2'00'             INTERRUPTION CONDITION MASK        *
0100C  00       SDMF    DC    XL1'00'             SECTION DM FLAGS                   *
0100D  01       NIOU    DC    XL1'01'             NUMBER OF UNIT TABLE ENTRYS        *
0100E  C0       FLAG1   DC    X'C0'               EXCLUSIVE CPU                      *
0100F  00       FLAG2   DC    X'00'               I/O INT ARE ERR, EXT INT TO PROG   *
01010  0104000000 INPSW  DC    X'0104000000'       DISABLED, SPVSR STATE, NO PGM MASK *
01015  0018E4           DC    AL3(ROUT01)         ADR OF 1ST ROUTINE PREFIX          *
01018  0000000000000000 EXOPSW DC    XL8'0'        SECTION OLD EXTERNAL PSW           *
01020  0000000000000000 SVOPSW DC    XL8'00'       CLEAR ALL OLD PSWS                 *
01028  0000000000000000 PGOPSW DC    XL8'00'       PROGRAM OLD PSW                    *
01030  0000000000000000 MCOPSW DC    XL8'00'       MACHINE CHECK OLD PSW              *
01038  0000000000000000 IOOPSW DC    XL8'00'       I/O OLD PSW                        *
```



```
01040  0000000000000000
01048  00000000
0104C  0000000000000000
01054  00000000
01058  0004000000
0105D  000000
01060  0000000000000000
01068  0000000000000000
01070  0000000000000000
01078  01040000
0107C  00001224
01080
010E0  83
010E1  00
010E2  8000

                CSW     DC    XL8'00'             CHANNEL STATUS WORD
                CAW     DC    XL4'00'             CAW
                        DC    XL12'00'            RESERVED FOR DM USE                *
                EXNPSW  DC    X'0004000000'       EXTERNAL NEW PSW                   *
                SRET    DC    XL3'0'              ADR OF EXT INTRPT ROUTINE          *
                SVNPSW  DC    XL8'00'             SUPERVISOR NEW PSW                 *
                PGNPSW  DC    XL8'00'             PROGRAM NEW PSW                    *
                MCNPSW  DC    XL8'00'             MACHINE CHECK NEW PSW              *
                IONPSW  DC    XL4'01040000'       I/O NEW PSW                        *
                        DC    AL4(IRETRN)         ADDRESS OF I/O INTRPT ROUTINE      *
                        DS    96C                 96 BYTE REG DUMP AREA FOR DM USE   *
                UNIT1   DC    X'83'               UNIT TYPE - 1419 MICR              *
                U1OP    DC    X'00'               OPTIONAL FEATURES BYTE             *
                U1ADDR  DC    X'8000'             FLAGS AND CHAN/UNIT ADDRESS        *
                ********************************************************************

                *                          1403 SENSE BYTE
                ********************************************************************
                *      BIT   MEANING
                *       0    COMMAND REJECT
                *       1    INTERVENTION REQUIRED
                *       2    BUS OUT CHECK
                *       3    EQUIPMENT CHECK - HAMMER FIRE OR PRINT BUFFER PARITY CHECK
                *       4    DATA CHECK - UCS PRINTERS ONLY - UNCOMPARABLE CHARACTER
                *       5    BUFFER PARITY CHECK - REFERS TO UCS BUFFER
                *       6    NOT USED
                *       7    CHANNEL 9
                ********************************************************************
                ********************************************************************
                *                          1403 DEVICE STATUS
                ********************************************************************
                *      BIT   MEANING
                *       0    ATTENTION - NOT USED
                *       1    STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
                *       2    CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
                *       3    DEVICE BUSY
                *       4    CHANNEL END
                *       5    DEVICE END
                *       6    UNIT CHECK
                *       7    UNIT EXCEPTION - CHANNEL 12
                ********************************************************************
                ********************************************************************
                *                     1403 DIAGNOSTIC CHECK READ DATA
                ********************************************************************
                *      BIT   MEANING
                *       5    ON  - THE PRINT LINE COMPLETE BIT HAS BEEN SET FOR THIS
                *                  POSITION.
                *            OFF - ON BASIC PRINTERS, A COMPARE BETWEEN THE DATA BEING
                *                  PRINTED, AND THE PRINT CHARACTER GENERATOR DID NOT
                *                  OCCUR IN THIS POSITION, AND THE CHARACTER WAS NOT
                *                  CONSIDERED A VALID UNPRINTABLE.
                *
                *                  ON UCS PRINTERS, A COMPARE BETWEEN THE DATA BUFFER
                *                  AND THE UNIVERSAL CHARACTER SET BUFFER DID NOT OCCUR
                *                  AND THE CHARACTER WAS NOT CONSIDERED A NULL OR BLANK
                *
                *       6    ON  - THE PRINT CHECK PLANE FOR THIS POSITION WAS SET ON.
                *                  THIS PLANE IS SET BY---
                *                  1. A HAMMER FIRE AND AN EQUAL CHECK.
                *                  2. NO HAMMER FIRE AND NO EQUAL CHECK.
                *                  3. LINE FULL, NOT VALID UNCOMPARABLE CHARACTER, AND
                *                     NOT A PRINT LINE COMPLETE BIT IN THIS POSITION.
                *            OFF - THE PRINT CHECK PLANE FOR THIS POSITION IS NOT SET.
                *
```

```
*       7    ON  - A PARITY CHECK IN THE DATA BUFFER WAS DETECTED IN
*                  THIS POSITION.
*
*            OFF - THIS POSITION OF THE DATA BUFFER HAS CORRECT PARITY.
*************************************************************************
*                        PARAMETERS USED TO ENTER
*                        THE I-O HANDLER ROUTINE
*************************************************************************
*      BAL   R11,ISIO              LINK TO I-O HANDLER
*      DC    XL2'0000'             CONTROL SWITCHES
*      DC    X'0014'               TEST NO. IN DEC EXPRESSED IN HEX
*      DC    X'F0'                 EXPECTED COND. CODE
*      DC    X'00'                 EXPECTED SENSE DATA
*      DC    AL2(ADR-BASE+REG)     ADDR. OF EXPECTED CSW IF NEEDED
*************************************************************************
*************************************************************************
*                        I-O HANDLER CONTROL SWITCHES
*                        2 BYTE PARAMETER FOLLOWING BAL
*************************************************************************
* SWITCH     DESCRIPTION
*   0  ----  OFF - ISSUE AN I-O COMMAND
*            ON  - DO NOT ISSUE AN I-O COMMAND
*   1  ----  OFF - ENABLE
*            ON  - DO NOT ENABLE
*   2  ----  OFF - EXPECT NO INTERRUPT
*            ON  - EXPECT AN INTERRUPT
*   3  ----  OFF - DO NOT EXPECT 2 INTERRUPTS
*            ON  - EXPECT 2 INTERRUPTS
*   4  ----  OFF - EXPECT NO CSWS
*            ON  - EXPECT A CSW
*   5  ----  OFF - DO NOT EXPECT 2 CSWS
*            ON  - EXPECT 2 CSWS
*   6  ----  OFF - ALWAYS TRY TO ISSUE SENSE
*            ON  - SENSE ON UNIT CHECK ONLY
*   7  ---- OFF - GIVE HALT OPTION ON DETECTED ERROR
*            ON  - RETURN WITHOUT HALT OPTION
*
*   8  ---- OFF - DO NOT ISSUE DIAGNOSTIC READ.
*            ON  - ISSUE DIAGNOSTIC READ IF UNIT CHECK.
*
*   9  ---- OFF - DO NOT ISSUE DIAGNOSTIC CHECK READ.
*            ON  - ISSUE DIAGNOSTIC CHECK READ IF UNIT CHECK.
*
*  10  ---- OFF - PRINT HEADER
*            ON  - DO NOT PRINT HEADER
*
*************************************************************************
*************************************************************************
*                              SWITCHES USED BY I-O HANDLER
*************************************************************************
* SWITCH     DESCRIPTION
*   0  ----  OFF - NO HANGUP ON INTERFACE
*            ON  - HANGUP OCCURRED
*   1  ----  OFF - NO CSWS STORED
*            ON  - ONE CSW STORED
*   2  ----  OFF - SECOND CSW NOT RECIEVED
*            ON  - SECOND CSW RECIEVED
*   3  ----  OFF - DID NOT ENABLE
*            ON  - ENABLED ONCE
*   4  ----  OFF - DID NOT ENABLE TWICE
*            ON  - ENABLED TWICE
*   5  ----  OFF - NO SENSE DATA RECIEVED
*            ON  - SENSE DATA RECIEVED
*   6  ----  OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*            ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
```



```
*   7  ----  OFF - NO ERROR DETECTED
*            ON  - AN ERROR WAS DETECTED
*************************************************************************
*                    REGISTERS USED IN I-O HANDLER
*************************************************************************
*      REG          COMMENTS
*       5    USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
*            PREVIOUS HANGUP ON INTERFACE DETECTED.
*
*       8    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       9    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
*
*       10   MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
*
*       11   MUST BE USED AS LINK REG TO THIS ROUTINE
*
*       12   MUST CONTAIN DEVICE ADDRESS
*
*************************************************************************
010E4  0000          ISW    DC    XL2'0'
*************************************************************************
*************************************************************************
*                          * I-O HANDLER SUB-ROUTINE *
*************************************************************************
010E6  92 9E  F 1A6  IHIO   MVI   ISSUE,X'9E'          SET UP FOR HALT I-O
010EA  92 C8  F 635          MVI   IOPTL+21,X'C8'      MOVE -H- TO MESSAGE
010EE  92 C8  F 5A0          MVI   IOADDR+12,X'C8'
010F2  92 9E  F 15C          MVI   ILOOP,X'9E'
010F6  47 F0  F 11E          BC    UNC,IEYEOH          BR. UNCONDITIONAL
010FA  92 9D  F 1A6  ITIO    MVI   ISSUE,X'9D'         SET UP FOR TEST I-O
010FE  92 9D  F 15C          MVI   ILOOP,X'9D'
01102  92 E3  F 635          MVI   IOPTL+21,X'E3'      MOVE -T- TO MESSAGE
01106  92 E3  F 5A0          MVI   IOADDR+12,X'E3'
0110A  47 F0  F 11E          BC    UNC,IEYEOH          BR. UNCONDITIONAL
0110E  92 9C  F 1A6  ISIO    MVI   ISSUE,X'9C'         SET UP FOR START I-O
01112  92 9C  F 15C          MVI   ILOOP,X'9C'
01116  92 E2  F 635          MVI   IOPTL+21,X'E2'      MOVE -S- TO MESSAGE
0111A  92 E2  F 5A0          MVI   IOADDR+12,X'E2'
0111E  D2 01  F 61C  B 002   IEYEOH MVC   ITSTNO+5(2),2(R11)  SAVE TEST NUMBER
01124  90 AB  F 680          STM   R10,R11,ISLAVE      SAVE REG 10 AND REG 11
01128  90 89  F 560          STM   R8,R9,ISAVE         SAVE REGS 8 AND 9
0112C  50 AD  0 048          ST    R10,HCAW(R13)       STORE COMMAND ADDRESS
01130  D7 07  D 040  D 040   XC    HCSW(8,R13),HCSW(R13)
01136  95 30  E 181          CLI   SYSMOD(R14),X'30'   CHECK FOR MODEL 30
0113A  47 60  F 144          BC    UNEQ,MOD44          BR. IF NOT
0113E  D7 0B  0 080  0 080   XC    LOGOUT(12),LOGOUT   CLEAR MOD 30 LOGOUT AREA
01144  91 80  B 000          MOD44 TM    0(R11),X'80'  CHECK CONTROL SWITCH FOR NO I-O
01148  47 10  F 1DC          BC    ALL,INOW            BR. IF ON
0114C  91 C0  F 004          TM    SNSW,X'C0'
01150  47 80  F 198          BC    NONE,JOHN
*************************************************************************
*                          SENSE SWITCH LOOPS
*************************************************************************
01154  91 80  F 004  ITRY1   TM    SNSW,X'80'          CHECK SECTION SENSE SWITCH 0
01158  47 80  F 164          BC    NONE,ITRY2          BR. IF OFF
0115C  9C 00  C 000  ILOOP   SIO   0(R12)              SIO, TIO, OR HIO
01160  47 F0  F 154          BC    UNC,ITRY1           BR. UNCONDITIONAL
01164  91 40  F 004  ITRY2   TM    SNSW,X'40'          CHECK SECTION SENSE SWITCH 1
01168  47 80  F 184          BC    NONE,IHI            BR. IF OFF
0116C  9D 00  C 000  IHANG   TIO   0(R12)              TEST I-O
01170  47 70  F 154          BC    NCC0,ITRY1          BR. IF NOT COND. CODE 0
01174  91 40  F 004          TM    SNSW,X'40'          CHECK SECTION SENSE SWITCH 1
01178  47 80  F 184          BC    NONE,IHI            BR. IF OFF
0117C  9C 00  C 000          SIO   0(R12)              START I-O
```

```
01180  47 F0  F 16C            518          BC    UNC,IHANG            BR. UNCONDITIONAL
                               519  *
01184  58 1E  0 198            520  IHI     L     R1,WT(14)
01188  88 10  0 003            521          SRL   R1,3
0118C  9D 00  C 000            522  GREG    TIO   0(R12)
01190  47 80  F 198            523          BC    CC0,JOHN
01194  46 10  F 18C            524          BCT   R1,GREG
01198  D7 01  F 0E4  F 0E4     525  JOHN    XC    ISW(2),ISW
0119E  96 80  F 0E4            526          OI    ISW,X'80'
011A2  92 E7  F 58F            527          MVI   IACTCC+5,C'X'        MOVE IN A -X-
011A6  9C 00  C 000            528  ISSUE   SIO   0(R12)               I-O COMMAND- SIO, TIO, OR HIO
011AA  47 80  F 1D8            529          BC    CC0,IZERO            BR. IF COND. CODE 0
011AE  47 40  F 1C6            530          BC    CC1,IONE             BR. IF COND. CODE 1
011B2  47 20  F 1BE            531          BC    CC2,ITWO             BR. IF COND. CODE 2
011B6  92 F3  F 58F            532          MVI   IACTCC+5,X'F3'       INDICATE COND. CODE 3
011BA  47 F0  F 1DC            533          BC    UNC,INOW             BR. UNCONDITIONAL
011BE  92 F2  F 58F            534  ITWO    MVI   IACTCC+5,X'F2'       INDICATE COND. CODE 2
011C2  47 F0  F 1DC            535          BC    UNC,INOW             BR. UNCONDITIONAL
011C6  92 F1  F 58F            536  IONE    MVI   IACTCC+5,X'F1'       INDICATE COND. CODE 1
011CA  D2 07  F 652  D 040     537          MVC   ICSW1(8),HCSW(R13)   SAVE CSW
011D0  96 40  F 0E4            538          OI    ISW,X'40'            INDICATE 1 CSW
011D4  47 F0  F 1DC            539          BC    UNC,INOW             BR. UNCONDITIONAL
011D8  92 F0  F 58F            540  IZERO   MVI   IACTCC+5,X'F0'       INDICATE COND. CODE 0
011DC  94 7F  F 0E4            541  INOW    NI    ISW,X'7F'            TURN OFF HANG UP SWITCH
011E0  91 40  8 000            542          TM    0(R11),X'40'         CHECK CONTROL SWITCH FOR NO ENABLE
011E4  47 10  F 298            543          BC    ALL,ISEN             BR. IF ON
011E8  95 F0  F 58F            544          CLI   IACTCC+5,X'F0'       CHECK FOR COND CODE 0
011EC  47 80  F 200            545          BC    EQ,IBLE              BR. IF IT WAS
011F0  95 F1  F 58F            546          CLI   IACTCC+5,X'F1'       CHECK FOR COND CODE 1
011F4  47 60  F 298            547          BC    UNEQ,ISEN            BR. IF NOT
011F8  91 08  F 656            548          TM    ICSW1+4,X'08'        CHECK FOR CHANNEL END
011FC  47 80  F 298            549          BC    NONE,ISEN            BR. IF NONE
01200  96 10  F 0E4            550  IBLE    OI    ISW,X'10'            INDICATE ENABLED ONCE
01204  58 9E  0 198            551  IWAIT   L     R9,WT(R14)           LOAD DM WAIT FACTOR
01208  88 90  0 003            552          SRL   R9,3                 ADJUST
0120C  96 80  F 0E4            553          OI    ISW,X'80'            TURN ON HANG UP SW
01210  80 00  F 673            554          SSM   MSK1                 ENABLE
01214  46 90  F 214            555          BCT   R9,*                 WAIT
01218  80 00  F 674            556          SSM   MSK2                 DISABLE
0121C  94 7F  F 0E4            557          NI    ISW,X'7F'            TURN OFF HANG SW
01220  47 F0  F 298            558          BC    UNC,ISEN             BR. UNCONDITIONAL
                               559  ********************************************************************
                               560  *                    ALL I-O INTERRUPTS RETURN HERE
                               561  ********************************************************************
01224  49 C0  F 03A            562  IRETRN  CH    R12,IOOPSW+2         COMPARE FOR CURRENT I-O ADDRESS
01228  47 60  F 246            563          BC    UNEQ,IUIO            BR. IF UNEQUAL
0122C  94 7F  F 0E4            564          NI    ISW,X'7F'            RESET HANG UP SW
01230  91 40  F 0E4            565          TM    ISW,X'40'
01234  47 10  F 276            566          BC    ALL,ISV2             BR. IF 1 CSW ALREADY STORED
01238  D2 07  F 652  F 040     567          MVC   ICSW1(8),HCSW(R15)   SAVE CSW 1
0123E  96 40  F 0E4            568          OI    ISW,X'40'            INDICATE 1 CSW STORED
01242  47 F0  F 280            569          BC    UNC,INT3             BR. UNCONDITIONAL
01246  D2 07  F 568  F 040     570  IUIO    MVC   WORK(8),HCSW(R15)
0124C  0A DD                   571          SVC   X'DD'                CONVERT ADDRESS
0124E  0003                    572          DC    AL2(3)
01250  0039                    573          DC    AL2(IOOPSW+1-SECNO)
01252  067A                    574          DC    AL2(IUNEX+5-SECNO)
01254  0A D0                   575          SVC   X'D0'                PRINT UNEXPECTED INTERRUPT DEVICE
01256  64                      576          DC    X'64'                ADDRESS
01257  0B                      577          DC    X'0B'
01258  F675                    578          DC    AL2(IUNEX-SECNO+REG)
0125A  D2 02  F 5C6  F 5BF     579          MVC   IBLAH+1(3),ICSW      MOVE -CSW- TO MESSAGE
01260  92 1A  F 427            580          MVI   ICNT,X'1A'           ADJUST COUNT
01264  D2 02  F 5DC  F 5DF     581          MVC   IBLAH+23(3),IACT     MOVE -ACT- TO MESSAGE
0126A  45 90  F 410            582          BAL   R9,ICOUT             BR. TO OUTPUT CSW
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0126E  96 02  F 0E4            583          OI    ISW,X'02'            INDICATE UIO
01272  47 F0  F 4E6            584          BC    UNC,IPASS            BR. UNCONDITIONAL
01276  D2 07  F 65A  F 040     585  ISV2    MVC   ICSW2(8),HCSW(R15)   SAVE CSW 2
0127C  96 20  F 0E4            586          OI    ISW,X'20'            INDICATE 2 CSWS STORED
01280  91 10  B 000            587  INT3    TM    0(R11),X'10'         CHECK CTRL SW FOR 2 INTR EXPECTED
01284  47 80  F 298            588          BC    NONE,ISEN            BR. IF NOT
01288  91 08  F 0E4            589          TM    ISW,X'08'
0128C  47 10  F 298            590          BC    ALL,ISEN             BR. IF ALREADY ENABLED TWICE
01290  96 08  F 0E4            591          OI    ISW,X'08'            INDICATE ENABLED TWICE
01294  47 F0  F 204            592          BC    UNC,IWAIT
01298  91 02  B 000            593  ISEN    TM    0(R11),X'02'         CHECK CONTROL SWITCH FOR SNS ON UC
0129C  47 80  F 2C0            594          BC    NONE,IDOSNS          BR. IF OFF TO ISSUE SENSE
012A0  91 40  F 0E4            595          TM    ISW,X'40'
012A4  47 80  F 316            596          BC    NONE,IBSN            BR. IF NO CSW STORED TO BYPASS SENSE
012A8  91 02  F 656            597          TM    ICSW1+4,X'02'        CHECK FOR UNIT CHECK
012AC  47 10  F 2C0            598          BC    ALL,IDOSNS           IF YES BR. TO ISSUE SENSE
012B0  91 20  F 0E4            599          TM    ISW,X'20'            CHECK FOR SECOND CSW
012B4  47 80  F 316            600          BC    NONE,IBSN            BR. IF NOT TO BYPASS SENSE
012B8  91 02  F 65E            601          TM    ICSW2+4,X'02'        CHECK FOR UNIT CHECK
012BC  47 80  F 316            602          BC    NONE,IBSN            BR. IF NOT TO BYPASS SENSE
012C0  58 9E  0 198            603  IDOSNS  L     R9,WT(R14)           LOAD DM WAIT FACTOR
012C4  88 90  0 004            604          SRL   R9,4                 ADJUST
012C8  41 80  F 668            605          LA    R8,ISENSE            LOAD SENSE COMMAND ADDRESS
012CC  50 8D  0 048            606          ST    R8,HCAW(R13)         STORE IN CAW
012D0  9C 00  C 000            607          SIO   0(R12)               ISSUE SENSE
012D4  47 70  F 364            608          BC    NCC0,INDER           BR. IF NOT ACCEPTED
012D8  9D 00  C 000            609  ITIOLP  TIO   0(R12)               TEST I-O
012DC  47 40  F 300            610          BC    CC1,ILOKE            BR. IF CSW STORED
012E0  46 90  F 2D8            611  ITIC    BCT   R9,ITIOLP
012E4  47 F0  F 316            612          BC    UNC,IBSN             BR. UNCONDITIONAL
012E8  91 40  F 0E4            613  INOEX1  TM    ISW,X'40'
012EC  47 10  F 364            614          BC    ALL,INDER            BR. IF CSW STORED
012F0  47 F0  F 368            615          BC    UNC,IDUNCK           BR. UNCONDITIONAL
012F4  91 20  F 0E4            616  INOEX2  TM    ISW,X'20'
012F8  47 10  F 364            617          BC    ALL,INDER            BR. IF CSW 2 STORED
012FC  47 F0  F 368            618          BC    UNC,IDUNCK           BR. UNCONDITIONAL
01300  95 0C  D 044            619  ILOKE   CLI   HCSW+4(R13),X'0C'    CHECK FOR CE DE ONLY
01304  47 70  F 2E0            620          BC    NCC0,ITIC            BR. IF NOT
01308  96 04  F 0E4            621          OI    ISW,X'04'            INDICATE SENSE DATA RECIEVED
0130C  D5 00  F 5F5  B 005     622          CLC   IACSNS+5(1),5(R11)   COMPARE FOR EXPECTED SENSE
01312  47 60  F 364            623          BC    UNEQ,INDER           BR. IF UNEQUAL
01316  D5 00  F 58F  B 004     624  IBSN    CLC   IACTCC+5(1),4(R11)   COMPARE FOR EXPECTED COND. CODE
0131C  47 60  F 364            625          BC    UNEQ,INDER           BR. IF UNEQUAL
01320  91 08  B 000            626          TM    0(R11),X'08'
01324  47 80  F 2E8            627          BC    NONE,INOEX1          BR. IF NO CSW EXPECTED
01328  91 40  F 0E4            628          TM    ISW,X'40'
0132C  47 80  F 364            629          BC    NONE,INDER           BR. IF NO CSW RECIEVED
01330  48 88  0 006            630          LH    R8,6(R11)            LOAD CSW ADDR
01334  40 80  F 33C            631          STH   R8,ICCSW1+4          STORE IN COMPARE INSTR.
01338  D5 07  F 652  F 652     632  ICCSW1  CLC   ICSW1(8),ICSW1       COMPARE FOR EXPECTED CSW
0133E  47 60  F 364            633          BC    UNEQ,INDER           BR. IF UNEQUAL
01342  91 04  B 000            634          TM    0(R11),X'04'
01346  47 80  F 2F4            635          BC    NONE,INOEX2          BR. IF NO CSW 2 EXPECTED
0134A  91 20  F 0E4            636          TM    ISW,X'20'
0134E  47 80  F 364            637          BC    NONE,INDER           BR. IF NO CSW 2 RECIEVED
01352  41 88  0 008            638          LA    R8,8(R8)             UPDATE TO SECOND CSW
01356  40 80  F 35E            639          STH   R8,ICCSW2+4
0135A  D5 07  F 65A  F 65A     640  ICCSW2  CLC   ICSW2(8),ICSW2       COMPARE FOR EXPECTED CSW 2
01360  47 80  F 368            641          BC    EQ,IDUNCK            BR. IF EQUAL
01364  96 01  F 0E4            642  INDER   OI    ISW,X'01'            INDICATE AN ERROR
01368  92 64  F 398            643  IDUNCK  MVI   IFLAG1,X'64'         SET UP FOR ERROR PRINTOUT
0136C  92 C0  F 52C            644          MVI   IFLAG2,X'C0'
01370  91 01  F 0E4            645          TM    ISW,X'01'            CHECK FOR A DETECTED ERROR
01374  47 10  F 388            646          BC    ALL,IOUTIT           BR. IF ERROR DETECTED
01378  91 01  F 004            647          TM    SNSW,X'01'           CHECK SECTION SENSE SWITCH 7
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0137C  47 80  F 548          648          BC    NONE,ILEAVE          BR. IF OFF
01380  92 24  F 398          649          MVI   IFLAG1,X'24'         SET UP FOR CORRECT PRINTOUT
01384  92 80  F 52C          650          MVI   IFLAG2,X'80'
01388  D2 01  F 61C  B 002   651  IOUTIT MVC   ITSTNO+5(2),2(R11)   MOVE TEST NUMBER TO PRINT
0138E  0A DD                 652          SVC   X'DD'                CONVERT TEST NUMBER
01390  0002                  653          DC    AL2(2)
01392  061C                  654          DC    AL2(ITSTNO+5-SECNO)
01394  061C                  655          DC    AL2(ITSTNO+5-SECNO)
01396  0A D0                 656          SVC   X'D0'                PRINT TEST NUMBER
01398  64                    657  IFLAG1  DC    X'64'
01399  09                    658          DC    X'09'
0139A  F617                  659          DC    AL2(ITSTNO-SECNO+REG)
0139C  41 80  0 004          660          LA    R8,4                 ADJUST LINK ADDRESS FOR PRINTOUT
013A0  1B 88                 661          SR    R11,R8
013A2  50 B0  F 5A8          662          ST    R11,ILINK+5
013A6  0A DD                 663          SVC   X'DD'                CONVERT LINK ADDRESS
013A8  0003                  664          DC    AL2(3)
013AA  05A9                  665          DC    AL2(ILINK+6-SECNO)
013AC  05A8                  666          DC    AL2(ILINK+5-SECNO)
013AE  0A D0                 667          SVC   X'D0'                PRINT LINK ADDRESS
013B0  E0                    668          DC    X'E0'
013B1  10                    669          DC    X'10'
013B2  F5A3                  670          DC    AL2(ILINK-SECNO+REG)
013B4  41 BB  0 004          671          LA    R11,4(R11)
013B8  91 80  B 000          672          TM    0(R11),X'80'
013BC  47 10  F 442          673          BC    ALL,IOCSW            BR. IF NO I-O COMMAND ISSUED
013C0  0A DD                 674          SVC   X'DD'                CONVERT I-O ADDRESS
013C2  0003                  675          DC    AL2(3)
013C4  0670                  676          DC    AL2(IOADR-SECNO)
013C6  0599                  677          DC    AL2(IOADDR+5-SECNO)
013C8  0A D0                 678          SVC   X'D0'                PRINT I-O ADDRESS
013CA  E0                    679          DC    X'E0'
013CB  0F                    680          DC    X'0F'
013CC  F594                  681          DC    AL2(IOADDR-SECNO+REG)
013CE  95 9C  F 1A6          682          CLI   ISSUE,X'9C'          COMPARE FOR SIO COMMAND
013D2  47 60  F 42C          683          BC    UNEQ,ICCOUT          BR. IF NOT
013D6  50 A0  F 5B8          684          ST    R10,ICAW+5           STORE CCW ADDR.
013DA  0A DD                 685          SVC   X'DD'                CONVERT CAW
013DC  0003                  686          DC    AL2(3)
013DE  05B9                  687          DC    AL2(ICAW+6-SECNO)
013E0  05B8                  688          DC    AL2(ICAW+5-SECNO)
013E2  0A D0                 689          SVC   X'D0'                PRINT CAW
013E4  E0                    690          DC    X'E0'
013E5  0B                    691          DC    X'0B'
013E6  F5B3                  692          DC    AL2(ICAW-SECNO+REG)
013E8  D2 02  F 5C6  F 5C2   693          MVC   IBLAH+1(3),ICCW      MOVE -CCW- TO MESSAGE
013EE  92 16  F 427          694          MVI   ICNT,X'16'           ADJUST COUNT
013F2  50 A0  F 854          695          ST    R10,SAV10            MOVE CONTENTS OF REG 10 TO SAVE
013F6  D2 07  F 568  A 000   696  ICWOUT MVC   WORK(8),0(R10)        MOVE CCW TO WORK AREA
013FC  45 90  F 410          697          BAL   R9,ICOUT             BR. TO OUTPUT CCW
01400  91 C0  A 004          698          TM    4(R10),X'C0'         CHECK FOR ANY CHAIN FLAGS
01404  47 80  F 42C          699          BC    NONE,ICCOUT          BR. IF NONE
01408  41 AA  0 008          700          LA    R10,8(R10)           UPDATE TO NEXT CCW
0140C  47 F0  F 3F6          701          BC    UNC,ICWOUT           BR. UNCONDITIONAL
01410  0A DD                 702  ICOUT   SVC   X'DD'                CONVERT
01412  0008                  703          DC    AL2(8)
01414  0568                  704          DC    AL2(WORK-SECNO)
01416  0568                  705          DC    AL2(WORK-SECNO)
01418  D2 07  F 5CA  F 568   706          MVC   IBLAH+5(8),WORK      MOVE TO MESSAGE
0141E  D2 07  F 5D3  F 570   707          MVC   IBLAH+14(8),WORK+8
01424  0A D0                 708          SVC   X'D0'                PRINT
01426  E0                    709          DC    X'E0'
01427  1A                    710  ICNT    DC    X'1A'
01428  F5C5                  711          DC    AL2(IBLAH-SECNO+REG)
0142A  07 F9                 712          BCR   UNC,R9               RETURN VIA REG 9
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0142C  D2 00  F 585  B 004   713  ICCOUT MVC   IEXPCC+5(1),4(R11)   MOVE EXP CC TO MESSAGE
01432  58 A0  F 680          714         L     R10,ISLAVE           RESTORE REG 10
01436  0A D0                 715         SVC   X'D0'                PRINT EXPECTED COND. CODE
01438  E0                    716         DC    X'E0'
01439  0A                    717         DC    X'0A'
0143A  F580                  718         DC    AL2(IEXPCC-SECNO+REG)
0143C  0A D0                 719         SVC   X'D0'                PRINT ACTUAL COND. CODE
0143E  E0                    720         DC    X'E0'
0143F  0A                    721         DC    X'0A'
01440  F58A                  722         DC    AL2(IACTCC-SECNO+REG)
01442  D2 02  F 5C6  F 5BF   723  IOCSW  MVC   IBLAH+1(3),ICSW      MOVE -CSW- TO MESSAGE
01448  92 1A  F 427          724         MVI   ICNT,X'1A'           ADJUST COUNT
0144C  91 08  B 000          725         TM    0(R11),X'08'
01450  47 80  F 474          726         BC    NONE,IDIDI           BR. IF NO CSW EXPECTED
01454  D2 02  F 5DC  F 5E2   727         MVC   IBLAH+23(3),IEXP     MOVE -EXP- TO MESSAGE
0145A  48 8B  0 006          728         LH    R8,6(R11)
0145E  40 80  F 46E          729         STH   R8,ICHNG1+4
01462  41 88  0 008          730         LA    R8,8(R8)
01466  40 80  F 49E          731         STH   R8,ICHNG2+4
0146A  D2 07  F 568  F 568   732  ICHNG1 MVC   WORK(8),WORK          MOVE EXPECTED CSW TO WORK AREA
01470  45 90  F 410          733         BAL   R9,ICOUT             BR. TO OUTPUT EXPECTED CSW
01474  91 40  F 0E4          734  IDIDI  TM    ISW,X'40'
01478  47 80  F 48C          735         BC    NONE,IMORST          BR. IF NO CSW STORED
0147C  D2 02  F 5DC  F 5DF   736         MVC   IBLAH+23(3),IACT     MOVE -ACT- TO MESSAGE
01482  D2 07  F 568  F 652   737         MVC   WORK(8),ICSW1        MOVE ACTUAL CSW TO WORK AREA
01488  45 90  F 410          738         BAL   R9,ICOUT             BR. TO OUTPUT ACTUAL CSW
0148C  91 04  B 000          739  IMORST TM    0(R11),X'04'
01490  47 80  F 4A4          740         BC    NONE,IDID            BR. IF NOT EXPECTING 2 CSWS
01494  D2 02  F 5DC  F 5E2   741         MVC   IBLAH+23(3),IEXP     MOVE -EXP- TO MESSAGE
0149A  D2 07  F 568  F 568   742  ICHNG2 MVC   WORK(8),WORK          MOVE EXPECTED CSW TO WORK AREA
014A0  45 90  F 410          743         BAL   R9,ICOUT             BR. TO OUTPUT EXPECTED CSW 2
014A4  91 20  F 0E4          744  IDID   TM    ISW,X'20'
014A8  47 80  F 4BC          745         BC    NONE,IPAS            BR. IF NO SECOND CSW STORED
014AC  D2 02  F 5DC  F 5DF   746         MVC   IBLAH+23(3),IACT     MOVE -ACT- TO MESSAGE
014B2  D2 07  F 568  F 65A   747         MVC   WORK(8),ICSW2        MOVE CSW TO WORK AREA
014B8  45 90  F 410          748         BAL   R9,ICOUT
014BC  D2 00  F 5EA  B 005   749  IPAS   MVC   IEXSNS+5(1),5(R11)   MOVE EXP SENSE TO MESSAGE
014C2  91 04  F 0E4          750         TM    ISW,X'04'
014C6  47 80  F 4E6          751         BC    NONE,IPASS           BR. IF NO SENSE DATA RECIEVED
014CA  0A DD                 752         SVC   X'DD'                CONVERT EXPECTED SENSE
014CC  0001                  753         DC    AL2(1)
014CE  05EA                  754         DC    AL2(IEXSNS+5-SECNO)
014D0  05EA                  755         DC    AL2(IEXSNS+5-SECNO)
014D2  0A D0                 756         SVC   X'D0'                PRINT EXPECTED SENSE
014D4  E0                    757         DC    X'E0'
014D5  0B                    758         DC    X'0B'
014D6  F5E5                  759         DC    AL2(IEXSNS-SECNO+REG)
014D8  0A DD                 760         SVC   X'DD'
014DA  0001                  761         DC    AL2(1)
014DC  05F5                  762         DC    AL2(IACSNS+5-SECNO)
014DE  05F5                  763         DC    AL2(IACSNS+5-SECNO)
014E0  0A D0                 764         SVC   X'D0'                PRINT ACTUAL SENSE DATA
014E2  E0                    765         DC    X'E0'
014E3  0B                    766         DC    X'0B'
014E4  F5F0                  767         DC    AL2(IACSNS-SECNO+REG)
014E6  95 30  E 181          768  IPASS  CLI   SYSMOD(R14),X'30'     CHECK FOR MODEL 30
014EA  47 60  F 52A          769         BC    UNEQ,IOPOUT          BR. IF NOT
014EE  D2 0B  F 568  0 080   770         MVC   WORK(12),LOGOUT      MOVE LOGOUT TO WORK AREA
014F4  0A DD                 771         SVC   X'DD'                CONVERT
014F6  000C                  772         DC    AL2(12)
014F8  0568                  773         DC    AL2(WORK-SECNO)
014FA  0568                  774         DC    AL2(WORK-SECNO)
014FC  D2 01  F 600  F 568   775         MVC   IOLOG+5(2),WORK      MOVE LOG OUT TO MESSAGE
01502  D2 05  F 603  F 56A   776         MVC   IOLOG+8(6),WORK+2
01508  D2 05  F 60A  F 572   777         MVC   IOLOG+15(6),WORK+10
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0150E  D2 05  F 611  F 57A   778          MVC   IOLOG+22(6),WORK+18
01514  0A D0                 779          SVC   X'D0'                 PRINT LOG OUT
01516  E0                    780          DC    X'E0'
01517  1C                    781          DC    X'1C'
01518  F5F8                  782          DC    AL2(IOLOG-SECNO+REG)
0151A  91 02  F 0E4          783          TM    ISW,X'02'
0151E  47 80  F 52A          784          BC    NONE,IOPOUT             BR. IF NOT UIO
01522  94 FD  F 0E4          785          NI    ISW,X'FD'               RESET UIO SWITCH
01526  47 F0  F 204          786          BC    UNC,IWAIT               BR. UNCONDITIONAL
0152A  0A D0                 787  IOPOUT  SVC   X'D0'                 PRINT LOOP OPTIONS
0152C  C0                    788  IFLAG2  DC    X'C0'
0152D  32                    789          DC    X'32'
0152E  F620                  790          DC    AL2(IOPT1-SECNO+REG)
01530  0A D0                 791          SVC   X'D0'                 SPACE A LINE
01532  A0                    792          DC    X'A0'
01533  01                    793          DC    X'01'
01534  F5A3                  794          DC    AL2(ILINK-SECNO+REG)
01536  50 AD  0 048          795          ST    R10,HCAW(R13)           STORE CAW
0153A  91 C0  F 004          796          TM    SNSW,X'C0'              CHECK SECTION SENSE SWITCH 0 AND 1
0153E  47 50  F 154          797          BC    ANY,ITRY1               BR. IF ANY ON
01542  91 01  F 0E5          798          TM    ISW+1,X'01'
01546  07 15                 799          BCR   ALL,R5                  RETURN VIA REG 5 IF HANG UP
01548  91 08  B 000          800  ILEAVE  TM    0(R11),X'08'
0154C  47 80  F 554          801          BC    NONE,IUP                BR. IF NO CSW EXPECTED
01550  41 BB  0 002          802          LA    R11,2(R11)              UPDATE LINK ADDRESS FOR RETURN
01554  41 BB  0 006          803  IUP     LA    R11,6(R11)
01558  98 89  F 560          804          LM    R8,R9,ISAVE             RESTORE REGS 8 AND 9
0155C  07 FB                 805          BCR   UNC,R11                 RETURN VIA REG 11
0155E  07 00                 806          CNOP  0,8
01560  0000000000000000      807  ISAVE   DC    XL8'0'
01568                        808  WORK    DS    24C
01580  40C3C34040E740C5      809  IEXPCC  DC    C' CC  X EXP'
01588  E7D7
0158A  40C3C34040E740C1      810  IACTCC  DC    C' CC  X ACT'
01592  C3E3
01594  40C1C4D940E7E7E7      811  IOADDR  DC    C' ADR XXXXXX XIO'
0159C  E7E7E740E7C9D6
015A3  00                    812          DC    X'00'
015A4                        813          CNOP  0,4
015A3                        814          ORG   *-1
015A3  40C1C4D940E7E7E7      815  ILINK   DC    C' ADR XXXXXX LINK'
015AB  E7E7E740D3C9D5D2
015B3  00                    816          DC    X'00'
015B4                        817          CNOP  0,4
015B3                        818          ORG   *-1
015B3  40C3C1E640E7E7E7      819  ICAW    DC    C' CAW XXXXXX '
015BB  E7E7E740
015BF  C3E2E6                820  ICSW    DC    C'CSW'
015C2  C3C3E6                821  ICCW    DC    C'CCW'
015C5  40C3E2E640E7E7E7      822  IBLAH   DC    C' CSW XXXXXXXX XX'
015CD  E7E7E7E7E740E7E7
015D5  E7E7E7E7E7E740C5      823          DC    C'XXXXXX EXP'
015DD  E7D7
015DF  C1C3E3                824  IACT    DC    C'ACT'
015E2  C5E7D7                825  IEXP    DC    C'EXP'
015E5  40E2D5E240E7E740      826  IEXSNS  DC    C' SNS XX EXP'
015ED  C5E7D7
015F0  40E2D5E240E7E740      827  IACSNS  DC    C' SNS XX ACT'
015F8  C1C3E3
015FB  40D3D6C740E7E740      828  IOLOG   DC    C' LOG XX XXXXXX X'
01603  E7E7E7E7E7E740E7
0160B  E7E7E7E7E740E7E7      829          DC    C'XXXXX XXXXXX'
01613  E7E7E7E7
01617  40E3E2E340E7E7E7      830  ITSTNO  DC    C' TST XXXX'
0161F  E7
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01620  40E2E240F040D6D5      831  IOPT1   DC    C' SS 0 ON FOR LOO'
01628  40C6D6D940D3D6D6
01630  D740D6D540E7C9D6      832          DC    C'P ON XIO, SS 1 O'
01638  6B40E2E240F140D6
01640  D540C6D6D940E3C9      833          DC    C'N FOR TIO SIO LO'
01648  D640E2C9D640D3D6
01650  D6D7                  834          DC    C'OP'
01652  0000000000000000      835  ICSW1   DC    XL8'0'
0165A  0000000000000000      836  ICSW2   DC    XL8'0'
01662  000000000000
01668  040015F500000001      837  ISENSE  CCW   X'04',IACSNS+5,X'00',1
01670  0011A6                838  IOADR   DC    AL3(ISSUE)
01673  FE                    839  MSK1    DC    X'FE'
01674  01                    840  MSK2    DC    X'01'
01675  40E4C9D640E7E7E7      841  IUNEX   DC    C' UIO XXXXXX'
0167D  E7E7E7
01680  0000000000000000      842  ISLAVE  DC    XL8'0'                  REGISTER SAVE AREA
01688  0600169800000084      843  DCKRD   CCW   X'06',CKAR,X'00',132
01690  00001690              844  CRDCSW  DC    A(CRDCSW)
01694  0C000000              845          DC    X'0C000000'
01698                        846  CKAR    DS    132C
0171C                        847  DRAR    DS    132C
017A0  0200171C00000084      848  RDCCW   CCW   X'02',DRAR,X'00',132
017A8  000017A8              849  WHOPS   DC    A(WHOPS)
017AC  0C000000              850          DC    X'0C000000'
                             851  ********************************************************************************
                             852  *                          INITIALIZE ROUTINE
                             853  ********************************************************************************
017B0  1B DD                 854  INIT    SR    R13,R13                 ZERO REG 13
017B2  91 40  E 196          855          TM    406(R14),X'40'          CHECK FOR FORCED PROBLEM STATE
017B6  47 80  F 7BC          856          BC    NONE,NITWIT             BR. IF NOT
017BA  18 DF                 857          LR    R13,R15                 SET UP FOR PROBLEM STATE
017BC  58 C0  F 0E0          858  NITWIT  L     R12,UNIT1               LOAD REG 12 WITH UNIT TABLE ENTRY
017C0  54 C0  F 858          859          N     R12,MOD50               AND OUT UNUSED BITS
017C4  91 80  F 0E4          860  BLOOP   TM    ISW,X'80'               CHECK FOR HANG UP
017C8  47 10  F 7DE          861          BC    ALL,HANGUP              BR. IF DETECTED
017CC  92 40  F 85D          862          MVI   PRAR,X'40'              MOVE BLANK TO PRINT AREA
017D0  D2 00  F 810  F 003   863          MVC   RTSAV(1),SECNO+3        SAVE ROUTINE NUMBER
017D6  D2 82  F 85E  F 85D   864          MVC   PRAR+1(131),PRAR        BLANK PRINT AREA
017DC  07 F4                 865          BCR   UNC,R4                  RETURN VIA REG 4
017DE  D2 00  F 003  F 810   866  HANGUP  MVC   SECNO+3(1),RTSAV        MOVE RTN NO. THAT HANG WAS FOUND
017E4  94 FE  F 0E5          867          NI    ISW+1,X'FE'
017E8  96 01  F 0E5          868          OI    ISW+1,X'01'
017EC  98 AB  F 680          869          LM    R10,R11,ISLAVE          RESTORE REGS 10 AND 11
017F0  0A D0                 870          SVC   X'D0'                   PRINT
017F2  64                    871          DC    X'64'                   -PREVIOUS HANGUP DETECTED-
017F3  1A                    872          DC    X'1A'
017F4  F82C                  873          DC    AL2(HUNG-SECNO+REG)
017F6  0A D0                 874          SVC   X'D0'
017F8  A019                  875          DC    X'A019'
017FA  F811                  876          DC    AL2(CLUIN-SECNO+REG)
017FC  45 50  F 2C0          877          BAL   R5,IDOSNS               BR. TO OUTPUT AVAILABLE INFO
01800  92 00  F 0E4          878          MVI   ISW,X'00'               RESET HANGUP SWITCH
01804  94 7F  F 0E4          879          NI    ISW,X'7F'
01808  92 01  F 003          880          MVI   SECNO+3,X'01'           RESTORE TO ROUTINE 01
0180C  47 F0  F 7C4          881          BC    UNC,BLOOP
01810  00                    882  RTSAV   DC    X'00'
01811  40E2C5C540C4C5E2      883  CLUIN   DC    C' SEE DESCRIPTION'
01819  C3D9C9D7E3C9D6D5
01821  60C3D6D4D4C5D5E3      884          DC    C'-COMMENTS'
01829  E2
0182A  07 00                 885          CNOP  0,4
0182C  40D7D9C5E5C9D6E4      886  HUNG    DC    C' PREVIOUS HANG U'
01834  E240C8C1D5C740E4
0183C  D740C4C5E3C5C3E3      887          DC    C'P DETECTED'
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01844  C5C4
01846  07 00                    888          CNOP  0,4
01848  0000000000000000         889  SAVIT   DC    XL12'0'
01850  00000000
01854  00000000                 890  SAV10   DC    XL4'0'
01858  00003FFF                 891  MOD50   DC    X'00003FFF'
0185C  40                       892          DC    X'40'
0185D                           893  PRAR    DS    132C
018E1  00
018E2  07 00                    894          CNOP  0,4
                                895  **************************************************************************
                                896  * ROUTINE 01 - ISSUE SKIP TO 1 IMMEDIATE, COMMAND CHAINED TO TWO SPACE
                                897  *              1 IMMEDIATE COMMANDS.  THE FIRST SPACE 1 SHOULD DETECT
                                898  *              A 9 HOLE IN THE CARRIAGE TAPE.  THIS SHOULD BRING UP
                                899  *              UNIT CHECK AND BREAK THE CHAIN.  TURN ON CHAIN DATA FLAG
                                900  *              AND ISSUE CHAIN AGAIN.  THE SKIP TO 1 WILL BE EXECUTED,
                                901  *              BUT NO CHAINING WILL OCCUR.
                                902  *              ISSUE SKIP IMMEDIATE TO CHANNEL 4 FOLLOWED BY TWO SPACE
                                903  *              IMMEDIATE COMMANDS.  A CHANNEL 12 SHOULD BE DETECTED ON
                                904  *              THE FIRST SPACE IMMEDIATE, BRING UP UNIT EXCEPTION, AND
                                905  *              BREAK COMMAND CHAINING.
                                906  **************************************************************************
018E4  01                       907  ROUT01  DC    X'01'                 ROUTINE NUMBER
018E5  000978                   908          DC    AL3(ROUT02-SECNO)     ADDRESS OF NEXT ROUTINE
018E8  45 40  F 7B0             909          BAL   R4,INIT               BR. TO INITIALIZE
018EC  41 A0  F 928             910  GO01    LA    R10,CHN3              LOAD CCW ADDRESS
018F0  92 40  F 92C             911          MVI   CHN3+4,X'40'          SET UP COMMAND CHAIN
018F4  45 B0  F 10E             912          BAL   R11,ISIO              BR. TO ISSUE SIO
018F8  3800                     913          DC    X'3800'               CONTROL SWITCHES
018FA  0010                     914          DC    X'0010'               T E S T  N U M B E R
018FC  F001                     915          DC    X'F001'               EXP COND. CODE AND SENSE
018FE  F940                     916          DC    AL2(BRKUC-SECNO+REG)  EXP CSW ADDRESS
01900  92 C0  F 92C             917          MVI   CHN3+4,X'C0'          TURN ON DATA CHAIN
01904  45 B0  F 10E             918          BAL   R11,ISIO              BR. TO ISSUE SIO
01908  3E00                     919          DC    X'3E00'               CONTROL SWITCHES
0190A  0020                     920          DC    X'0020'               T E S T  N U M B E R
0190C  F100                     921          DC    X'F100'               EXP COND. CODE AND SENSE
0190E  F948                     922          DC    AL2(NOCHN-SECNO+REG)  EXP CSW ADDRESS
01910  41 A0  F 958             923          LA    R10,UNEX              LOAD CCW ADDRESS
01914  45 B0  F 10E             924          BAL   R11,ISIO              BR. TO ISSUE SIO
01918  3A00                     925          DC    X'3A00'               CONTROL SWITCHES
0191A  0030                     926          DC    X'0030'               T E S T  N U M B E R
0191C  F000                     927          DC    X'F000'               EXP COND. CODE AND SENSE
0191E  F970                     928          DC    AL2(EXCE-SECNO+REG)   EXP CSW ADDRESS
01920  0A D6                    929          SVC   X'D6'                 ROUTINE EXIT
01922  000000000000
01928  8B00185D40000001         930  CHN3    CCW   X'8B',PRAR,X'40',1
01930  0B00185D40000001         931          CCW   X'0B',PRAR,X'40',1
01938  0B00185D00000001         932          CCW   X'0B',PRAR,X'00',1
01940  00001938                 933  BRKUC   DC    A(BRKUC-8)
01944  06000001                 934          DC    X'06000001'
01948  00000000                 935  NOCHN   DC    XL4'0'
0194C  08000000                 936          DC    X'08000000'
01950  00000000                 937          DC    XL4'0'
01954  04000000                 938          DC    X'04000000'
01958  A300185D40000001         939  UNEX    CCW   X'A3',PRAR,X'40',1
01960  0B00185D40000001         940          CCW   X'0B',PRAR,X'40',1
01968  0B00185D00000001         941          CCW   X'0B',PRAR,X'00',1
01970  00001968                 942  EXCE    DC    A(UNEX+16)
01974  05000001                 943          DC    X'05000001'
01978                           944          CNOP  0,4
                                945  **************************************************************************
                                946  * ROUTINE 02 - DATA CHAIN A DIAGNOSTIC READ COMMAND, WITH THE COUNT
                                947  *              EQUAL TO THE RECORD LENGTH.  THE NEXT COMMAND IS INVALID
                                948  *              TO THE CHANNEL.  INCORRECT LENGTH RECORD AT CHANNEL END
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                                949  *              TIME SHOULD BREAK THE CHAIN AND THE CCW WITH THE INVALID
                                950  *              COMMAND SHOULD NOT BE USED.  A DIAGNOSTIC READ WITH A
                                951  *              COUNT LESS THAN THE RECORD LENGTH IS NOW DATA CHAINED TO
                                952  *              COMPLETE TRANSFERING THE CORRECT RECORD LENGTH.  THE
                                953  *              SECOND CCW COMMAND FIELD IS INVALID TO THE CHANNEL.  NO
                                954  *              CHANNEL PROGRAM CHECK SHOULD BE SET.
                                955  **************************************************************************
01978  02                       956  ROUT02  DC    X'02'                 ROUTINE NUMBER
01979  0009D8                   957          DC    AL3(ROUT03-SECNO)     ADDRESS OF NEXT ROUTINE
0197C  45 40  F 7B0             958          BAL   R4,INIT               BR. TO INITIALIZE
01980  41 A0  F 9A8             959  GO02    LA    R10,RDCDA             LOAD CCW ADDRESS
01984  45 B0  F 10E             960          BAL   R11,ISIO              BR. TO ISSUE SIO
01988  3A00                     961          DC    X'3A00'               CONTROL SWITCHES
0198A  0040                     962          DC    X'0040'               T E S T  N U M B E R
0198C  F000                     963          DC    X'F000'               EXP COND. CODE AND SENSE
0198E  F9B8                     964          DC    AL2(WIERD-SECNO+REG)  EXP CSW ADDRESS
01990  41 A0  F 9C0             965          LA    R10,TRU               LOAD CCW ADDRESS
01994  45 B0  F 10E             966          BAL   R11,ISIO              BR. TO ISSUE SIO
01998  3A00                     967          DC    X'3A00'               CONTROL SWITCHES
0199A  0050                     968          DC    X'0050'               T E S T  N U M B E R
0199C  F000                     969          DC    X'F000'               EXP COND CODE AND SENSE
0199E  F9D0                     970          DC    AL2(WORD-SECNO+REG)   EXP CSW ADDRESS
019A0  0A D6                    971          SVC   X'D6'                 ROUTINE EXIT
019A2  000000000000
019A8  0200185D80000084         972  RDCDA   CCW   X'02',PRAR,X'80',132
019B0  0000185D00000001         973          CCW   X'00',PRAR,X'00',1
019B8  00001988                 974  WIERD   DC    A(WIERD)
019BC  0C400001                 975          DC    X'0C400001'
019C0  0200185D80000083         976  TRU     CCW   X'02',PRAR,X'80',131
019C8  0000185D00000001         977          CCW   X'00',PRAR,X'00',1
019D0  000019D0                 978  WORD    DC    A(WORD)
019D4  0C000000                 979          DC    X'0C000000'
019D8                           980          CNOP  0,4
                                981  **************************************************************************
                                982  * ROUTINE 03 - ISSUE A NOP, COMMAND CHAINED TO A UCS PRE-CONDITION LOAD
                                983  *              -EB- COMMAND.  EXPECT COND. CODE 0 ON THE START I-O.
                                984  *              UNIT CHECK SHOULD BREAK THE CHAIN DURING INITIAL
                                985  *              SELECTION OF THE -EB- COMMAND.  COMMAND REJECT SENSE BIT
                                986  *              SHOULD BE SET.  ON NON-UCS PRINTERS, -EB- IS AN INVALID
                                987  *              COMMAND.  ON UCS PRINTERS THE -EB- MUST BE THE FIRST
                                988  *              COMMAND IN A CHAIN, OR COMMAND REJECT WILL BE SET.
                                989  **************************************************************************
019D8  03                       990  ROUT03  DC    X'03'                 ROUTINE NUMBER
019D9  000A30                   991          DC    AL3(ROUT04-SECNO)     ADDRESS OF NEXT ROUTINE
019DC  45 40  F 7B0             992          BAL   R4,INIT               BR. TO INITIALIZE
019E0  41 A0  F A18             993  GO03    LA    R10,NOPEB             LOAD CCW ADDRESS
019E4  92 EB  F A20             994          MVI   NOPEB+8,X'EB'         SET UP PRE-CONDITION LOAD
019E8  45 B0  F 10E             995          BAL   R11,ISIO              BR. TO ISSUE SIO
019EC  3800                     996          DC    X'3800'               CONTROL SWITCHES
019EE  0060                     997          DC    X'0060'               T E S T  N U M B E R
019F0  F080                     998          DC    X'F080'               EXP COND. CODE AND SENSE
019F2  FA28                     999          DC    AL2(ZOT-SECNO+REG)    EXP CSW ADDRESS
019F4  92 73  F A20            1000          MVI   NOPEB+8,X'73'         SET UP BLOCK DATA CHECK
019F8  45 B0  F 10E            1001          BAL   R11,ISIO              BR. TO ISSUE SIO
019FC  3800                    1002          DC    X'3800'               CONTROL SWITCHES
019FE  0070                    1003          DC    X'0070'               T E S T  N U M B E R
01A00  F080                    1004          DC    X'F080'               EXP COND. CODE AND SENSE
01A02  FA28                    1005          DC    AL2(ZOT-SECNO+REG)    EXP CSW ADDRESS
01A04  92 7B  F A20            1006          MVI   NOPEB+8,X'7B'         SET UP ALLOW DATA CHECK
01A08  45 B0  F 10E            1007          BAL   R11,ISIO              BR. TO ISSUE SIO
01A0C  3800                    1008          DC    X'3800'               CONTROL SWITCHES
01A0E  0080                    1009          DC    X'0080'               T E S T  N U M B E R
01A10  F080                    1010          DC    X'F080'               EXP COND CODE AND SENSE
01A12  FA28                    1011          DC    AL2(ZOT-SECNO+REG)    EXP CSW ADDRESS
01A14  0A D6                   1012          SVC   X'D6'                 ROUTINE EXIT
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01A16  00 00
01A18  0300185D40000001      1013  NOPEB  CCW   X'03',PRAR,X'40',1
01A20  E800185D00000001      1014         CCW   X'E8',PRAR,X'00',1
01A28  00001A28              1015  ZOT    DC    A(ZOT)
01A2C  02000001              1016         DC    X'02000001'
01A30                        1017         CNOP  0,4
                             1018  ********************************************************************************
                             1019  * ROUTINE 04 - PRINT A LINE OF BLANKS.  ISSUE DIAGNOSTIC CHECK READ.
                             1020  *               CHECK FOR ALL PLC BITS BEING SET ON.
                             1021  ********************************************************************************
01A30  04                    1022  ROUT04 DC    X'04'                 ROUTINE NUMBER
01A31  000808                1023         DC    AL3(ROUT05-SECNO)     ADDRESS OF NEXT ROUTINE
01A34  45 40  F 7B0          1024         BAL   R4,INIT               BR. TO INITIALIZE
01A38  41 A0  F AF0          1025  GO04   LA    R10,PRCCW             LOAD CCW ADDRESS
01A3C  45 B0  F 10E          1026         BAL   R11,ISIO              BR. TO ISSUE SIO
01A40  3E00                  1027         DC    X'3E00'               CTRL SWITCHES
01A42  0090                  1028         DC    X'0090'               T E S T  N U M B E R
01A44  F000                  1029         DC    X'F000'               EXP COND CODE AND SENSE
01A46  FAF8                  1030         DC    AL2(PRCSW-SECNO+REG)  EXP CSW ADDRESS
01A48  41 A0  F 688          1031         LA    R10,DCKRD             LOAD CCW ADDRESS
01A4C  45 B0  F 10E          1032         BAL   R11,ISIO              BR. TO ISSUE SIO
01A50  3A00                  1033         DC    X'3A00'               CONTROL SWITCHES
01A52  0100                  1034         DC    X'0100'               T E S T  N U M B E R
01A54  F000                  1035         DC    X'F000'               EXP COND. CODE AND SENSE
01A56  F690                  1036         DC    AL2(CRDCSW-SECNO+REG) EXP CSW ADDRESS
01A58  92 00  F AE4          1037         MVI   SKORCH,X'00'          RESET SWITCH
01A5C  41 70  0 084          1038         LA    R7,132                SET UP TO CHECK 132 POSITIONS
01A60  41 80  F 718          1039         LA    R8,CKAR+131           LOAD ADDR POSITION 132
01A64  91 04  8 000          1040  TECT   TM    0(R8),X'04'           CHECK FOR PLC BIT
01A68  47 80  F A8C          1041         BC    NONE,ERED             BR. IF NONE
01A6C  46 80  F A70          1042  TIC    BCT   R8,*+4                DECRIMENT ADDRESS
01A70  46 70  F A64          1043         BCT   R7,TECT               BR. UNTIL 132 CHECKED
01A74  91 01  F AE4          1044         TM    SKORCH,X'01'
01A78  47 80  F A8A          1045         BC    NONE,END04            BR. IF NO ERR DETECTED
01A7C  41 A0  F AF0          1046         LA    R10,PRCCW             SET UP TO LOOP ON PRINT
01A80  45 B0  F 52A          1047         BAL   R11,IOPOUT            BR. TO PRINT LOOP OPTIONS
01A84  000000000000          1048         DC    XL6'0'
01A8A  0A D6                 1049  END04  SVC   X'D6'                 ROUTINE EXIT
01A8C  91 01  F AE4          1050  ERED   TM    SKORCH,X'01'          CHECK FOR HEADING PRINTED
01A90  47 10  F AA4          1051         BC    ALL,NOHDR             BR. IF IT WAS
01A94  96 01  F AE4          1052         OI    SKORCH,X'01'          INDICATE HEADING PRINTED
01A98  0A D0                 1053         SVC   X'D0'
01A9A  64                    1054         DC    X'64'
01A9B  09                    1055         DC    X'09'
01A9C  FAD8                  1056         DC    AL2(BLABRR-SECNO+REG)
01A9E  0A D0                 1057         SVC   X'D0'
01AA0  64                    1058         DC    X'64'
01AA1  1F                    1059         DC    X'1F'
01AA2  FABC                  1060         DC    AL2(MITHED-SECNO+REG)
01AA4  4E 70  F 568          1061  NOHDR  CVD   R7,WORK                CONVERT PRINT POSITION TO DECIMAL
01AA8  F3 21  F AE6  F 56E   1062         UNPK  POS+1(3),WORK+6(2)
01AAE  96 F0  F AE8          1063         OI    POS+3,X'F0'
01AB2  0A D0                 1064         SVC   X'D0'                 PRINT ERR POSITION
01AB4  A0                    1065         DC    X'A0'
01AB5  04                    1066         DC    X'04'
01AB6  FAE5                  1067         DC    AL2(POS-SECNO+REG)
01AB8  47 F0  F A6C          1068         BC    UNC,TIC
01ABC  40D7D3C340D5D6E3      1069  MITHED DC    C' PLC NOT SET PRI'
01AC4  40E2C5E340D7D9C9
01ACC  D5E3C9D5C740C2D3      1070         DC    C'NTING BLANKS IN'
01AD4  C1D5D2E240C9D5
01ADB  40E3E2E340F0F1F1      1071  BLABRR DC    C' TST 0110'          T E S T  N U M B E R
01AE3  F0
01AE4  00                    1072  SKORCH DC    X'00'
01AE5  40E7E7E7              1073  POS    DC    C' XXX'
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01AE9  00000000000000
01AF0  0100185000000084      1074  PRCCW  CCW   X'01',PRAR,X'00',132
01AF8  00001AF8              1075  PRCSW  DC    A(PRCSW)
01AFC  08000000              1076         DC    X'08000000'
01B00  00000000              1077         DC    XL4'0'
01B04  04000000              1078         DC    X'04000000'
01B08                        1079         CNOP  0,4
                             1080  ********************************************************************************
                             1081  * ROUTINE 05 - THIS ROUTINE WILL RUN ON UCS PRINTERS ONLY.
                             1082  *               COMMAND CHAIN A PRE-CONDITION LOAD -EB-, TO A BLOCK DATA
                             1083  *               CHECK COMMAND, TO AN ALLOW DATA CHECK COMMAND.  COND.
                             1084  *               CODE 0 SHOULD BE SET ON THE SIO.  THE ENTIRE CHAIN
                             1085  *               SHOULD BE EXECUTED.  THE PRE-COND. LOAD LATCH BEING ON
                             1086  *               BLOCKS COMMAND REJECT OF THE DATA CHECK COMMANDS, EVEN
                             1087  *               THOUGH THEY ARE NOT THE FIRST IN A CHAIN.
                             1088  *               COMMAND CHAIN A PRE-CONDITION LOAD -EB-, TO A DIAG READ,
                             1089  *               TO ALLOW DATA CHECK COMMAND. THE DIAG READ SHOULD RESET
                             1090  *               THE PRE-CONDITION LOAD LATCH, AND COMMAND REJECT SHOULD
                             1091  *               BREAK THE CHAIN ON THE ALLOW DATA CHECK COMMAND.
                             1092  ********************************************************************************
01B08  05                    1093  ROUT05 DC    X'05'                 ROUTINE NUMBER
01B09  000870                1094         DC    AL3(ROUT06-SECNO)     ADDRESS OF NEXT ROUTINE
01B0C  45 40  F 7B0          1095         BAL   R4,INIT               BR. TO INITIALIZE
01B10  41 A0  F B50          1096  GO05   LA    R10,BIGC              LOAD CCW ADDRESS
01B14  92 73  F B58          1097         MVI   BIGC+8,X'73'          SET UP BLOCK DATA CHECK
01B18  58 10  F 84C          1098         L     R1,SAVIT+4
01B1C  91 10  F 0E1          1099         TM    UNIT1+1,X'10'         CHECK FOR UCS FEATURE
01B20  47 80  F B40          1100         BC    NONE,END05            BR. IF NOT DEFINED
01B24  45 B0  F 10E          1101         BAL   R11,ISIO              BR. TO ISSUE SIO
01B28  3A00                  1102         DC    X'3A00'               CONTROL SWITCHES
01B2A  0120                  1103         DC    X'0120'               T E S T  N U M B E R
01B2C  F000                  1104         DC    X'F000'               EXP COND CODE AND SENSE
01B2E  FB68                  1105         DC    AL2(BIGW-SECNO+REG)   EXP CSW ADDRESS
01B30  92 02  F B58          1106         MVI   BIGC+8,X'02'          SET UP SENSE
01B34  45 B0  F 10E          1107         BAL   R11,ISIO              BR. TO ISSUE SIO
01B38  3800                  1108         DC    X'3800'               CONTROL SWITCHES
01B3A  0130                  1109         DC    X'0130'               T E S T  N U M B E R
01B3C  F080                  1110         DC    X'F080'               EXP COND CODE AND SENSE
01B3E  FB44                  1111         DC    AL2(BUST-SECNO+REG)   EXP CSW ADDRESS
01B40  0A D6                 1112  END05  SVC   X'D6'                 ROUTINE EXIT
01B42  00 00
01B44  00001B68              1113  BUST   DC    A(BIGW)
01B48  02000001              1114         DC    X'02000001'
01B4C  00000000
01B50  E800185D40000001      1115  BIGC   CCW   X'E8',PRAR,X'40',1
01B58  7300185D60000001      1116         CCW   X'73',PRAR,X'60',1
01B60  7800185D00000001      1117         CCW   X'78',PRAR,X'00',1
01B68  00001B68              1118  BIGW   DC    A(BIGW)
01B6C  0C000001              1119         DC    X'0C000001'
01B70                        1120         CNOP  0,4
                             1121  ********************************************************************************
                             1122  * ROUTINE 06 - ISSUE A UCS LOAD WITH FOLDING COMMAND.  COND. CODE 1
                             1123  *               SHOULD BE SET ON THE SIO, WITH UNIT CHECK IN THE CSW,
                             1124  *               AND COMMAND REJECT IN THE SENSE BYTE.  THE -F3- COMMAND
                             1125  *               IS INVALID ON NON-UCS PRINTERS, AND ON UCS PRINTERS, THE
                             1126  *               PRE-CONDITION LOAD LATCH MUST BE SET FOR THE COMMAND TO
                             1127  *               BE ACCEPTED.  REPEAT FOR LOAD NO FOLD -FB-.
                             1128  ********************************************************************************
01B70  06                    1129  ROUT06 DC    X'06'                 ROUTINE NUMBER
01B71  000BC8                1130         DC    AL3(ROUT07-SECNO)     ADDRESS OF NEXT ROUTINE
01B74  45 40  F 7B0          1131         BAL   R4,INIT               BR. TO INITIALIZE
01B78  41 A0  F 7A0          1132  GO06   LA    R10,RDCCW             SET ADDR OF READ  COMM IN REG 10
01B7C  45 B0  F 10E          1133         BAL   R11,ISIO              BR. TO DO SIO
01B80  3800                  1134         DC    X'3800'               CONTROL SWITCHES
01B82  0140                  1135         DC    X'0140'               T E S T  N U M B E R
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01B84  F000                1136          DC    X'F000'                 EXP COND CODE - EXP SENSE
01B86  F7A8                1137          DC    AL2(WHOPS-SECNO+REG)    ADDRESS OF EXP CSW
01B88  92 F3  F BCO        1138          MVI   LDUCS,X'F3'             INSURE UCS LOAD WITH FOLDING OP
01B8C  41 A0  F BCO        1139          LA    R10,LDUCS
01B90  45 B0  F 10E        1140          BAL   R11,ISIO                GO DO SIO
01B94  3800                1141          DC    X'3800'                 CONTROL SWITCHES
01B96  0150                1142          DC    X'0150'                 T E S T  N U M B E R
01B98  F180                1143          DC    X'F180'                 COND. CODE 1 - COMM. REJ. EXPECTED
01B9A  FBB2                1144          DC    AL2(FOLD-SECNO+REG)     ADDRESS OF CSW
01B9C  92 FB  F BCO        1145          MVI   LDUCS,X'FB'             INSURE UCS LOAD NO FOLDING
01BA0  41 A0  F BCO        1146          LA    R10,LDUCS
01BA4  45 B0  F 10E        1147          BAL   R11,ISIO                GO DO SIO
01BA8  3800                1148          DC    X'3800'                 CONTROL SWITCHES
01BAA  0160                1149          DC    X'0160'                 T E S T  N U M B E R
01BAC  F180                1150          DC    X'F180'                 COND. CODE 1 - COM. REJ. EXPECTED
01BAE  FBB2                1151          DC    AL2(FOLD-SECNO+REG)     ADDRESS OF CSW
01BB0  0A D6               1152  END06   SVC   X'D6'                   ROUTINE EXIT
01BB2  00000000            1153  FOLD    DC    XL4'0'
01BB6  02000000            1154          DC    X'02000000'
01BBA  000000000000
01BC0  F300185D000000F0    1155  LDUCS   CCW   X'F3',PRAR,X'00',240
01BC8                      1156          CNOP  0,4
                           1157  ********************************************************************
                           1158  * ROUTINE 07 - ISSUE ALL COMMANDS TO THE 1403, THAT SHOULD RESULT IN
                           1159  *              COMMAND REJECT.  EXPECT COND. CODE 1 ON EACH SIO, WITH
                           1160  *              UNIT CHECK IN THE CSW. EXPECT COMMAND REJECT IN THE
                           1161  *              SENSE BYTE. AFTER EACH INVALID, ISSUE BLANK PRINT NO
                           1162  *              SPACE, AND ANOTHER SENSE TO CHECK PROPER RESETING OF THE
                           1163  *              SENSE INFORMATION.
                           1164  ********************************************************************
01BC8  07                  1165  ROUT07  DC    X'07'                   ROUTINE NUMBER
01BC9  00FFFF              1166          DC    X'00FFFF'               ADDRESS OF NEXT ROUTINE
01BCC  45 40  F 7B0        1167          BAL   R4,INIT                 BR. TO INITIALIZE
01BD0  41 20  0 0A3        1168  GO07    LA    R2,163                  SET UP FOR 163 INVALIDS
01BD4  91 01  F 0E1        1169          TM    UNIT1+1,X'01'           CHECK FOR TWO CHANNEL SWITCH
01BD8  47 10  F BEA        1170          BC    ALL,ARG                 BR. IF DEFINED
01BDC  41 32  F C40        1171          LA    R3,ERTAB(R2)            SET UP FOR 171 INVALIDS
01BE0  D2 07  3 000  F CEE 1172          MVC   0(8,R3),VC2CS            ,,
01BE6  41 22  0 008        1173          LA    R2,8(R2)                 ,,
01BEA  91 10  F 0E1        1174  ARG     TM    UNIT1+1,X'10'           CHECK FOR UCS FEATURE
01BEE  47 10  F C00        1175          BC    ALL,LESS3               BR. IF DEFINED
01BF2  41 32  F C40        1176          LA    R3,ERTAB(R2)            SET UP FOR 174 INVALIDS
01BF6  D2 02  3 000  F CF6 1177          MVC   0(3,R3),VCUCS            ,,
01BFC  41 22  0 003        1178          LA    R2,3(R2)                 ,,
01C00  43 32  F C3F        1179  LESS3   IC    R3,ERTAB-1(R2)          PICK UP INVALID COMMAND
01C04  42 30  F C30        1180          STC   R3,CCWERR               STORE IN CCW
01C08  41 A0  F C30        1181          LA    R10,CCWERR              LOAD CCW ADDRESS
01C0C  45 B0  F 10E        1182          BAL   R11,ISIO                BR. TO ISSUE SIO
01C10  0800                1183          DC    X'0800'                 CONTROL SWITCHES
01C12  0170                1184          DC    X'0170'                 T E S T  N U M B E R
01C14  F180                1185          DC    X'F180'                 EXP COND. CODE AND SENSE
01C16  FC38                1186          DC    AL2(REJ-SECNO+REG)      EXP CSW ADDRESS
01C18  41 A0  F AF0        1187          LA    R10,PRCCW               LOAD PRINT CCW ADDRESS
01C1C  45 B0  F 10E        1188          BAL   R11,ISIO                BR. TO ISSUE SIO
01C20  3C00                1189          DC    X'3C00'                 CONTROL SWITCHES
01C22  0180                1190          DC    X'0180'                 T E S T  N U M B E R
01C24  F000                1191          DC    X'F000'                 EXP COND CODE AND SENSE
01C26  FAF8                1192          DC    AL2(PRCSW-SECNO+REG)    EXP CSW ADDRESS
01C28  46 20  F C00        1193          BCT   R2,LESS3                BR. UNTIL ALL INVALIDS CHECKED
01C2C  0A D6               1194          SVC   X'D6'                   ROUTINE EXIT
01C2E  00 00
01C30  0000185D00000001    1195  CCWERR  CCW   X'00',PRAR,X'00',1
01C38  00000000            1196  REJ     DC    XL4'0'
01C3C  02000000            1197          DC    X'02000000'
01C40                      1198          CNOP  0,4                     DEFINE BOUNDRY
```



```
01C40  07F3FBFFFEFDFCFA    1199  ERTAB   DC    X'07F3FBFFFEFDFCFA'
01C48  F9F7F6F5F2F1EFEE    1200          DC    X'F9F7F6F5F2F1EFEE'
01C50  EDECEAE9E7E6E4E2    1201          DC    X'EDECEAE9E7E6E4E2'
01C58  DFDEDCDAD7D6D2CF    1202          DC    X'DFDEDCDAD7D6D2CF'
01C60  CECCCAC7C6C4C2BF    1203          DC    X'CECCCAC7C6C4C2BF'
01C68  BEBCBAB7B6B2AFAE    1204          DC    X'BEBCBAB7B6B2AFAE'
01C70  ACAAA7A4A29F9E9C    1205          DC    X'ACAAA7A4A29F9E9C'
01C78  9A9796928F8E8C8A    1206          DC    X'9A9796928F8E8C8A'
01C80  878685848382817F    1207          DC    X'878685848382817F'
01C88  7E7D7C7C7A797776    1208          DC    X'7E7D7C7C7A797776'
01C90  757272716F6E6D6C    1209          DC    X'757272716F6E6D6C'
01C98  6B6A696766656463    1210          DC    X'6B6A696766656463'
01CA0  62615F5E5D5C5B5A    1211          DC    X'62615F5E5D5C5B5A'
01CA8  595756555352514F    1212          DC    X'595756555352514F'
01CB0  4E4D4C4B4A494746    1213          DC    X'4E4D4C4B4A494746'
01CB8  454443424 13F3E3D   1214          DC    X'45444342413F3E3D'
01CC0  3C3B3A3937363533    1215          DC    X'3C3B3A3937363533'
01CC8  32312F2E2D2C2B2A    1216          DC    X'32312F2E2D2C2B2A'
01CD0  2927262524232221    1217          DC    X'2927262524232221'
01CD8  1F1E1C1A1716120F    1218          DC    X'1F1E1C1A1716120F'
01CE0  0E0C0A0000000000    1219          DC    X'0E0C0A0000000000'
01CE8  000000000000        1220          DC    X'000000000000'
01CEE  1434547494B4D4F4    1221  VC2CS   DC    X'1434547494B4D4F4'
01CF6  EB7378              1222  VCUCS   DC    X'EB737B'
                           1223  ********************************************************************
                           1224  *      EQUATES                                                     *
                           1225  ********************************************************************
00000                      1226  NEVER   EQU   0
00007                      1227  NCCO    EQU   7
0000F                      1228  UNC     EQU   15
00008                      1229  NONE    EQU   8
00004                      1230  SOME    EQU   4
00001                      1231  ALL     EQU   1
00005                      1232  ANY     EQU   5
00008                      1233  CCO     EQU   8
00004                      1234  CC1     EQU   4
00002                      1235  CC2     EQU   2
00001                      1236  CC3     EQU   1
00008                      1237  EQ      EQU   8
00004                      1238  LO      EQU   4
00002                      1239  HI      EQU   2
00006                      1240  UNEQ    EQU   6
0000C                      1241  EQLO    EQU   12
0000A                      1242  EQHI    EQU   10
00080                      1243  LOGOUT  EQU   X'80'
00181                      1244  SYSMOD  EQU   X'181'
0F000                      1245  REG     EQU   X'F000'
0005A                      1246  WHAT    EQU   90
00000                      1247  R0      EQU   0
00001                      1248  R1      EQU   1
00002                      1249  R2      EQU   2
00003                      1250  R3      EQU   3
00004                      1251  R4      EQU   4
00005                      1252  R5      EQU   5
00006                      1253  R6      EQU   6
00007                      1254  R7      EQU   7
00008                      1255  R8      EQU   8
00009                      1256  R9      EQU   9
0000A                      1257  R10     EQU   10
0000B                      1258  R11     EQU   11
0000C                      1259  R12     EQU   12
0000D                      1260  R13     EQU   13
0000E                      1261  R14     EQU   14
0000F                      1262  R15     EQU   15
00198                      1263  WT      EQU   408
```

```
0005A                1264  WAHT   EQU   90
00040                1265  HCSW   EQU   64
00048                1266  HCAW   EQU   72
00009                1267  NMIXED EQU   9        NOT MIXED       0     3
00008                1268  Z      EQU   8        ZERO            0
0000D                1269  NCC2   EQU   13       NOT BUSY        0 1   3
00004                1270  NOTZRO EQU   4        NOT ZERO - AND -  1
0000C                1271  MIXNON EQU   12       MIXED OR NONE   0 1
0000B                1272  NCC1   EQU   11       CSW NOT STORED  0   2 3
                     1273  *
                     1274  *      GENERAL EQUATES
                     1275  *
00078                1276  HION   EQU   120      HARDWARE I/O NEW PSW LOCATION
001BC                1277  DMIO   EQU   444      DMIO TABLE
001A0                1278  DMSSW  EQU   416
                     1279        END
```


POST ASSEMBLY DATA

RELOCATION DICTIONARY

LOCATION	LENGTH
01015	3
0107C	4
01669	3
01670	3
01689	3
01690	4
017A1	3
017A8	4
01929	3
01931	3
01939	3
01940	4
01959	3
01961	3
01969	3
01970	4
019A9	3
01981	3
01988	4
019C1	3
019C9	3
019D0	4
01A19	3
01A21	3
01A28	4
01AF1	3
01AF8	4
01B44	4
01B51	3
01B59	3
01B61	3
01B68	4
01BC1	3
01C31	3

LABEL CROSS-REFERENCE BY STATEMENT NUMBERS

LABEL	LEN	VALUE	DEFN	REFERENCES
ALL	1	000001	1231	0501 0543 0566 0590 0598 0614 0617 0646 0673 0799 0861 1051 1170 1175
ANY	1	000005	1232	0797
ARG	4	001BEA	1174	1170
BIGC	8	001B50	1115	1096 1097 1106
BIGW	4	001B68	1118	1105 1113 1118
BLABRR	9	001ADB	1071	1056
BLOOP	4	0017C4	0860	0881
BRKUC	4	001940	0933	0916 0933
BUST	4	001B44	1113	1111
CAW	4	001048	0325	
CCWERR	8	001C30	1195	1180 1181
CC0	1	000008	1233	0523 0529
CC1	1	000004	1234	0530 0610
CC2	1	000002	1235	0531
CC3	1	000001	1236	
CHN3	8	001928	0930	0910 0911 0917
CKAR	1	001698	0846	0843 1039
CLUIN	16	001811	0883	0876
CRDCSW	4	001690	0844	0844 1036
CSW	8	001040	0324	
DCKRD	8	001688	0843	1031
DMIO	1	0001BC	1277	
DMSSW	1	0001A0	1278	
DRAR	1	00171C	0847	0848
END04	2	001A8A	1049	1045
END05	2	001B40	1112	1100
END06	2	001BB0	1152	
EQ	1	000008	1237	0545 0641
EQHI	1	00000A	1242	
EQLO	1	00000C	1241	
ERED	4	001A8C	1050	1041
ERTAB	8	001C40	1199	1171 1176 1179
EXCE	4	001970	0942	0928
EXNPSW	5	001058	0327	
EXOPSW	8	001018	0319	
FLAG1	1	00100E	0315	
FLAG2	1	00100F	0316	
FOLD	4	001BB2	1153	1144 1151
GO01	4	0018EC	0910	
GO02	4	001980	0959	
GO03	4	0019E0	0993	
GO04	4	001A38	1025	
GO05	4	001B10	1096	
GO06	4	001878	1132	
GO07	4	0018D0	1168	
GREG	4	00118C	0522	0524
HANGUP	6	0017DE	0866	0861
HCAW	1	000048	1266	0495 0606 0795
HCSW	1	000040	1265	0496 0496 0537 0567 0570 0585 0619
HI	1	000002	1239	
HION	1	000078	1276	
HUNG	16	00182C	0886	0873
IACSNS	11	0015F0	0827	0622 0762 0763 0767 0837
IACT	3	0015DF	0824	0581 0736 0746
IACTCC	10	00158A	0810	0527 0532 0534 0536 0540 0544 0546 0624 0722
IBLAH	16	0015C5	0822	0579 0581 0693 0706 0707 0711 0723 0727 0736 0741 0746
IBLE	4	001200	0550	0545
IBSN	6	001316	0624	0596 0600 0602 0612
ICAW	12	0015B3	0819	0684 0687 0688 0692
ICCOUT	6	00142C	0713	0683 0699

ICCSW1	6	001338	0632	0631
ICCSW2	6	00135A	0640	0639
ICCW	3	0015C2	0821	0693
ICHNG1	6	00146A	0732	0729
ICHNG2	6	00149A	0742	0731
ICM	2	00100A	0312	
ICNT	1	001427	0710	0580 0694 0724
ICOUT	2	001410	0702	0582 0697 0733 0738 0743 0748
ICSW	3	0015BF	0820	0579 0723
ICSW1	8	001652	0835	0537 0548 0567 0597 0632 0632 0737
ICSW2	8	00165A	0836	0585 0601 0640 0640 0747
ICWOUT	6	0013F6	0696	0701
IDID	4	0014A4	0744	0740
IDIDI	4	001474	0734	0726
IDOSNS	4	0012C0	0603	0594 0598 0877
IDUNCK	4	001368	0643	0615 0618 0641
IEXP	3	0015E2	0825	0727 0741
IEXPCC	10	001580	0809	0713 0718
IEXSNS	11	0015E5	0826	0749 0754 0755 0759
IEYEOH	6	00111E	0492	0482 0487
IFLAG1	1	001398	0657	0643 0649
IFLAG2	1	00152C	0788	0644 0650
IHANG	4	00116C	0513	0518
IHI	4	001184	0520	0512 0516
IHIO	4	0010E6	0478	
ILEAVE	4	001548	0800	0648
ILINK	16	0015A3	0815	0662 0665 0666 0670 0794
ILOKE	4	001300	0619	0610
ILOOP	4	00115C	0509	0481 0484 0489
IMORST	4	00148C	0739	0735
INDER	4	001364	0642	0608 0614 0617 0623 0625 0629 0633 0637
INIT	2	0017B0	0854	0909 0958 0992 1024 1095 1131 1167
INOEX1	4	0012E8	0613	0627
INOEX2	4	0012F4	0616	0635
INOW	4	0011DC	0541	0501 0533 0535 0539
INPSW	5	001010	0317	
INT3	4	001280	0587	0569
IOADDR	15	001594	0811	0480 0486 0491 0677 0681
IOADR	3	001670	0838	0676
IOCSW	6	001442	0723	0673
IOLOG	16	0015FB	0828	0775 0776 0777 0778 0782
IONE	4	0011C6	0536	0530
IONPSW	4	001078	0332	
IOOPSW	8	001038	0323	0562 0573
IOPOUT	2	00152A	0787	0769 0784 1047
IOPT1	16	001620	0831	0479 0485 0490 0790
IOUTIT	6	001388	0651	0646
IPAS	6	0014BC	0749	0745
IPASS	4	0014E6	0768	0584 0751
IRETRN	4	001224	0562	0333
ISAVE	8	001560	0807	0494 0804
ISEN	4	001298	0593	0543 0547 0549 0558 0588 0590
ISENSE	8	001668	0837	0605
ISIO	4	00110E	0488	0912 0918 0924 0960 0966 0995 1001 1007 1026 1032 1101 1107 1133 1140 1147 1182 1188
ISLAVE	8	001680	0842	0493 0714 0869
ISSUE	4	0011A6	0528	0478 0483 0488 0682 0838
ISV2	6	001276	0585	0566
ISW	2	0010E4	0473	0525 0525 0526 0538 0541 0550 0553 0557 0564 0565 0568 0583 0586 0589 0591 0595 0599 0613 0616 0621 0628 0636 0642 0645 0734 0744 0744 0750 0783 0785 0798 0860 0867 0868 0878 0879
ITIC	4	0012E0	0611	0620
ITIO	4	0010FA	0483	
ITIOLP	4	0012D8	0609	0611
ITRY1	4	001154	0507	0510 0514 0797

```
ITRY2        4 001164 0511   0508
ITSTNO       9 001617 0830   0492  0651  0654  0655  0659
ITWO         4 0011BE 0534   0531
IUID         6 001246 0570   0563
IUNEX       11 001675 0841   0574  0578
IUP          4 001554 0803   0801
IWAIT        4 001204 0551   0592  0786
IZERO        4 0011D8 0540   0529
JOHN         6 001198 0525   0503  0523
LDUCS        8 0018C0 1155   1138  1139  1145  1146
LESS3        4 001C00 1179   1175  1193
LO           1 000004 1238
LOGOUT       1 000080 1243   0499  0499  0770
MCNPSW       8 001070 0331
MCOPSW       8 001030 0322
MITHED      16 001ABC 1069   1060
MIXNON       1 00000C 1271
MOD44        4 001144 0500   0498
MOD50        4 001858 0891   0859
MSK1         1 001673 0839   0554
MSK2         1 001674 0840   0556
NCC0         1 000007 1227   0514  0608  0620
NCC1         1 00000B 1272
NCC2         1 00000D 1269
NEVER        1 000000 1226
NIOU         1 00100D 0314
NITWIT       4 0017BC 0858   0856
NMIXED       1 000009 1267
NOCHN        4 001948 0935   0922
NOHDR        4 001AA4 1061   1051
NONE         1 000008 1229   0503  0508  0512  0516  0549  0588  0594  0596  0600  0602  0627  0629  0635
                             0637  0648  0699  0726  0735  0740  0745  0751  0784  0801  0856  1041  1045
                             1045  1100
NOPEB        8 001A18 1013   0993  0994  1000  1006
NOTZRO       1 000004 1270
PGNPSW       8 001068 0330
PGOPSW       8 001028 0321
POS          4 001AE5 1073   1062  1063  1067
PRAR         1 00185D 0893   0862  0864  0864  0930  0931  0932  0939  0940  0941  0972  0973  0976  0977
                             1013  1014  1074  1115  1116  1117  1155  1195
PRCCW        8 001AF0 1074   1025  1046  1187
PRCSW        4 001AF8 1075   1030  1075  1192
RDCCW        8 0017A0 0848   1132
RDCDA        8 0019A8 0972   0959
REG          1 00F000 1245   0578  0659  0670  0681  0692  0711  0718  0722  0759  0767  0782  0790  0794
                             0873  0876  0916  0922  0928  0964  0970  0999  1005  1011  1030  1036  1056
                             1056  1060  1067  1105  1111  1137  1144  1151  1186  1192
REJ          4 001C38 1196   1186
ROUT01       1 0018E4 0907   0318
ROUT02       1 001978 0956   0908
ROUT03       1 0019D8 0990   0957
ROUT04       1 001A30 1022   0991
ROUT05       1 001B08 1093   1023
ROUT06       1 001B70 1129   1094
ROUT07       1 001BC8 1165   1130
RTSAV        1 001810 0882   0863  0866
R0           1 000000 1247
R1           1 000001 1248   0520  0521  0524  1098
R10          1 00000A 1257   0493  0495  0684  0695  0696  0698  0700  0700  0714  0795  0869  0910  0923
                             0959  0965  0993  1025  1031  1046  1096  1132  1139  1146  1181  1187
R11          1 00000B 1258   0492  0493  0500  0542  0587  0593  0622  0624  0626  0630  0634  0651  0661
                             0662  0671  0671  0672  0713  0725  0728  0739  0749  0800  0802  0802  0803
                             0803  0803  0805  0869  0912  0918  0924  0960  0966  0995  1001  1007  1026
                             1026  1032  1047  1101  1107  1133  1140  1147  1182  1188
R12          1 00000C 1259   0509  0513  0517  0522  0528  0562  0607  0609  0858  0859
```



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R13          1 00000D 1260   0495  0496  0496  0537  0606  0619  0795  0854  0854  0857
R14          1 00000E 1261   0497  0551  0603  0768  0855
R15          1 00000F 1262   0567  0570  0585  0857
R2           1 000002 1249   1168  1171  1173  1173  1176  1178  1178  1179  1193
R3           1 000003 1250   1171  1172  1176  1177  1179  1180
R4           1 000004 1251   0865  0909  0958  0992  1024  1095  1131  1167
R5           1 000005 1252   0799  0877
R6           1 000006 1253
R7           1 000007 1254   1038  1043  1061
R8           1 000008 1255   0494  0605  0606  0630  0631  0638  0638  0639  0660  0661  0728  0729  0730
                             0730  0731  0804  1039  1040  1042
R9           1 000009 1256   0494  0551  0552  0555  0582  0603  0604  0611  0697  0712  0733  0738  0743
                             0748  0804
SAVIT       12 001848 0889   1098
SAV10        4 001854 0890   0695
SDMF         1 00100C 0313
SECNO        4 001000 0309   0573  0574  0578  0654  0655  0659  0665  0666  0670  0676  0677  0681  0687
                             0688  0692  0704  0705  0711  0718  0722  0754  0755  0759  0762  0763  0767
                             0767  0773  0774  0782  0790  0794  0863  0866  0873  0876  0880  0908  0916
                             0916  0922  0928  0957  0964  0970  0991  0999  1005  1011  1023  1030  1036
                             1036  1056  1060  1067  1094  1105  1111  1130  1137  1144  1151  1186  1192
                             1192
SKORCH       1 001AE4 1072   1037  1044  1050  1052
SNSW         4 001004 0310   0502  0507  0511  0515  0647  0796
SOME         1 000004 1230
SRET         3 00105D 0328
SVNPSW       8 001060 0329
SVOPSW       8 001020 0320
SYSMOD       1 000181 1244   0497  0768
TECT         4 001A64 1040   1043
TIC          4 001A6C 1042   1068
TRU          8 0019C0 0976   0965
UNC          1 00000F 1228   0482  0487  0510  0518  0533  0535  0539  0558  0569  0584  0592  0612  0615
                             0712  0786  0805  0865  0881  1068
UNEQ         1 000006 1240   0498  0547  0563  0623  0625  0633  0683  0769
UNEX         8 001958 0939   0923  0942
UNIT1        1 0010E0 0335   0858  1099  1169  1174
U1ADDR       2 0010E2 0337
U1OP         1 0010E1 0336
VCUCS        3 001CF6 1222   1177
VC2CS        8 001CEE 1221   1172
WAHT         1 00005A 1264
WHAT         1 00005A 1246
WHOPS        4 0017A8 0849   0849  1137
WIERD        4 001988 0974   0964  0974
WORD         4 001900 0978   0970  0978
WORK         1 001568 0808   0570  0696  0704  0705  0706  0707  0732  0732  0737  0742  0742  0747  0770
                             0773  0774  0775  0776  0777  0778  1061  1062
WT           1 000198 1263   0520  0551  0603
XF8315       1 001000 0003
Z            1 000008 1268
ZOT          4 001A28 1015   0999  1005  1011  1015
```

NO STATEMENTS FLAGGED IN THIS ASSEMBLY

OBJECT DECK LIST. PERIODS CORRESPOND TO BLANK COLUMNS.

```
COLS.  1 THROUGH 20    COLS.  21 THROUGH 40    COLS.  41 THROUGH 60    COLS.  61 THROUGH 80

BESD......AA..AAXF83   15..AAAA.AD9........    ................840     107.131812..83150001
9         YQ  Y9           YYQY Y8
          99  9            9999 99

BTXT.AAA..A8..AA81&A   AAAAAAAAA&AADAAAAQU     AAAAAAAAAAAAAAAAAAAA    AAAAAAAAAAAA83150002
9    YQY  Y9  Y9 9 Y   YYYYYYYYY9-Y99YYYY9     YYYYYYYYYYYYYYYYYYYY    YYYYYYYYYYYY
     999  9   9    9   99999999  9  9999       99999999999999999999    999999999999

BTXT.AA8..A8..AAAAAA   AAAAAAAAAAAAAAAAAAAA    AAAAAAAAADAAAAAAAAAA    AAAAAAAAAAAA83150003
9    YQ9  Y9  Y9YYYY   YYYYYYYYYYYYYYYYYYYY    YYYYYYYYY9YYYYYYYYYY    YYYYYYYYYYYY
     99   9   9 9999   99999999999999999999    999999999 999999999     999999999999

BTXT.AA&..AA..AAAAAA   AAAAADAAAAKU........    ....................    ............83150004
9    YQ-  YQ  Y9YYYY   YYYY99YYYY99
     990  99  9 9999   9999  9999

BTXT.AAS..A8..AACAAA   AABF10BH65BH5JBF1MG0    10BE10BE1MBT65BT5JG0    10BD10BD1MBS83150005
9    YQ8  Y9  Y90YYY   YY-Q 0-  9-  Y-Q 8Z      8-Q 0-Q 8-  9-  YZ      8-Q 0-Q 8-
     99   9   9  9 9   99                       9                       9

BTXT.AJQ..A8..AA65BS   5JKA6MABAL6AA15-&NAH    PG-.-.EAJAG-1DPCAAAA    AAAAGA1DA&0D83150006
9    Y99  Y9  Y9 9-     Y 9 8Q9QY YQ0   YYZ     90 0 -QZ0Z  Z 8YYYY    -YQYZQ Q-- 9
     9    9   9             90            9             Z        99 9    09 9 9

BTXT.AJ&..A8..AAGA1H   AA0DGA1MDA&AG01DA.0D    GA1DEA&AG&1DA.0DGA1D    DA&AG01UH0AH83150007
9    Y9   Y9  Y9ZY -   -Y 9ZY ZQY-YZ  R-  9    ZY 0QY-YZ- R-  9ZY 0    QY-YZ  8R89-
     9    9   9                  9 9                 9 9 0              9 9     9

BTXT.AJH..A8..AAHAAC   EA&AGA1HFA1DPA0U0UFA    0UBX5GDA&AGA1QG.1FGJ    1FB35GG01DB283150008
9    Y90  Y9  Y90QY9   QY-YZY -ZQ Y 9    -Y     -  YQY-YZY  Z   ZY      Q-  YZ  Q-
     9    9   9  99     9 9    9                     9 9          9    0        9

BTXT.AJ&..A8..AA5GG0   1DB15GKG6B-.F.0UG01D    B05GD70UA.AAGA2HE05G    GA2AE15GG-2H83150009
9    Y9-  Y9  Y9 YZ     Q-  Y 9 R0 -    Z  Q   -  Y-8  - QYZQ --  Y    ZY Y-  YZ  -
     9    9   9         9                  9               09 9           9

BTXT.AJ8..A8..AAAH6F   GA2HFA0UHFAHHAACFA0U    AA6CFA2MAA6DD70UG02H    A&02G-2FD70U83150010
9    Y9   Y9  Y9-9 R   ZY --Q  RQ9-0QY9-Y      YY RZQ 9YY R-8  Z  -    8- 8Z  Z-8
     9    9   9              9          9       9 0     9 0               9

BTXT.AKA..A8..AAA.0U   GA2FKG6B0.F.0UG02AKG    5Q0.BEACA1F2B-MC6EKB    5F5GBK4XKB5D83150011
9    Y9Q  Y9  Y9-      ZQ R 9 R  -   Z  Y 9     Z  8QY9Y89880Z8 R 9       Q-8 9 9 Q
     9 Z  9   9         9 0                          999 99  9  9 0       0 9     9

BTXT.AKQ..A8..AA5GEA   4AFB0UG04WKG6K0.FJ0U    AAAAGA2HAH0UGA2HFH0U    G02DABAAGA2&83150012
9    Y9Z  Y9  Y9 QZQ    Q-9  Z      9 8  -Y    -QQYZY --9  ZQ --9      Z  9-9QYZY -
     9    9   9  9      9                  9    909          9                09

BTXT.AKJ..A8..AAA.0U   GA30AB6FGA2&AJ0UGA30    AB60GA30HFAHHAADAA6Q    &EAHDA&AG&3M83150013
9    Y9Y  Y9  Y9-      ZY 9-9 RZQ --Y  ZY 9    -9 8ZY 9RQ9-0QY9ZY Z     YYZQY-YZ- Z
     9    9   9                   9   9                     9            9  9 9 0

BTXT.AKQ..A8..AAEA&A   G.3AFA2QG030A.0UGA3M    G03QAJ0UGA3MG03QED-D    G&2SFD0UNA5583150014
9    Y9   Y9  Y9QY-Y   Z  YZQ  Z  9-    ZQ Z   Z  Z-Y  ZQ ZZ  Z-80Z    Z- 8-9    Y
     9    9   9  9 9       9              9          9   9        9    0        9
```



```
BTXT.ALA..A8..AAAEG-   3MNA5GADG-3MAHAAGA2Y    A.0UGA3MHCAF.A34NG6B    6BG-3MADAAGA83150015
9    Y9Q  Y9  Y9Q9Z     Z Y YQ9Z  Z-9QYZY      -    ZY ZZYY9 Y 8 9 R    RZ  Z-9QYZY
     9 9  9   9 0         9  0       09                  9    9              09

BTXT.ALH..A8..AA24AJ   0UGA3MAHAH.A30NG6K6K    GA3QFA0UBM3HB&5UAA0U    GA3HAA0DGA5H83150016
9    Y9Z  Y9  Y9  -Y     ZY ZZ0Y9 Y 8 9 8 8    ZY Z-9  -Z --- 8-9      ZQ 0-9 9ZY Z
     9    9   9    9           9                              9        9

BTXT.ALA..A8..AABU3H   BA5UKA6MABBEABFMFMB-    MA6PAAADLH&A5QBEACER    EQB-SA5LACAD83150017
9    Y9Y  Y9  Y9-9 -   -Y 8 9 8Q98QY9989880    Z8 9ZYY98- Q 08QY990    90808Q 0ZQY9
     9    9   9           9   90 999  9 99      9    9 90 0  999         9  9  09

BTXT.ALH..A8..AAAAAA   GA4BBEACF&EIB-SG5DED    10G-4U&J5HBEACEIEHB-    SC5CKB5F5BB083150018
9    Y9-  Y9  Y9-YQY   ZQ Z8QY99-9-8088 --Q     0Z  8 Y -8QY99-9-80    88 - 9    -9
     9 0  9   9   09    9  999  0 9  9               9  0999  0 09      9 0

BTXT.AL0..A8..AA4X&J   8DKG5QJAEA4AA&JDGA4U    AKAHG036BEAHEQEQKG5B    5QKG5L5&B-SK83150019
9    Y9   Y9  Y9 9 Y    R 9 ZYYZQ Q--Y9ZY 8    ZYY9Z    8QY99Z9Z 9 Y    Z 9   -8088
     9    9   9                9    9     9      9      999         9         09  9

BTXT.AMY..A8..AA5EG9   KA5EADHJ6AB-SB5AB-SB    5BKB5F5GBK4XAHAAGA4D    KB5D5SHCAF.A83150020
9    Y99  Y9  Y9  9     Y 0Q9RY  Y8088 Y8088    Y 9   Q-8 9-9QYZY R     9 Q  ZYY9 Y
     9    9   9         9  0     9  9  9  9          0 9    09    0       9    9

BTXT.AM-..A8..AA4WAH   AH.A4FKG5Q5QEA4AA.0U    GA4DKB5D5GKG5Q6BEA4A    ADAAGA4MKB5D83150021
9    Y9   Y9  Y9 8Z0   Y9 Y Q 9 Z ZZQ Q-       ZY Y 9 Q Q 9 Z RZQ Q    -9QYZY 0 9 Q
     9    9   9        9                9             9 9           9     09        9

BTXT.AMH..A8..AA5SKG   5Q5QEA4AAJ0UGA4DKB5D    5GKG5Q6KEA4AKA5KAEAD    0UGA4WBEAAEK83150022
9    Y9-  Y9  Y9   9    Z ZZQ Q-Y   ZY Q 9 Q    Q 9 Z 8ZQ Q Y YQ9-9      ZY  8QY99Y
     9    9   9                9 9     0   9    9          9 9 90            999  9

BTXT.AM-..A8..AAEKB-   SC5VBEAAE5E5B-SC50EA    JAG-5SKC5QAABEADEQEQ    KA6A5QKE6C5&83150023
9    Y90  Y9  Y99Y80   88   8QY99 9 8088  -Q   Z0Z  8 8 ZYY8QY89Z9Z     9 Y Z 9 9 -
     9    9   9  99     9  999     9  9    Z         9 9  9 9999          9

BTXT.ANH..A8..AAKE6B   5BKE6J52B-SM5CAB0UGA    5SDE0UG02DB-&26JB-JA    5L&NAHA&0DG&83150024
9    Y99  Y9  Y9 9 8    R 9 9 88088 Q-9  ZY     8-Q  Z   980-9 Y80Y9    0 YYZ-- 9Z
     9    9   9    9    0        9  9 Z         9 Z      9      99         9

BTXT.AN...AY..AA1DAA   0VGNAHAAGA5DACABACAF    HI5-GCGAAAAAAAAA....    ............83150025
9    Y9   Y9  Y9 R-9     99-9QYZY RZQY9ZQY9    -0  9Q9YYYYYYYYY
     9    9   9               09      09  09          Z 999999999

BTXT.ANA..AU..AA.CC.   .X.EXP.CC..X.ACT.ADR    .XXXXXX.XIOA........    ............83150026
9    Y9Y  Y9  Y9                                          Y
     9    9   9                                           9

BTXT.ANL..AJ..AA.ADR   .XXXXXX.LINKA.......    ....................    ............83150027
9    Y90  Y9  Y9                     Y
     9    9   9                      9

BTXT.ANC..A8..AA.CAW   .XXXXXX.CSWCCW.CSW.X    XXXXXXX.XXXXXXXX.EXP    ACTEXP.SNS.X83150028
9    Y9-  Y9  Y9
     9 0  9   9

BTXT.ANL..A8..AAX.EX   P.SNS.XX.ACT.LOG.XX.    XXXXXX.XXXXXX.XXXXXX    .TST.XXXX.SS83150029
9    Y9Y  Y9  Y9
     9 9  9   9

BTXT.AOT..A8..AA.O.O   N.FOR.LOOP.ON.XIOT.S    S.1.ON.FOR.TIO.SIO.L    OOPAAAAAAAAA83150030
9    Y99  Y9  Y9                          8                               YYYYYYYYY
     9    9   9                                                           999999999
```

1403 PRINTER FUNCTION 2

```
BTXT.AOL..A8..AAAAAA    AAAAAAAAADAN5AAAAAJD    FA.UIO.XXXXXXAAAAAAA    AFAOHAAADAAO83150031
9    Y98  Y9  Y9YYYY    YYYYYYYYY9Y9 YYY9Y90    Q9           YYYYYYY    Y9Y9-YYYOYY9
     9    9   9 9999    999999999 9  999 9    Z            9999999    9 9  999 99

BTXT.AOC..AE..AAADAA    A.....................    ......................    .............83150032
9    Y9-  Y9  Y9Q8YY    Y
     9    9   9  999    9

BTXT.APJ..A8..AABAPM    AAADAAPQDAAALEA.JFGA    7DQGH&OSD&8HAAOUGA7F    B.8NKA8AOCKB83150033
9    Y9Y  Y9  Y99Y98    YYYOYY908YYY8Q- Z-ZY    Q9QR- 8R- R-Y  ZQ Q    -  8 Y Q 9 O
     9    9   9  9 9    999 99  999999          0 9             9 9        9 9

BTXT.APQ..A8..AA8O8N    G4KAOC8ADFOVFAOVHL6A    B-MK8UB-JJ8JE&2&BAOU    D7OUBAOCGO7D83150034
9    Y9   Y9  Y9 8 8    9  Y 9 Q-Q  -9  -Y Y    8OZ8 88OY8 9Z  --Y      -8  -9 9Z
     9    9   9          9   9 Z               9 9 99  9       9

BTXT.AQA..A8..AAA.SE    E.DESCRIPTION-COMMEN    TSGA.PREVIOUS.HANG.U    P.DETECTEDGA83150035
9    Y9Q  Y9  Y9Y                            9Y                      9Y
     9 9  9   9 9                            9                       9

BTXT.AQH..AN..AAAAAA    AAAAAAAAAAAAAA7G....    ......................    .............83150036
9    Y9Z  Y9  Y9YYYY    YYYYYYYYYYYYYY8Q
     9    9   9 9999    99999999999999Z

BTXT.AQJ..A8..AAAGAA    AAHE.7AAJ9YB.9UEA1F8    AAAOA9.B&9UEA1F6AAJ1    A9HAJ9HEA1F283150037
9    Y9Z  Y9  Y9Y9Y9    Y8RZ  QZY 9-  8ZQ 89    YYQ 9  -- 8ZQ 88YYY    Y ZZY RZQ 88
     9    9   9 9 9    990   O       9 O 9      999       9 O 99999      9       O 99

BTXT.AJJ..A8..AAAAAO    A9&BOAAAAAACAQN.AAAC    AQN.AAACAQNAAAAAAJ8F    AAAAAAAHAAAA83150038
9    Y88  Y9  Y9YYQ    Y -8 YYYYYYYY98 YY98    Y98 YY98Y98YYY9YY899    YY9YYYY9YYYY
     999  9   9 99Z    9 09 999999 9   99 9    9   99 99  999 999      99 9999 9999

BTXT.AJA..A8..AAAAAD    AAALAQN.AAACAQN.AAAC    AQNAAAAAAJQEAAABAAQE    .7AAJ9QEA1F283150039
9    Y8R  Y9  Y9YYY9    YYYOY98 YY98Y98 YY98    Y98YYY9YY8Z9YY99Y8 Z      QZY OZQ 88
     99   9   9 999     999 9   99 99   99 9    9  999 999  99  99         O     O 99

BTXT.AJI..A8..AAAA.O    A9HAJ9&EA1F2AA&OA9-B    OAAAAAABAQNAAADAAQNA    AAAAAJHD.AAB83150040
9    Y80  Y9  Y9YY     Y -ZY -ZQ 88YY  Y O8     YYYYYY9Y98YYYOYY98Y     YY9YY8-8 Y99
     99   9   9 99     9 O     O 9999  9  9     999999 9   99 99  9     99 99909 9

BTXT.AJA..A8..AAAQNA    AACAAQNAAAAAAJ-DAAAC    ABAE.7AAJBQBLBJEA1F8    AA-OABYBCBJE83150041
9    Y8   Y9  Y9Y98Y    YYOYY98YYY9YY808YYY9    Y8QZ  QZYQ9-YQYZQ 89    YY  YQ9-RQYZ
     99   9   9 9      99 99  999 999 9999      99Z   O  Z  9Z9 O 9      99   Z  OZ9

BTXT.AJ9..A8..AAA1F8    AA&OABYB3BJEA1F8AAAO    ABYBOAACAQN.AAALAQNA    AAAAAKYBAAAD83150042
9    Y8   Y9  Y9Q 89    YY- YQ9-8QYZQ 89YYY    YQ98 YY9Y98 YY9YY98Y    YY9YY899YY99
     99   9   9 O 9    990  Z   Z9 O 9 99       Z 9 99 9   99 99  9    99 999  99

BTXT.AK1..A8..AAACHE    .7AAJBOEA1F6AAAOAB8A    J6HEA1F2AAAOA6ABABUA    &ADAA7LADAAG83150043
9    Y89  Y9  Y9Y89Z      QZYQ ZQ 88YYQ YQ Z      Y OZQ 88Y9Y Y Q-YQ Z    -YOZY 8-9YYZ
     99   9   9 99        O  Z  O 9999  9Z         0 999 9 9   9Z       09    9   9

BTXT.AK/..A8..AAABDF    AB&F&BMAABUGABBAJBOE    A5SAAAAAABOAABUGABMF    ABUB-MABCB-M83150044
9    Y88  Y9  Y9YQYZ    YQ-Z-QZ-9Q ZYQYZYQ Z    Q 8YYYYYY8 -9Q ZQQO-    9Q 8OZ8QQ8OZ
     99   9   9  Z      ZO OZ   Z  Z   Z       0 99999999   Z  9Z        Z 9  9Z99

BTXT.AKJ..A8..AAPBDF    &5Q3/BW5WFOBYB-JDBVG    OBU.PLC.NOT.SET.PRIN    TING.BLANKS.83150045
9    Y80  Y9  Y98QQ8    - Z 9Q  8- Q 8OY9Q Z      Q8
     99   9   9 9ZO    O    Z      Z 9   Z        Z

BTXT.AKR..A8..AAIN.T    5T.O110A.XXXAAAAAAAAA    AQNAAADAAK8HAAAAAAAD    AAAEAC&E.7AA83150046
9    Y8   Y9  Y9                Y    YYYYYYYY9    Y98YYYOYY8 9YYYYYYY9    YYY9Y8-Z  QZ
     99   9   9                 9    99999999     9  999 999  9999999    999 990   0
```


1403 PRINTER FUNCTION 2

```
BTXT.ALJ..A8..AAJC&B    CCHHA8DAAOJGAC.EA1F2    AAJOACQBBCHEA1F8AAAO    ACDBOAAAALQB83150047
9    Y89  Y9  Y9YQ -    RQRRQ 8-Q ZZYQ ZQ 88    Y9Y YQZ-9QRZQ 89Y9Q     YQZ8 YYYY8Z9
     99   9   9  Z     OZ  9   9     Z  O 99    9 9 9Z   Z  O 9 9 Z      Z 9 99999

BTXT.ALA..A8..AAAAAA    AAALAQN.AAACAQN-AAA3    AQNAAAAAAALQDAAAFACHE    .7AAJ7JEA1F883150048
9    Y88  Y9  Y9YY9Y    YYYYY98 YY9RY98 YY98    Y98YYY9YY8Z8YY99Y8 Z      QZY YZQ 89
     99   9   9 99 9    99999   99 09   99      9  999 999 999  99         O     O 9

BTXT.ALA..A8..AAAA.O    A7QB3C&AJC&EA1F8AA&1    ACBBCC&AJC&EA1F8AA-1    ACBBOAAAABAA83150049
9    Y8O  Y9  Y9Y9      Y O- Q-ZYQ-ZQ 89Y9      YQ--QQ-ZYQ-ZQ 89Y9       YQ-8 YYYY9YY
     99   9   9 9      9    Z   Z  O 9 9        ZO ZZ   Z  O 9 9          Z09 9999 99

BTXT.ALI..A8..AAAAAA    AAA3AQNAAAOGAGGE.7AA    JALAAOJGACKA2D.KGAAD    OASAHAAOJGAD83150050
9    Y8-  Y9  Y9YYYY    YYY Y98YYY 9YQQZ  QZ    YYO-9 ZZQQYZ9Q  9QYQ     YZ9Y9-Q ZZCQ
     990  9   9 9999    999 9  999  9ZZ   O     99       9Z9 Z   Z9Z      9 9 9   9Z

BTXT.AL1..A8..AAAA2D    .KBAAD6ASACC2D7BADAA    JDAEA1FHAA&1AD8AJBOE    A1F4AAAOAB8F83150051
9    Y8   Y9  Y9YZ9Q      9QYQ Z9Y9Z9Q8ZQQQZ      YQQZQ 89Y9- YQ9ZYQ Z    Q 88Y9Y YQ Z
     99   9   9 9 Z.       Z9Z   9   Z9 ZZZ       ZZ O 9 9 O  Z   Z       O 999   9Z

BTXT.AM/..A8..AAJDAB    OAAAAQNAAAAAAAABAAAG    3CGFEDB976521PONMKZX    WUSGFDBPOKGF83150052
9    Y88  Y9  Y9YQY8    YYYY98YYY9YYYY9YYY9      QQQQQQ      YYYYY       QQQQ   YY
     999  9   9 9Z99    9999  999 9999 999       ZZZZZZ      99999       9999   99

BTXT.AM/..A8..AADBGF    DBGFDBGFBPOMKPMKGFDB    GFBGFDBGFEDCBA765442    1GFEBBAXWVUT83150053
9    Y8   Y9  Y9YY       QQQQ---YYYYOOOQQQQ      ---YYYYOOOOOOO888888    8RRRRRR88888
     99   9   9 99       OOOOOOO                                          OOOOOO

BTXT.AMI..A8..AA&/PO    NMLK/PONMLKJGFECBAGF    EDCBAGFEDCBA76543217    65321XWVUTS/83150054
9    Y8-  Y9  Y9-8ZZ    ZZZZ 8888888RRRRRR88    88888ZZZZZZZ88888889    999998888888
     99   9   9                                              9999999         9999999

BTXT.AMJ..AY..AAXWVU    TS/POMKPOKGFDBAAAAAA    AAAAAM4DDDDM4LC3....    .............83150055
9    Y8   Y9  Y99999    9998888999888 8YYYYYY    YYYYY99RR--   YR8
     99   9   9          9999   9999999999      99999   0 0  90

BRLD......A4....AAAA    AAANEAA4AAO/AAO&AAOI    EAOAAAPJEAPQAAJ/AAJ1    AAJ1DAJ.....83150056
9            Y9    Y9Y9    8YQ98YQ88Y988Y9-8Y9O    8Y9Q8Y9O8Y9O8Y888Y89    8Y888Y8
             9   9 9 9    999 999 99  99 O99      99  99  99  9999999     9999999

BRLD......A4....AAAA    AAJJAAJ/AAJ/EAJ&AAJR    AAJAEAJHAAJAAAJIEAJ-    AAKJHAK/....83150057
9            Y9    Y9Y9    8Y888Y8 8Y888Y8-8Y80    8Y8-8Y8-8Y8 8Y8 8Y80    8Y889Y89
             9   9 9 9    999 999 999 9990999     99909990999 999 999     9999 99

BRLD......AU....AAAA    EAKYAAK1EAK8EALDAALA    AALJAAL/EALQAALAHAM1    .............83150058
9            Y8    Y9Y9    8Y898Y8 8Y8 8Y8Z8Y8R    8Y888Y8 8Y8Z8Y8 9Y89
             99    9 9     999 999 999 999 999    999 999 999 999  99

BEND.....................    ......................    ......................    .............83150059
9

BLDT.....................    ......................    ......................    .............83150060
9
```

---LAST PAGE---

PROGRAM LENGTH = 4079 (DECIMAL)

```
                  PRINT ON,GEN,DATA
01000      XF8325 START 4096
01000             USING *,15
           *
           *
           *******************************************************************
           * MODIFICATIONS
           * REVISION LEVEL 5.  THIS REVISION DIFFERS FROM VERSION 4 AS FOLLOWS---
           *      1.  THE PROGRAM HAS BEEN MODIFIED TO TEST THAT THE HEX CHARACTERS
           *          80 AND CO ARE CONSIDERED VALID UNPRINTABLE CHARACTERS WHEN
           *          THE UCS PRINTER IS IN FOLDING MODE.
           *      2.  INCLUDES CHANGES TO ENABLE PROGRAM TO RUN WITH DM-44.
           * E.C. PREREQUISITES
           *     MACHINE . . . 2821 MUST BE AT E.C. 125673
           *     PROGRAM . . . NONE
           * REVISION LEVEL 4.  THIS REVISION DIFFERS FROM VERSION 3 AS FOLLOWS...
           *      1.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE -TEST NUMBERS-
           *      2.  TEST THE ABILITY TO SET AND SUPPRESS INCORRECT LENGTH RECORD
           *          ON A UCS BUFFER LOAD COMMAND.
           *      3.  TEST THE ABILITY TO LOAD THE UCS BUFFER WITH BLANKS (40).
           *      4.  TEST THE ABILITY TO LOAD THE UCS BUFFER WITH A SHORT COUNT
           *          AND NOT AFFECT THE REST OF THE BUFFER.
           *      5.  TEST THE ABILITY TO -FOLD- CHARACTERS FROM THE FIRST QUADRANT
           *          TO THE FOURTH QUADRANT.
           *      6.  INCLUDE TESTING PREVIOUSLY HANDLED BY PROGRAM ID F833 WHICH
           *          IS NOW OBSOLETE.
           * E.C. PREREQUISITES
           *     MACHINE . . . 2821 MUST BE AT E.C. 125655
           *     PROGRAM . . . NONE
           * USE DESCRIPTION F830* AT EC 125655, DATED NOV 15, 1966 OR LATER.
           *******************************************************************
           * REVISION LEVEL 3.  THIS REVISION DIFFERS FROM VERSION 2 AS FOLLOWS...
           *      1.  THE PROGRAM HAS BEEN MODIFIED TO RESET THE BLOCK DATA CHECK
           *          LATCH, ON UCS PRINTERS, DURING INITIALIZATION OF THE SECTION.
           * E.C. PREREQUISITES
           *     MACHINE . . . 2821 MUST BE AT MINIMUM E.C. LEVEL 124265.
           *     PROGRAM . . . NONE
           *******************************************************************
           *
           *
           *
           *******************************************************************
           *******************************************************************
           *                      TEST NUMBER DESCRIPTION
           *******************************************************************
           *                            ROUTINE 01
           *
           *
           * TEST   DESCRIPTION
           *
           *
           *
           * 0010 - OPERATION ATTEMPTED
           *
           *        ISSUE A PRE-CONDITION LOAD COMMAND, COMMAND CHAINED TO ALLOW
           *        DATA CHECK COMMAND AND FURTHER CHAINED TO A LOAD UCS BUFFER
           *        COMMAND WITHOUT FOLDING.  THE BUFFER IS LOADED WITH BLANKS.
           *
           *        EXPECTED RESPONSE
           *
           *        EXPECT CHANNEL END AND THEN DEVICE END.
           *        COND. CODE 0 ON THE SIO (COMMAND ACCEPTED)
```



```
           *
           *
           * 0020 - OPERATION ATTEMPTED
           *
           *        ISSUE A PRE-CONDITION LOAD COMMAND, COMMAND CHAINED TO ALLOW
           *        DATA CHECK COMMAND AND FURTHER CHAINED TO A LOAD UCS BUFFER
           *        COMMAND WITH FOLDING.  THE BUFFER IS LOADED WITH BLANKS.
           *
           *        EXPECTED RESPONSE
           *
           *        EXPECT CHANNEL END AND THEN DEVICE END.
           *        COND. CODE 0 ON THE SIO (COMMAND ACCEPTED)
           *
           *
           * 0030 - OPERATION ATTEMPTED
           *
           *        ISSUE A PRE-CONDITION LOAD COMMAND CHAINED TO LOAD UCS BUFFER
           *        WITH A SHORT COUNT -239-.
           *
           *        EXPECTED RESPONSE
           *
           *        EXPECT CHANNEL END WITH INCORRECT LENGTH FLAG ON,
           *        THEN DEVICE END.
           *        COND. CODE 0 ON THE SIO (COMMAND ACCEPTED).
           *
           *
           * 0040 - OPERATION ATTEMPTED
           *
           *        ISSUE A PRE-CONDITION LOAD COMMAND, COMMAND CHAINED TO A LOAD
           *        THE UCS BUFFER COMMAND WITH A LONG COUNT -241-.
           *
           *        EXPECTED RESPONSE
           *
           *        EXPECT CHANNEL END WITH INCORRECT LENGTH FLAG ON AND RESIDUAL
           *        COUNT OF 1, THEN DEVICE END.
           *        COND. CODE 0 ON THE SIO (COMMAND ACCEPTED).
           *
           *
           *                            ROUTINE 02
           *
           * 0050 - OPERATION ATTEMPTED
           *
           *        LOAD THE UCS BUFFER WITH BLANKS AND NO FOLDING.
           *
           *        EXPECTED RESPONSE
           *
           *        EXPECT CHANNEL END AND THEN DEVICE END.
           *        COND. CODE 0 ON THE SIO (COMMAND ACCEPTED).
           *
           *
           * 0060 - OPERATION ATTEMPTED
           *
           *        ISSUE A PRE-CONDITION LOAD COMMAND, COMMAND CHAINED TO A WRITE
           *        NO SPACE COMMAND.
           *
           *        EXPECTED RESPONSE
           *
           *        THE UCS BUFFER AND THE PRINT AREA BOTH CONTAIN
           *        BLANKS AND THE PRE-CONDITION LOAD LATCH IS SET ON.  A WRITE
           *        COMMAND ISSUED UNDER THESE CONDITIONS FORCES PRINT CHECK IN
           *        EVERY POSITION.  EXPECT CHANNEL END THEN DEVICE END WITH UNIT
           *        CHECK.  EQUIPMENT CHECK SHOULD BE IN THE SENSE BYTE.
           *        ALLOW NEXT TWO TESTS TO BE PERFORMED FOR FURTHER INFORMATION.
           *
           *
```

```
129  * 0070 - OPERATION ATTEMPTED
130  *
131  *        ISSUE DIAGNOSTIC CHECK READ.
132  *
133  *        EXPECTED RESPONSE
134  *
135  *        EXPECT CHANNEL END, DEVICE END, UNIT CHECK TOGETHER.
136  *        EQUIPMENT CHECK (PRINT CHECK) IN THE SENSE BYTE.
137  *        THIS TEST WILL FAIL IF TEST 0060 ABOVE FAILED.
138  *
139  *
140  * 0080 - OPERATION ATTEMPTED
141  *
142  *        TEST 0070 ABOVE READS BACK 132 CHECK PLANE POSITIONS.
143  *        THIS TEST SCANS THE CHECK PLANE POSITIONS FOR NO PRINT CHECK
144  *        SET.
145  *
146  *        ************************************************************
147  *        NOTE...THIS TEST DOES  N O T  PRINT OUT IF THE CORRECT PRINT
148  *        OUT SWITCH IS SET ON, OR IF TEST 0070 ABOVE DETECTS NO ERROR.
149  *        ************************************************************
150  *
151  *        EXPECTED RESPONSE
152  *
153  *        EXPECT PRINT CHECK BIT ON IN EVERY CHECK PLANE POSITION.  THIS
154  *        TEST SCANS ALL CHECK PLANE POSITIONS AND PRINTS OUT POSITIONS
155  *        WHICH DO NOT HAVE PRINT CHECK BIT SET ON.  IF YOU LOOP AT THIS
156  *        TIME YOU WILL LOOP ON THE PRE-LOAD, WRITE COMMANDS.
157  *
158  *
159  *                                ROUTINE 03
160  *
161  * 0090 - OPERATION ATTEMPTED
162  *
163  *        LOAD UCS BUFFER WITH 15 SETS OF 16 CHARACTERS, F0 THRU FF.
164  *
165  *        EXPECTED RESPONSE
166  *
167  *        EXPECT CHANNEL END AND THEN DEVICE END.
168  *
169  *
170  * 0100 - OPERATION ATTEMPTED
171  *
172  *        ISSUE A PRINT COMMAND.
173  *
174  *        EXPECTED RESPONSE
175  *
176  *        PRINT AREA IS FILLED WITH CHARACTER -A- (C1) WHICH DOES  N O T
177  *        COMPARE TO WHAT IS IN THE UCS BUFFER.
178  *        EXPECT CHANNEL END THEN DEVICE END WITH UNIT CHECK.
179  *        DATA CHECK WILL BE IN THE SENSE BYTE.
180  *        CONTINUE ON FOR FURTHER INFORMATION.
181  *
182  *
183  * 0110 - OPERATION ATTEMPTED
184  *
185  *        ISSUE A DIAGNOSTIC CHECK READ.
186  *
187  *        EXPECTED RESPONSE
188  *
189  *        EXPECT CHANNEL END, DEVICE END UNIT CHECK TOGETHER.
190  *        EQUIPMENT CHECK IS IN THE SENSE BYTE.
191  *        THIS TEST WILL FAIL IF TEST 0100 FAILED. CONTINUE ON FOR MORE
192  *        INFORMATION.
193  *
```



```
194  *
195  * 0120 - OPERATION ATTEMPTED
196  *
197  *        TEST 0110 ABOVE READS BACK 132 CHECK PLANE POSITIONS.
198  *        THIS TEST SCANS ALL 132 CHECK PLANE POSITIONS FOR PRINT LINE
199  *        COMPLETE BIT TO BE SET  O F F  IN ALL POSITIONS.
200  *
201  *        ************************************************************
202  *        NOTE...THIS TEST DOES  N O T  PRINT OUT IF THE CORRECT PRINT
203  *        OUT SWITCH IS SET ON, OR IF TEST 0110 ABOVE DETECTS NO ERROR.
204  *        ************************************************************
205  *
206  *        EXPECTED RESPONSE
207  *
208  *        EXPECT PRINT LINE COMPLETE BIT TO BE SET  O F F  IN ALL
209  *        POSITIONS.  THIS TEST WILL PRINT OUT WHICH POSITIONS THE PRINT
210  *        LINE COMPLETE BIT IS ON.
211  *        IF YOU LOOP AT THIS TIME, YOU WILL LOOP ON THE WRITE COMMAND.
212  *
213  *
214  *                                ROUTINE 04
215  *
216  * 0130 - OPERATION ATTEMPTED
217  *
218  *        LOAD UCS BUFFER WITH 15 SETS OF 16 CHARACTERS FO THRU TO FF.
219  *
220  *        EXPECTED RESPONSE
221  *
222  *        EXPECT CHANNEL END AND THEN DEVICE END.
223  *
224  *
225  * 0140 - OPERATION ATTEMPTED
226  *
227  *        ISSUE A BLOCK DATA CHECK COMMAND.
228  *
229  *        EXPECTED RESPONSE
230  *
231  *        EXPECT CHANNEL END DEVICE END TOGETHER.  BLOCK DATA CHECK
232  *        LATCH SHOULD BE SET ON.
233  *
234  *
235  * 0150 - OPERATION ATTEMPTED
236  *
237  *        ISSUE A PRINT COMMAND.
238  *
239  *        EXPECTED RESPONSE
240  *
241  *        THE PRINT AREA IS FILLED WITH CHARACTER -A- WHICH DOES NOT
242  *        COMPARE TO WHAT IS IN THE UCS BUFFER.  EXPECT CHANNEL END AND
243  *        THEN DEVICE END WITH  N O  DATA CHECK IN THE SENSE BYTE DUE TO
244  *        THE BLOCK DATA CHECK LATCH BEING ON FROM TEST 0140 ABOVE.
245  *
246  *
247  * 0160 - OPERATION ATTEMPTED
248  *
249  *        ISSUE ALLOW DATA CHECK COMMAND.
250  *
251  *        EXPECTED RESPONSE
252  *
253  *        EXPECT CHANNEL END DEVICE END TOGETHER AND SETTING THE BLOCK
254  *        DATA CHECK LATCH  O F F.
255  *
256  *
257  * 0170 - OPERATION ATTEMPTED
258  *
```

```
*        ISSUE A PRINT COMMAND.
*
*        EXPECTED RESPONSE
*
*        THE PRINT AREA IS FILLED WITH CHARACTER -A- WHICH DOES  N O T
*        COMPARE TO WHAT IS IN THE UCS BUFFER.  EXPECT CHANNEL END
*        THEN DEVICE END WITH UNIT CHECK.  EXPECT DATA CHECK IN THE
*        SENSE BYTE DUE TO BLOCK DATA CHECK LATCH BEING SET OFF FROM
*        TEST 0160 ABOVE.
*
*                                ROUTINE 05
*
* 0180 - OPERATION ATTEMPTED
*
*         LOAD UCS BUFFER WITH 15 SETS OF 16 CHARACTERS F0 THRU TO FF
*
*        EXPECTED RESPONSE
*
*        CHANNEL END AND THEN DEVICE END.
*
*
* 0190 - OPERATION ATTEMPTED
*
*        ISSUE A PRINT COMMAND.
*
*        EXPECTED RESPONSE
*
*        POSITIONS 2 THRU 132 OF THE PRINT AREA CONTAINS BLANKS.
*        POSITION 1 OF THE PRINT AREA CONTAINS A -1-.
*        EXPECT CHANNEL END AND THEN DEVICE END, AND PRINT ONE
*        CHARACTER.
*
*
* 0200 - OPERATION ATTEMPTED
*
*         PLACE A BLANK IN POSITION ONE OF BUFFER LOAD AREA.  ISSUE A
*         LOAD UCS BUFFER WITH A COUNT OF 1.
*
*        EXPECTED RESPONSE
*
*        THIS SHOULD PLACE ONLY ONE BLANK IN THE UCS BUFFER AND NOT
*        ALTER THE REST OF THE BUFFER.
*
*
* 0210 - OPERATION ATTEMPTED
*
*        ISSUE A PRINT COMMAND.
*
*        EXPECTED RESPONSE
*
*        PRINT AREA CONTAINS A -1- AND THE REST ARE BLANKS.
*        IF TEST 0200 ABOVE WAS PERFORMED CORRECTLY, THAT IS ONLY ONE
*        POSITION OF THE BUFFER IS BLANK THEN A COMPARE SHOULD OCCUR
*        AND THE CHARACTER IS PRINTED.  EXPECT CHANNEL END AND THEN
*        DEVICE END.
*
*
*                                ROUTINE 06
*
* 0220 - OPERATION ATTEMPTED
*
*         LOAD UCS BUFFER WITH 5 SETS OF 48 CHARACTERS.
*
*
```



```
*        EXPECTED RESPONSE
*
*        CHANNEL END AND THEN DEVICE END.
*
*
* 0230 - OPERATION ATTEMPTED
*
*        ISSUE A PRINT COMMAND.
*
*        EXPECTED RESPONSE
*
*        THE PRINT AREA CONTAINS 48 CHARACTER SETS.  EXPECT CHANNEL END
*        AND THEN DEVICE END.
*        CONTINUE ON FOR FURTHER INFORMATION.
*
*
* 0240 - OPERATION ATTEMPTED
*
*        ISSUE A DIAGNOSTIC READ COMMAND.
*
*
*        EXPECTED RESPONSE
*
*        EXPECT CHANNEL END DEVICE END TOGETHER.  THIS TEST WILL FAIL
*        IF TEST 0230 ABOVE FAILED.
*        CONTINUE ON FOR FURTHER INFORMATION.
*
*
* 0250 - OPERATION ATTEMPTED
*
*        TEST 0240 ABOVE READS BACK THE CONTENTS OF THE DATA BUFFER.
*        THIS TEST WILL COMPARE WHAT IS IN THE PRINT AREA TO WHAT WAS
*        READ BACK FROM THE DATA BUFFER.
*
*        ************************************************************
*        NOTE...THIS TEST DOES  N O T  PRINT OUT IF THE CORRECT PRINT
*        OUT SWITCH IS SET ON, OR IF TEST 0240 ABOVE DETECTS NO ERROR.
*        ************************************************************
*
*        EXPECTED RESPONSE
*
*        PRINT AREA AND DATA BUFFER POSITIONS THAT DO  N O T  COMPARE
*        ARE PRINTED OUT.  IF YOU LOOP AT THIS POINT, YOU WILL LOOP
*        ON THE PRINT COMMAND.
*        NOTE---DO  N O T  USE TO TROUBLE SHOOT PRINT CHECK PROBLEMS,
*        USE ONLY TO CHECK READ BACK OF THE DATA BUFFER.
*
*
* 0260 - OPERATION ATTEMPTED
*
*        LOAD THE UCS BUFFER WITH FOLDING.  UCS BUFFER IS FILLED WITH
*        5 SETS OF 48  F O U R T H  QUADRANT CHARACTERS -C1 TO F0-.
*
*        EXPECTED RESPONSE
*
*        EXPECT CHANNEL END AND THEN DEVICE END.
*
*
* 0270 - OPERATION ATTEMPTED
*
*        PRINT AREA IS FILLED WITH 48  F I R S T  QUADRANT CHARACTERS
*        -30 TO 01- REPEATED TO FILL THE 132 PRINT POSITIONS.
*        A PRINT COMMAND IS THEN ISSUED.
*
*        EXPECTED RESPONSE
```

```
389  *
390  *        EXPECT CHANNEL END AND THEN DEVICE END.
391  *        N O T E-- IF THIS TEST (FOLDING) FAILED, CHANNEL END AND THEN
392  *        DEVICE END WITH UNIT CHECK WILL OCCUR.  DATA CHECK WILL BE IN
393  *        THE SENSE BYTE.
394  *
395  *        POSSIBLE FAILURE CAUSES
396  *
397  *        1.  THE FOLDING LATCH FAILED TO BE SET ON.
398  *        2.  FAILED TO FORCE A COMPARE ON THE ZERO AND ONE BITS OF
399  *            THE UCS AND PRINT BUFFER DATA.
400  *
401  *                              ROUTINE 07
402  *
403  ********************************************************************
404  *          NOTE--SECTION SENSE SWITCH 24 MUST BE ON  TO INDICATE DUALING
405  ********************************************************************
406  *
407  * 0280 - OPERATION ATTEMPTED
408  *
409  *         LOAD UCS BUFFER WITH 5 SETS OF 48 CHARACTERS.  EACH SET
410  *         INCLUDES THE FOUR DUALABLE CHARACTERS.
411  *
412  *        EXPECTED RESPONSE
413  *
414  *        CHANNEL END AND THEN DEVICE END.
415  *
416  *
417  * 0290 - OPERATION ATTEMPTED
418  *
419  *         PLACE ALREADY TRANSLATED DUALING CHARACTERS INTO PRINT AREA.
420  *         ISSUE A PRINT COMMAND TO PRINT THE FOUR DUALING CHARACTERS.
421  *
422  *        EXPECTED RESPONSE
423  *
424  *         EXPECT CHANNEL END AND THEN DEVICE END.
425  *
426  *
427  * 0300 - OPERATION ATTEMPTED
428  *
429  *         PLACE UNTRANSLATED DUALING CHARACTERS IN THE PRINT AREA.
430  *         ISSUE A PRINT COMMAND TO PRINT THE FOUR DUALING CHARACTERS.
431  *
432  *        EXPECTED RESPONSE
433  *
434  *         EXPECT CHANNEL END AND THEN DEVICE END.  IF AN ERROR OCCURS
435  *         ON THIS TEST, CONTINUE THROUGH THE NEXT 2 TESTS FOR FURTHER
436  *         ERROR INFORMATION.
437  *
438  *
439  * 0310 - OPERATION ATTEMPTED
440  *
441  *        ISSUE A DIAGNOSTIC READ COMMAND.
442  *
443  *        EXPECTED RESPONSE
444  *
445  *        EXPECT CHANNEL END DEVICE END TOGETHER.  IF AN ERROR OCCURRED
446  *        ON PREVIOUS TEST, THIS TEST WILL INDICATE AN ERROR ALSO.
447  *        CONTINUE ON TO NEXT TEST FOR FURTHER ERROR INFORMATION.
448  *
449  *
450  * 0320 - OPERATION ATTEMPTED
451  *
452  *         TEST 0290 ABOVE READS BACK THE CONTENTS OF THE DATA BUFFER.
453  *
```



```
454  *         THIS TEST COMPARES THE DUALING CHARACTERS AFTER TRANSLATION
455  *         BY THE DATA BUFFER TO WHAT THE DUALING CHARACTERS SHOULD BE
456  *         AFTER TRANSLATION.
457  *
458  *        ************************************************************
459  *        NOTE...THIS TEST DOES  N O T  PRINT OUT IF THE CORRECT PRINT
460  *        OUT SWITCH IS SET ON, OR IF TEST 0310 ABOVE DETECTS NO ERROR.
461  *        ************************************************************
462  *
463  *        EXPECTED RESPONSE
464  *
465  *        ANY INCORRECT DUALING CHARACTER FOUND IN THE BUFFER WILL
466  *        RESULT IN A PRINT OUT OF THE FOUR DUALING CHARACTERS AS THEY
467  *        APPEAR IN THE DATA BUFFER AND A PRINTOUT OF WHAT THEY SHOULD
468  *        BE.  IF YOU LOOP AT THIS TIME, YOU WILL LOOP ON THE PRINT
469  *        COMMAND.
470  *
471  *                              ROUTINE 08
472  *
473  *
474  * 0330 - OPERATION ATTEMPTED
475  *
476  *        THE UCS BUFFER IS LOADED IN FOLDING MODE, WITH A 16 CHAR. SET.
477  *
478  *        EXPECTED RESPONSE
479  *
480  *        EXPECT COND. CODE 0 TO BE SET ON THE START I-O.  EXPECT A
481  *        CHANNEL AND DEVICE END INTERRUPT.  THE FOLDING LATCH SHOULD
482  *        BE SET ON.
483  *
484  *
485  * 0340 - OPERATION ATTEMPTED
486  *
487  *        A PRINT COMMAND IS ISSUED, AND INTERRUPTS ARE CLEARED.
488  *
489  *        EXPECTED RESPONSE
490  *
491  *        THE PRINT AREA CONTAINS HEX CHARACTERS -80-, AND -C0-.  THE
492  *        UCS BUFFER DOES NOT CONTAIN ANY OF THESE CHARACTERS, BUT
493  *        BECAUSE OF FOLDING MODE, THE CHARACTERS ARE CONSIDERED VALID
494  *        UNPRINTABLE CHARACTERS, AND ARE TREATED AS BLANKS OR NULLS.
495  *        EXPECT COND. CODE 0 ON THE START I-O.  EXPECT 2 SEPARATE
496  *        INTERRUPTS - CHANNEL END, THEN DEVICE END.  UNIT CHECK AND
497  *        DATA CHECK SHOULD NOT OCCUR.
498  *
499  ********************                              ********************
500  * SECTION PREFACE ********************************** SECTION PREFACE *
501  ********************                              ********************
01000  F8325000            502  SECNO  DC   XL4'F8325000'
01004  00000000            503  SNSW   DC   XL4'00'          SECTION SENSE SWITCHES          *
01008  0000                504             DC   XL2'00'                                        *
0100A  0000                505  ICM    DC   XL2'00'          INTERRUPTION CONDITION MASK     *
0100C  00                  506  SDMF   DC   XL1'00'          SECTION DM FLAGS                *
0100D  01                  507  NIOU   DC   XL1'01'          NUMBER OF UNIT TABLE ENTRYS     *
0100E  C0                  508  FLAG1  DC   X'C0'            EXCLUSIVE CPU                   *
0100F  00                  509  FLAG2  DC   X'00'            I/O INT ARE ERR, EXT INT TO PROG *
01010  0104000000000       510  INPSW  DC   X'0104000000'    DISABLED, SPVSR STATE, NO PGM MASK *
01015  0018F8              511             DC   AL3(ROUT01)     ADR OF 1ST ROUTINE PREFIX       *
01018  0000000000000000    512  EXOPSW DC   XL8'0'           SECTION OLD EXTERNAL PSW        *
01020  0000000000000000    513  SVOPSW DC   XL8'00'          CLEAR ALL OLD PSWS              *
01028  0000000000000000    514  PGOPSW DC   XL8'00'          PROGRAM OLD PSW                 *
01030  0000000000000000    515  MCOPSW DC   XL8'00'          MACHINE CHECK OLD PSW           *
01038  0000000000000000    516  IOOPSW DC   XL8'00'          I/O OLD PSW                     *
01040  0000000000000000    517  CSW    DC   XL8'00'          CHANNEL STATUS WORD             *
```

```
01048  00000000                519  CAW     DC    XL4'00'              CAW                                 *
0104C  0000000000000000        520         DC    XL12'00'             RESERVED FOR DM USE                 *
01054  00000000
01058  0004000000              521  EXNPSW  DC    X'00040000000'       EXTERNAL NEW PSW                    *
0105D  000000                  522  SRET    DC    XL3'0'               ADR OF EXT INTRPT ROUTINE           *
01060  0000000000000000        523  SVNPSW  DC    XL8'00'              SUPERVISOR NEW PSW                  *
01068  0000000000000000        524  PGNPSW  DC    XL8'00'              PROGRAM NEW PSW                     *
01070  0000000000000000        525  MCNPSW  DC    XL8'00'              MACHINE CHECK NEW PSW               *
01078  01040000                526  IONPSW  DC    XL4'01040000'        I/O NEW PSW                         *
0107C  000011D4                527         DC    AL4(IRETRN)          ADDRESS OF I/O INTRPT ROUTINE       *
01080                          528         DS    96C                  96 BYTE REG DUMP AREA FOR DM USE    *
010E0  83                      529  UNIT1   DC    X'83'                UNIT TYPE - 1419 MICR               *
010E1  00                      530  U1OP    DC    X'00'                OPTIONAL FEATURES BYTE              *
010E2  8000                    531  U1ADDR  DC    X'8000'              FLAGS AND CHAN/UNIT ADDRESS         *
                               532  ********************************************************************
                               534  ********************************************************************
                               535  *                          1403 SENSE BYTE
                               536  ********************************************************************
                               537  *       BIT   MEANING
                               538  *         0   COMMAND REJECT
                               539  *         1   INTERVENTION REQUIRED
                               540  *         2   BUS OUT CHECK
                               541  *         3   EQUIPMENT CHECK - HAMMER FIRE CHECK
                               542  *         4   DATA CHECK - UCS PRINTERS ONLY - UNCOMPARABLE CHARACTER
                               543  *         5   BUFFER PARITY CHECK - REFERS TO UCS BUFFER
                               544  *         6   NOT USED
                               545  *         7   CHANNEL 9
                               546  ********************************************************************
                               547  ********************************************************************
                               548  *                          1403 DEVICE STATUS
                               549  ********************************************************************
                               550  *       BIT   MEANING
                               551  *         0   ATTENTION - NOT USED
                               552  *         1   STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
                               553  *         2   CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
                               554  *         3   DEVICE BUSY
                               555  *         4   CHANNEL END
                               556  *         5   DEVICE END
                               557  *         6   UNIT CHECK
                               558  *         7   UNIT EXCEPTION - CHANNEL 12
                               559  ********************************************************************
                               560  *                      1403 DIAGNOSTIC CHECK READ DATA
                               561  ********************************************************************
                               562  *       BIT   MEANING
                               563  *         5   ON  - THE PRINT LINE COMPLETE BIT HAS BEEN SET FOR THIS
                               564  *                   POSITION.
                               565  *             OFF - ON BASIC PRINTERS, A COMPARE BETWEEN THE DATA BEING
                               566  *                   PRINTED, AND THE PRINT CHARACTER GENERATOR DID NOT
                               567  *                   OCCUR IN THIS POSITION, AND THE CHARACTER WAS NOT
                               568  *                   CONSIDERED A VALID UNPRINTABLE.
                               569  *
                               570  *                   ON UCS PRINTERS, A COMPARE BETWEEN THE DATA BUFFER
                               571  *                   AND THE UNIVERSAL CHARACTER SET BUFFER DID NOT OCCUR
                               572  *                   AND THE CHARACTER WAS NOT CONSIDERED A NULL OR BLANK
                               573  *
                               574  *         6   ON  - THE PRINT CHECK PLANE FOR THIS POSITION WAS SET ON.
                               575  *                   THIS PLANE IS SET BY---
                               576  *                   1. A HAMMER FIRE AND AN EQUAL CHECK.
                               577  *                   2. NO HAMMER FIRE AND NO EQUAL CHECK.
                               578  *                   3. LINE FULL, NOT VALID UNCOMPARABLE CHARACTER, AND
                               579  *                      NOT A PRINT LINE COMPLETE BIT IN THIS POSITION.
                               580  *             OFF - THE PRINT CHECK PLANE FOR THIS POSITION IS NOT SET.
                               581  *
                               582  *         7   ON  - A PARITY CHECK IN THE DATA BUFFER WAS DETECTED IN
```



```
                               583  *                   THIS POSITION.
                               584  *
                               585  *             OFF - THIS POSITION OF THE DATA BUFFER HAS CORRECT PARITY.
                               586  ********************************************************************
                               587  *                          PARAMETERS USED TO ENTER
                               588  *                          THE I-O HANDLER ROUTINE
                               589  ********************************************************************
                               590  *       BAL   R11,ISIO              LINK TO I-O HANDLER
                               591  *       DC    XL2'0000'             CONTROL SWITCHES
                               592  *       DC    X'0014'               TEST NO. IN DEC EXPRESSED IN HEX
                               593  *       DC    X'F0'                 EXPECTED COND. CODE
                               594  *       DC    X'00'                 EXPECTED SENSE DATA
                               595  *       DC    AL2(ADR-BASE+REG)     ADDR. OF EXPECTED CSW IF NEEDED
                               596  ********************************************************************
                               597  ********************************************************************
                               598  *                        I-O HANDLER CONTROL SWITCHES
                               599  *                          2 BYTE PARAMETER FOLLOWING BAL
                               600  ********************************************************************
                               601  * SWITCH     DESCRIPTION
                               602  *   0  ----  OFF - ISSUE AN I-O COMMAND
                               603  *             ON  - DO NOT ISSUE AN I-O COMMAND
                               604  *   1  ----  OFF - ENABLE
                               605  *             ON  - DO NOT ENABLE
                               606  *   2  ----  OFF - EXPECT NO INTERRUPT
                               607  *             ON  - EXPECT AN INTERRUPT
                               608  *   3  ----  OFF - DO NOT EXPECT 2 INTERRUPTS
                               609  *             ON  - EXPECT 2 INTERRUPTS
                               610  *   4  ----  OFF - EXPECT NO CSWS
                               611  *             ON  - EXPECT A CSW
                               612  *   5  ----  OFF - DO NOT EXPECT 2 CSWS
                               613  *             ON  - EXPECT 2 CSWS
                               614  *   6  ----  OFF - ALWAYS TRY TO ISSUE SENSE
                               615  *             ON  - SENSE ON UNIT CHECK ONLY
                               616  ********************************************************************
                               617  ********************************************************************
                               618  *                          SWITCHES USED BY I-O HANDLER
                               619  ********************************************************************
                               620  * SWITCH     DESCRIPTION
                               621  *   0  ----  OFF - NO HANGUP ON INTERFACE
                               622  *             ON  - HANGUP OCCURRED
                               623  *   1  ----  OFF - NO CSWS STORED
                               624  *             ON  - ONE CSW STORED
                               625  *   2  ----  OFF - SECOND CSW NOT RECIEVED
                               626  *             ON  - SECOND CSW RECIEVED
                               627  *   3  ----  OFF - DID NOT ENABLE
                               628  *             ON  - ENABLED ONCE
                               629  *   4  ----  OFF - DID NOT ENABLE TWICE
                               630  *             ON  - ENABLED TWICE
                               631  *   5  ----  OFF - NO SENSE DATA RECIEVED
                               632  *             ON  - SENSE DATA RECIEVED
                               633  *   6  ----  OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
                               634  *             ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
                               635  *   7  ----  OFF - NO ERROR DETECTED
                               636  *             ON  - AN ERROR WAS DETECTED
                               637  ********************************************************************
                               638  *                        REGISTERS USED IN I-O HANDLER
                               639  ********************************************************************
                               640  *      REG          COMMENTS
                               641  *        5    USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
                               642  *             PREVIOUS HANGUP ON INTERFACE DETECTED.
                               643  *
                               644  *        8    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
                               645  *
                               646  *        9    USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
                               647  *
```

```
                                 *       10   MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
                                 *
                                 *       11   MUST BE USED AS LINK REG TO THIS ROUTINE
                                 *
                                 *       12   MUST CONTAIN DEVICE ADDRESS
                                 *
                                 ********************************************************************************
010E4  0000                      ISW     DC   XL2'0'
                                 ********************************************************************************
                                 *                          * I-O HANDLER SUB-ROUTINE *
                                 ********************************************************************************
010E6  D2 01  F 59C  B 002       ISIO    MVC  ITSTNO+5(2),2(R11)     SAVE TEST NUMBER
010EC  90 AB  F 4F8              MOD44   STM  R10,R11,ISLAVE         SAVE REG 10 AND REG 11
010F0  90 89  F 4F0                      STM  R8,R9,ISAVE            SAVE REGS 8 AND 9
010F4  50 AD  0 048                      ST   R10,HCAW(R13)          STORE COMMAND ADDRESS
010F8  D7 07  D 040  D 040               XC   HCSW(8,R13),HCSW(R13)
010FE  95 30  E 181                      CLI  SYSMOD(R14),X'30'      CHECK FOR MODEL 30
01102  47 60  F 10C                      BC   UNEQ,MOD44             BR. IF NOT
01106  D7 0B  0 080  0 080               XC   LOGOUT(12),LOGOUT      CLEAR MOD 30 LOGOUT AREA
0110C  91 80  B 000                      TM   0(R11),X'80'           CHECK CONTROL SWITCH FOR NO I-O
01110  47 10  F 1A4                      BC   ALL,INOW               BR. IF ON
01114  91 C0  F 004                      TM   SNSW,X'C0'
01118  47 80  F 160                      BC   NONE,JOHN
                                 ********************************************************************************
                                 *                              SENSE SWITCH LOOPS
                                 ********************************************************************************
0111C  91 80  F 004              ITRY1   TM   SNSW,X'80'             CHECK SECTION SENSE SWITCH 0
01120  47 80  F 12C                      BC   NONE,ITRY2             BR. IF OFF
01124  9C 00  C 000              ILOOP   SIO  0(R12)                 SIO, TIO, OR HIO
01128  47 F0  F 11C                      BC   UNC,ITRY1              BR. UNCONDITIONAL
0112C  91 40  F 004              ITRY2   TM   SNSW,X'40'             CHECK SECTION SENSE SWITCH 1
01130  47 80  F 14C                      BC   NONE,IHI               BR. IF OFF
01134  9D 00  C 000                      SIO  0(R12)                 START I-O
01138  47 70  F 11C                      BC   UNC,IHANG              BR. UNCONDITIONAL
                                 *
0113C  91 40  F 004              IHI     TM   SNSW,X'40'             CHECK SECTION SENSE SWITCH 1
01140  47 80  F 14C                      BC   NONE,IHI               BR. IF OFF
01144  9C 00  C 000                      SIO  0(R12)                 START I-O
01148  47 F0  F 134                      BC   UNC,IHANG              BR. UNCONDITIONAL
                                 *
0114C  58 1E  0 198              IHI     L    R1,WT(14)
01150  88 10  0 003                      SRL  R1,3
01154  9D 00  C 000              GREG    TIO  0(R12)
01158  47 80  F 160                      BC   CC0,JOHN
0115C  46 10  F 154                      BCT  R1,GREG
01160  D7 01  F 0E4  F 0E4       JOHN    XC   ISW(2),ISW
01166  96 80  F 0E4                      OI   ISW,X'80'
0116A  92 E7  F 50F                      MVI  IACTCC+5,C'X'          MOVE IN A -X-
0116E  9C 00  C 000              ISSUE   SIO  0(R12)                 I-O COMMAND- SIO, TIO, OR HIO
01172  47 80  F 1A0                      BC   CC0,IZERO              BR. IF COND. CODE 0
01176  47 40  F 18E                      BC   CC1,IONE               BR. IF COND. CODE 1
0117A  47 20  F 186                      BC   CC2,ITWO               BR. IF COND. CODE 2
0117E  92 F3  F 50F                      MVI  IACTCC+5,X'F3'         INDICATE COND. CODE 3
01182  47 F0  F 1A4                      BC   UNC,INOW               BR. UNCONDITIONAL
01186  92 F2  F 50F              ITWO    MVI  IACTCC+5,X'F2'         INDICATE COND. CODE 2
0118A  47 F0  F 1A4                      BC   UNC,INOW               BR. UNCONDITIONAL
0118E  92 F1  F 50F              IONE    MVI  IACTCC+5,X'F1'         INDICATE COND. CODE 1
01192  D2 07  F 5D2  D 040            704       MVC  ICSW1(8),HCSW(R13)     SAVE CSW
01198  96 40  F 0E4                    705       OI   ISW,X'40'              INDICATE 1 CSW
0119C  47 F0  F 1A4                    706       BC   UNC,INOW              BR. UNCONDITIONAL
011A0  92 F0  F 50F              IZERO   MVI  IACTCC+5,X'F0'         INDICATE COND. CODE 0
011A4  94 7F  F 0E4              INOW    NI   ISW,X'7F'              TURN OFF HANG UP SWITCH
011A8  91 40  B 000                      TM   0(R11),X'40'           CHECK CONTROL SWITCH FOR NO ENABLE
011AC  47 10  F 210                      BC   ALL,ISEN               BR. IF ON
011B0  96 10  F 0E4                      OI   ISW,X'10'              INDICATE ENABLED ONCE
011B4  58 9E  0 198              IWAIT   L    R9,WT(R14)             LOAD DM WAIT FACTOR
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011B8  88 90  0 003              ISEN    SRL  R9,3                  ADJUST
011BC  96 80  F 0E4                      OI   ISW,X'80'              TURN ON HANG UP SW
011C0  80 00  F 5F3                      SSM  MSK1                   ENABLE
011C4  46 90  F 1C4                      BCT  R9,*                   WAIT
011C8  80 00  F 5F4                      SSM  MSK2                   DISABLE
011CC  94 7F  F 0E4                      NI   ISW,X'7F'              TURN OFF HANG SW
011D0  47 F0  F 210                      BC   UNC,ISEN               BR. UNCONDITIONAL
                                 ********************************************************************************
                                 *                          ALL I-O INTERRUPTS RETURN HERE
                                 ********************************************************************************
011D4  94 7F  F 0E4              IRETRN  NI   ISW,X'7F'              RESET HANG UP SW
011D8  91 40  F 0E4                      TM   ISW,X'40'
011DC  47 10  F 1EE                      BC   ALL,ISV2               BR. IF 1 CSW ALREADY STORED
011E0  D2 07  F 5D2  F 040               MVC  ICSW1(8),HCSW(R15)     SAVE CSW 1
011E6  96 40  F 0E4                      OI   ISW,X'40'              INDICATE 1 CSW STORED
011EA  47 F0  F 1F8                      BC   UNC,INT3               BR. UNCONDITIONAL
011EE  D2 07  F 5DA  F 040       ISV2    MVC  ICSW2(8),HCSW(R15)     SAVE CSW 2
011F4  96 20  F 0E4                      OI   ISW,X'20'              INDICATE 2 CSWS STORED
011F8  91 10  B 000              INT3    TM   0(R11),X'10'           CHECK CTRL SW FOR 2 INTR EXPECTED
011FC  47 80  F 210                      BC   NONE,ISEN              BR. IF NOT
01200  91 08  F 0E4                      TM   ISW,X'08'
01204  47 10  F 210                      BC   ALL,ISEN               BR. IF ALREADY ENABLED TWICE
01208  96 08  F 0E4                      OI   ISW,X'08'              INDICATE ENABLED TWICE
0120C  47 F0  F 1B4                      BC   UNC,IWAIT
01210  91 02  B 000              ISEN    TM   0(R11),X'02'           CHECK CONTROL SWITCH FOR SNS ON UC
01214  47 80  F 238                      BC   NONE,IDOSNS            BR. IF OFF TO ISSUE SENSE
01218  91 40  F 0E4                      TM   ISW,X'40'
0121C  47 80  F 28E                      BC   NONE,IBSN              BR. IF NO CSW STORED TO BYPASS SENSE
01220  91 02  F 5D6                      TM   ICSW1+4,X'02'          CHECK FOR UNIT CHECK
01224  47 10  F 238                      BC   ALL,IDOSNS             IF YES BR. TO ISSUE SENSE
01228  91 20  F 0E4                      TM   ISW,X'20'              CHECK FOR SECOND CSW
0122C  47 80  F 28E                      BC   NONE,IBSN              BR. IF NOT TO BYPASS SENSE
01230  91 02  F 5DE                      TM   ICSW2+4,X'02'          CHECK FOR UNIT CHECK
01234  47 80  F 28E                      BC   NONE,IBSN              BR. IF NOT TO BYPASS SENSE
01238  58 9E  0 198              IDOSNS  L    R9,WT(R14)             LOAD DM WAIT FACTOR
0123C  88 90  0 004                      SRL  R9,4                   ADJUST
01240  41 80  F 5E8                      LA   R8,ISENSE              LOAD SENSE COMMAND ADDRESS
01244  50 8D  0 048                      ST   R8,HCAW(R13)           STORE IN CAW
01248  9C 00  C 000                      SIO  0(R12)                 ISSUE SENSE
0124C  47 70  F 2DC                      BC   NCC0,INDER             BR. IF NOT ACCEPTED
01250  9D 00  C 000              ITIOLP  TIO  0(R12)                 TEST I-O
01254  47 40  F 278                      BC   CC1,ILOKE              BR. IF CSW STORED
01258  46 90  F 250              ITIC    BCT  R9,ITIOLP
0125C  47 F0  F 28E                      BC   UNC,IBSN               BR. UNCONDITIONAL
01260  91 40  F 0E4              INOEX1  TM   ISW,X'40'
01264  47 10  F 2DC                      BC   ALL,INDER              BR. IF CSW STORED
01268  47 F0  F 2E0                      BC   UNC,IDUNCK             BR. UNCONDITIONAL
0126C  91 20  F 0E4              INOEX2  TM   ISW,X'20'
01270  47 10  F 2DC                      BC   ALL,INDER              BR. IF CSW 2 STORED
01274  47 F0  F 2E0                      BC   UNC,IDUNCK             BR. UNCONDITIONAL
01278  95 0C  D 044              ILOKE   CLI  HCSW+4(R13),X'0C'      CHECK FOR CE DE ONLY
0127C  47 70  F 258                      BC   NCC0,ITIC              BR. IF NOT
01280  96 04  F 0E4                      OI   ISW,X'04'              INDICATE SENSE DATA RECIEVED
01284  D5 00  F 575  B 005            766       CLC  IACSNS+5(1),5(R11)     COMPARE FOR EXPECTED SENSE
01288  47 60  F 2DC                    767       BC   UNEQ,INDER            BR. IF UNEQUAL
0128E  D5 00  F 50F  B 004       IBSN    CLC  IACTCC+5(1),4(R11)     COMPARE FOR EXPECTED COND. CODE
01294  47 60  F 2DC                      BC   UNEQ,INDER             BR. IF UNEQUAL
01298  91 08  B 000                      TM   0(R11),X'08'
0129C  47 80  F 260                      BC   NONE,INOEX1            BR. IF NO CSW EXPECTED
012A0  91 40  F 0E4                      TM   ISW,X'40'
012A4  47 80  F 2DC                      BC   NONE,INDER             BR. IF NO CSW RECIEVED
012A8  48 8B  0 006                      LH   R8,6(R11)              LOAD CSW ADDR
012AC  40 80  F 284                      STH  R8,ICCSW1+4            STORE IN COMPARE INSTR.
012B0  D5 07  F 5D2  F 5D2       ICCSW1  CLC  ICSW1(8),ICSW1         COMPARE FOR EXPECTED CSW
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012B6  47 60  F 2DC           777          BC    UNEQ,INDER            BR. IF UNEQUAL
012BA  91 04  B 000           778          TM    0(R11),X'04'
012BE  47 80  F 26C           779          BC    NONE,INOEX2           BR. IF NO CSW 2 EXPECTED
012C2  91 20  F 0E4           780          TM    ISW,X'20'
012C6  47 80  F 2DC           781          BC    NONE,INDER            BR. IF NO CSW 2 RECIEVED
012CA  41 88  0 008           782          LA    R8,8(R8)              UPDATE TO SECOND CSW
012CE  40 80  F 2D6           783          STH   R8,ICCSW2+4
012D2  D5 07  F 5DA  F 5DA    784  ICCSW2  CLC   ICSW2(8),ICSW2       COMPARE FOR EXPECTED CSW 2
012D8  47 80  F 2E0           785          BC    EQ,IDUNCK             BR. IF EQUAL
012DC  96 01  F 0E4           786  INDER   OI    ISW,X'01'             INDICATE AN ERROR
012E0  92 64  F 310           787  IDUNCK  MVI   IFLAG1,X'64'          SET UP FOR ERROR PRINTOUT
012E4  92 C0  F 4A4           788          MVI   IFLAG2,X'C0'
012E8  91 01  F 0E4           789          TM    ISW,X'01'             CHECK FOR A DETECTED ERROR
012EC  47 10  F 300           790          BC    ALL,IOUTIT            BR. IF ERROR DETECTED
012F0  91 01  F 004           791          TM    SNSW,X'01'            CHECK SECTION SENSE SWITCH 7
012F4  47 80  F 4C0           792          BC    NONE,ILEAVE           BR. IF OFF
012F8  92 24  F 310           793          MVI   IFLAG1,X'24'          SET UP FOR CORRECT PRINTOUT
012FC  92 80  F 4A4           794          MVI   IFLAG2,X'80'
01300  D2 01  F 59C  B 002    795  IOUTIT  MVC   ITSTNO+5(2),2(R11)    MOVE TEST NUMBER TO PRINT
01306  0A DD                  796          SVC   X'DD'                 CONVERT TEST NUMBER
01308  0002                    797          DC    AL2(2)
0130A  059C                    798          DC    AL2(ITSTNO+5-SECNO)
0130C  059C                    799          DC    AL2(ITSTNO+5-SECNO)
0130E  0A D0                   800          SVC   X'D0'                 PRINT TEST NUMBER
01310  64                      801  IFLAG1  DC    X'64'
01311  09                      802          DC    X'09'
01312  F597                    803          DC    AL2(ITSTNO-SECNO+REG)
01314  41 80  0 004           804          LA    R8,4                  ADJUST LINK ADDRESS FOR PRINTOUT
01318  1B 88                   805          SR    R11,R8
0131A  50 80  F 528           806          ST    R11,ILINK+5
0131E  0A DD                  807          SVC   X'DD'                 CONVERT LINK ADDRESS
01320  0003                    808          DC    AL2(3)
01322  0529                    809          DC    AL2(ILINK+6-SECNO)
01324  0528                    810          DC    AL2(ILINK+5-SECNO)
01326  0A D0                   811          SVC   X'D0'                 PRINT LINK ADDRESS
01328  E0                      812          DC    X'E0'
01329  10                      813          DC    X'10'
0132A  F523                    814          DC    AL2(ILINK-SECNO+REG)
0132C  41 BB  0 004           815          LA    R11,4(R11)
01330  91 80  B 000           816          TM    0(R11),X'80'
01334  47 10  F 38A           817          BC    ALL,IOCSW             BR. IF NO I-O COMMAND ISSUED
01338  0A DD                  818          SVC   X'DD'                 CONVERT I-O ADDRESS
0133A  0003                    819          DC    AL2(3)
0133C  05F0                    820          DC    AL2(IOADR-SECNO)
0133E  0519                    821          DC    AL2(IOADDR+5-SECNO)
01340  0A D0                   822          SVC   X'D0'                 PRINT I-O ADDRESS
01342  E0                      823          DC    X'E0'
01343  0F                      824          DC    X'0F'
01344  F514                    825          DC    AL2(IOADDR-SECNO+REG)
01346  95 9C  F 16E           826          CLI   ISSUE,X'9C'           COMPARE FOR SIO COMMAND
0134A  47 60  F 3A4           827          BC    UNEQ,ICCOUT           BR. IF NOT
0134E  50 A0  F 538           828          ST    R10,ICAW+5            STORE CCW ADDR.
01352  0A DD                  829          SVC   X'DD'                 CONVERT CAW
01354  0003                    830          DC    AL2(3)
01356  0539                    831          DC    AL2(ICAW+6-SECNO)
01358  0538                    832          DC    AL2(ICAW+5-SECNO)
0135A  0A D0                   833          SVC   X'D0'                 PRINT CAW
0135C  E0                      834          DC    X'E0'
0135D  0B                      835          DC    X'0B'
0135E  F533                    836          DC    AL2(ICAW-SECNO+REG)
01360  D2 02  F 546  F 542    837          MVC   IBLAH+1(3),ICCW       MOVE -CCW- TO MESSAGE
01366  92 16  F 39F           838          MVI   ICNT,X'16'            ADJUST COUNT
0136A  50 A0  F 818           839          ST    R10,SAV10             MOVE CONTENTS OF REG 10 TO SAVE
0136E  D2 07  F 4D8  A 000    840  ICWOUT  MVC   WORK(8),0(R10)        MOVE CCW TO WORK AREA
01374  45 90  F 388           841          BAL   R9,ICOUT              BR. TO OUTPUT CCW
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01378  91 C0  A 004           842          TM    4(R10),X'C0'          CHECK FOR ANY CHAIN FLAGS
0137C  47 80  F 3A4           843          BC    NONE,ICCOUT           BR. IF NONE
01380  41 AA  0 008           844          LA    R10,8(R10)            UPDATE TO NEXT CCW
01384  47 F0  F 36E           845          BC    UNC,ICWOUT            BR. UNCONDITIONAL
01388  0A DD                  846  ICOUT   SVC   X'DD'                 CONVERT
0138A  0008                    847          DC    AL2(8)
0138C  04D8                    848          DC    AL2(WORK-SECNO)
0138E  04D8                    849          DC    AL2(WORK-SECNO)
01390  D2 07  F 54A  F 4D8    850          MVC   IBLAH+5(8),WORK       MOVE TO MESSAGE
01396  D2 07  F 553  F 4E0    851          MVC   IBLAH+14(8),WORK+8
0139C  0A D0                   852          SVC   X'D0'                 PRINT
0139E  E0                      853          DC    X'E0'
0139F  1A                      854  ICNT    DC    X'1A'
013A0  F545                    855          DC    AL2(IBLAH-SECNO+REG)
013A2  07 F9                   856          BCR   UNC,R9                RETURN VIA REG 9
013A4  D2 00  F 505  B 004    857  ICCOUT  MVC   IEXPCC+5(1),4(R11)    MOVE EXP CC TO MESSAGE
013AA  58 A0  F 4F8           858          L     R10,ISLAVE            RESTORE REG 10
013AE  0A D0                   859          SVC   X'D0'                 PRINT EXPECTED COND. CODE
013B0  E0                      860          DC    X'E0'
013B1  0A                      861          DC    X'0A'
013B2  F500                    862          DC    AL2(IEXPCC-SECNO+REG)
013B4  0A D0                   863          SVC   X'D0'                 PRINT ACTUAL COND. CODE
013B6  E0                      864          DC    X'E0'
013B7  0A                      865          DC    X'0A'
013B8  F50A                    866          DC    AL2(IACTCC-SECNO+REG)
013BA  D2 02  F 546  F 53F    867  IOCSW   MVC   IBLAH+1(3),ICSW       MOVE -CSW- TO MESSAGE
013C0  92 1A  F 39F           868          MVI   ICNT,X'1A'            ADJUST COUNT
013C4  91 08  B 000           869          TM    0(R11),X'08'
013C8  47 80  F 3EC           870          BC    NONE,IDIDI            BR. IF NO CSW EXPECTED
013CC  D2 02  F 55C  F 562    871          MVC   IBLAH+23(3),IEXP      MOVE -EXP- TO MESSAGE
013D2  48 8B  0 006           872          LH    R8,6(R11)
013D6  40 80  F 3E6           873          STH   R8,ICHNG1+4
013DA  41 88  0 008           874          LA    R8,8(R8)
013DE  40 80  F 416           875          STH   R8,ICHNG2+4
013E2  D2 07  F 4D8  F 4D8    876  ICHNG1  MVC   WORK(8),WORK          MOVE EXPECTED CSW TO WORK AREA
013E8  45 90  F 388           877          BAL   R9,ICOUT              BR. TO OUTPUT EXPECTED CSW
013EC  91 40  F 0E4           878  IDIDI   TM    ISW,X'40'
013F0  47 80  F 404           879          BC    NONE,IMORST           BR. IF NO CSW STORED
013F4  D2 02  F 55C  F 55F    880          MVC   IBLAH+23(3),IACT      MOVE -ACT- TO MESSAGE
013FA  D2 07  F 4D8  F 5D2    881          MVC   WORK(8),ICSW1         MOVE ACTUAL CSW TO WORK AREA
01400  45 90  F 388           882          BAL   R9,ICOUT              BR. TO OUTPUT ACTUAL CSW
01404  91 04  B 000           883  IMORST  TM    0(R11),X'04'
01408  47 80  F 41C           884          BC    NONE,IDID             BR. IF NOT EXPECTING 2 CSWS
0140C  D2 02  F 55C  F 562    885          MVC   IBLAH+23(3),IEXP      MOVE -EXP- TO MESSAGE
01412  D2 07  F 4D8  F 4D8    886  ICHNG2  MVC   WORK(8),WORK          MOVE EXPECTED CSW TO WORK AREA
01418  45 90  F 388           887          BAL   R9,ICOUT              BR. TO OUTPUT EXPECTED CSW 2
0141C  91 20  F 0E4           888  IDID    TM    ISW,X'20'
01420  47 80  F 434           889          BC    NONE,IPAS             BR. IF NO SECOND CSW STORED
01424  D2 02  F 55C  F 55F    890          MVC   IBLAH+23(3),IACT      MOVE -ACT- TO MESSAGE
0142A  D2 07  F 4D8  F 5DA    891          MVC   WORK(8),ICSW2         MOVE CSW TO WORK AREA
01430  45 90  F 388           892          BAL   R9,ICOUT
01434  D2 00  F 56A  B 005    893  IPAS    MVC   IEXSNS+5(1),5(R11)    MOVE EXP SENSE TO MESSAGE
0143A  91 04  F 0E4           894          TM    ISW,X'04'
0143E  47 80  F 45E           895          BC    NONE,IPASS            BR. IF NO SENSE DATA RECIEVED
01442  0A DD                  896          SVC   X'DD'                 CONVERT EXPECTED SENSE
01444  0001                    897          DC    AL2(1)
01446  056A                    898          DC    AL2(IEXSNS+5-SECNO)
01448  056A                    899          DC    AL2(IEXSNS+5-SECNO)
0144A  0A D0                   900          SVC   X'D0'                 PRINT EXPECTED SENSE
0144C  E0                      901          DC    X'E0'
0144D  0B                      902          DC    X'0B'
0144E  F565                    903          DC    AL2(IEXSNS-SECNO+REG)
01450  0A DD                  904          SVC   X'DD'
01452  0001                    905          DC    AL2(1)
01454  0575                    906          DC    AL2(IACSNS+5-SECNO)
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01456  0575                    907          DC    AL2(IACSNS+5-SECNO)
01458  0A D0                   908          SVC   X'D0'                 PRINT ACTUAL SENSE DATA
0145A  E0                      909          DC    X'E0'
0145B  08                      910          DC    X'08'
0145C  F570                    911          DC    AL2(IACSNS-SECNO+REG)
0145E  95 30  E 181            912  IPASS   CLI   SYSMOD(R14),X'30'     CHECK FOR MODEL 30
01462  47 60  F 4A2            913          BC    UNEQ,IOPOUT           BR. IF NOT
01466  D2 0B  F 4D8  0 080     914          MVC   WORK(12),LOGOUT       MOVE LOGOUT TO WORK AREA
0146C  0A DD                   915          SVC   X'DD'                 CONVERT
0146E  000C                    916          DC    AL2(12)
01470  04D8                    917          DC    AL2(WORK-SECNO)
01472  04D8                    918          DC    AL2(WORK-SECNO)
01474  D2 01  F 580  F 4D8     919          MVC   IOLOG+5(2),WORK       MOVE LOG OUT TO MESSAGE
0147A  D2 05  F 583  F 4DA     920          MVC   IOLOG+8(6),WORK+2
01480  D2 05  F 58A  F 4E2     921          MVC   IOLOG+15(6),WORK+10
01486  D2 05  F 591  F 4EA     922          MVC   IOLOG+22(6),WORK+18
0148C  0A D0                   923          SVC   X'D0'                 PRINT LOG OUT
0148E  E0                      924          DC    X'E0'
0148F  1C                      925          DC    X'1C'
01490  F57B                    926          DC    AL2(IOLOG-SECNO+REG)
01492  91 02  F 0E4            927          TM    ISW,X'02'
01496  47 80  F 4A2            928          BC    NONE,IOPOUT           BR. IF NOT UIO
0149A  94 FD  F 0E4            929          NI    ISW,X'FD'             RESET UIO SWITCH
0149E  47 F0  F 184            930          BC    UNC,IWAIT             BR. UNCONDITIONAL
014A2  0A D0                   931  IOPOUT  SVC   X'D0'                 PRINT LOOP OPTIONS THEN HALT
014A4  C0                      932  IFLAG2  DC    X'C0'
014A5  32                      933          DC    X'32'
014A6  F5A0                    934          DC    AL2(IOPT1-SECNO+REG)
014A8  0A D0                   935          SVC   X'D0'                 SPACE A LINE
014AA  A0                      936          DC    X'A0'
014AB  01                      937          DC    X'01'
014AC  F523                    938          DC    AL2(ILINK-SECNO+REG)
014AE  50 AD  0 048            939          ST    R10,HCAW(R13)         STORE CAW
014B2  91 C0  F 004            940          TM    SNSW,X'C0'            CHECK SECTION SENSE SWITCH 0 AND 1
014B6  47 50  F 11C            941          BC    ANY,ITRY1             BR. IF ANY ON
014BA  91 01  F 0E5            942          TM    ISW+1,X'01'
014BE  07 15                   943          BCR   ALL,R5                RETURN VIA REG 5 IF HANG UP
014C0  91 08  B 000            944  ILEAVE  TM    0(R11),X'08'          BR. IF NO CSW EXPECTED
014C4  47 80  F 4CC            945          BC    NONE,IUP
014C8  41 BB  0 002            946          LA    R11,2(R11)            UPDATE LINK ADDRESS FOR RETURN
014CC  41 BB  0 006            947  IUP     LA    R11,6(R11)
014D0  98 89  F 4F0            948          LM    R8,R9,ISAVE           RESTORE REGS 8 AND 9
014D4  07 FB                   949          BCR   UNC,R11               RETURN VIA REG 11
014D6  07 00                   950          CNOP  0,8
014D8                          951  WORK    DS    24C
014F0  0000000000000000        952  ISAVE   DC    XL8'0'
014F8  0000000000000000        953  ISLAVE  DC    XL8'0'                REGISTER SAVE AREA
01500  40C3C34040E740C5        954  IEXPCC  DC    C' CC  X EXP'
01508  E7D7
0150A  40C3C34040E740C1        955  IACTCC  DC    C' CC  X ACT'
01512  C3E3
01514  40C1C4D940E7E7E7        956  IOADDR  DC    C' ADR XXXXXX SIO'
0151C  E7E7E740E2C9D6
01523  00                      957          DC    X'00'
01524                          958          CNOP  0,4
01523                          959          ORG   *-1
01523  40C1C4D940E7E7E7        960  ILINK   DC    C' ADR XXXXXX LINK'
0152B  E7E7E740D3C9D5D2
01533  00                      961          DC    X'00'
01534                          962          CNOP  0,4
01533                          963          ORG   *-1
01533  40C3C1E640E7E7E7        964  ICAW    DC    C' CAW XXXXXX '
0153B  E7E7E740
0153F  C3E2E6                  965  ICSW    DC    C'CSW'
01542  C3C3E6                  966  ICCW    DC    C'CCW'
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01545  40C3E2E640E7E7E7        967  IBLAH   DC    C' CSW XXXXXXXX XX'
0154D  E7E7E7E7E740E7E7
01555  E7E7E7E7E7E740C5        968          DC    C'XXXXXX EXP'
0155D  E7D7
0155F  C1C3E3                  969  IACT    DC    C'ACT'
01562  C5E7D7                  970  IEXP    DC    C'EXP'
01565  40E2D5E240E7E740        971  IEXSNS  DC    C' SNS XX EXP'
0156D  C5E7D7
01570  40E2D5E240E7E740        972  IACSNS  DC    C' SNS XX ACT'
01578  C1C3E3
0157B  40D3D6C740E7E740        973  IOLOG   DC    C' LOG XX XXXXXX X'
01583  E7E7E7E7E7E740E7
0158B  E7E7E7E7E740E7E7        974          DC    C'XXXXX XXXXXX'
01593  E7E7E7E7
01597  40E3E2E340E7E7E7        975  ITSTNO  DC    C' TST XXXX'
0159F  E7
015A0  40E2E240F040D6D5        976  IOPT1   DC    C' SS 0 ON FOR LOO'
015A8  40C6D6D940D3D6D6
015B0  D740D6D540E2C9D6        977          DC    C'P ON SIO, SS 1 O'
015B8  6B40E2E240F140D6
015C0  D540C6D6D940E3C9        978          DC    C'N FOR TIO SIO LO'
015C8  D640E2C9D640D3D6
015D0  D6D7                    979          DC    C'OP'
015D2  0000000000000000        980  ICSW1   DC    XL8'0'
015DA  0000000000000000        981  ICSW2   DC    XL8'0'
015E2  000000000000
015E8  0400157500000001        982  ISENSE  CCW   X'04',IACSNS+5,X'00',1
015F0  00116E                  983  IOADR   DC    AL3(ISSUE)
015F3  FE                      984  MSK1    DC    X'FE'
015F4  01                      985  MSK2    DC    X'01'
015F5  40E2C5C540C4C5E2        986  CLUIN   DC    C' SEE DESCRIPTION'
015FD  C3D9C9D7E3C9D6D5
01605  60C3D6D4D4C5D5E3        987          DC    C'-COMMENTS'
0160D  E2
0160E                          988  CKAR    DS    132C
01692                          989  DRAR    DS    132C
01716  00 00
01718  0200169200000084        990  RDCCW   CCW   X'02',DRAR,X'00',132
                               991  ********************************************************************************
                               992  *                          INITIALIZE ROUTINE
                               993  ********************************************************************************
01720  1B DD                   994  INIT    SR    R13,R13               ZERO REG 13
01722  91 40  E 196            995          TM    406(R14),X'40'        CHECK FOR FORCED PROBLEM STATE
01726  47 80  F 730            996          BC    NONE,NITWIT           BR. IF NOT
0172A  18 DF                   997          LR    R13,R15               SET UP FOR PROBLEM STATE
0172C  92 FB  F 8E0            998          MVI   LOAD,X'FB'            INSURE LOAD NO FOLD
01730  58 C0  F 0E0            999  NITWIT  L     R12,UNIT1             LOAD REG 12 WITH UNIT TABLE ENTRY
01734  54 C0  F 81C           1000          N     R12,MOD50             AND OUT UNUSED BITS
01738  49 C0  F 7FC           1001          CH    R12,SAVDEV            COMPARE FOR CURRENT DEVICE ADDRESS
0173C  47 80  F 780           1002          BC    EQ,RLOOP              BR. IF EQUAL
01740  40 C0  F 7FC           1003          STH   R12,SAVDEV            SAVE CURRENT DEVICE ADDRESS
01744  91 10  F 0E1           1004          TM    UNIT1+1,X'10'         CHECK FOR UCS FEATURE
01748  47 80  F 7D2           1005          BC    NONE,SCAT
0174C  D2 02  F F89  F 5A6     1006          MVC   FERRO+14(3),IOPT1+6   MOVE WORD -ON - TO MSG
01752  D2 02  F FC4  F FD6     1007          MVC   FERRO+25(3),OFF       MOVE WORD -OFF- TO MSG
01758  D2 02  F FCB  F F83     1008          MVC   FERRO+32(3),NOT       MOVE WORD -NOT- TO MSG
0175E  91 80  F 007           1009          TM    SNSW+3,X'80'          TEST FOR DUALING MODE
01762  47 10  F 778           1010          BC    ALL,DARIO             BR. IF DUALING MODE
01766  D2 02  F F89  F FD6     1011          MVC   FERRO+14(3),OFF       MOVE WORD -OFF- TO MSG
0176C  D2 02  F FC4  F 5A6     1012          MVC   FERRO+25(3),IOPT1+6   MOVE WORD -ON - TO MSG
01772  D2 02  F FCB  F FCA     1013          MVC   FERRO+32(3),FERRO+31  BLANK OUT WORD -NOT-
01778  0A D0                  1014  DARIO   SVC   X'D0'                 PRINT SS 24 MSG
0177A  04                      1015          DC    X'04'
0177B  2B                      1016          DC    X'2B'
0177C  FFAB                    1017          DC    AL2(FERRO-SECNO+REG)
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0177E  0A DA                    1018  STAY   SVC   X'DA'                HALT FOR SS ALTERATION
01780  91 80  F 0E4            1019  BLOOP  TM    ISW,X'80'            CHECK FOR HANG UP
01784  47 10  F 7A0            1020        BC    ALL,HANGUP           BR. IF DETECTED
01788  D2 00  F 8A5  F 003      1021        MVC   RTSAV(1),SECNO+3     SAVE ROUTINE NUMBER
0178E  92 40  F 9FB            1022        MVI   LDAR,X'40'           CLEAR LOAD  AREA
01792  D2 EF  F 9FC  F 9FB      1023        MVC   LDAR+1(240),LDAR
01798  D2 83  F 821  F 9FB      1024        MVC   PRAR(132),LDAR       CLEAR PRINT AREA
0179E  07 F4                    1025        BCR   UNC,R4               RETURN VIA REG 4
017A0  D2 00  F 003  F 8A5      1026  HANGUP MVC   SECNO+3(1),RTSAV    MOVE RTN NO. THAT HANG WAS FOUND
017A6  94 7F  F 0E4             1027        NI    ISW,X'7F'
017AA  96 01  F 0E5             1028        OI    ISW+1,X'01'
017AE  98 AB  F 4F8             1029        LM    R10,R11,ISLAVE       RESTORE REGS 10 AND 11
017B2  0A D0                    1030        SVC   X'D0'                PRINT
017B4  64                       1031        DC    X'64'                -PREVIOUS HANGUP DETECTED-
017B5  1A                       1032        DC    X'1A'
017B6  F7FE                     1033        DC    AL2(HUNG-SECNO+REG)
017B8  0A D0                    1034        SVC   X'D0'
017BA  A019                     1035        DC    X'A019'
017BC  F5F5                     1036        DC    AL2(CLUIN-SECNO+REG)
017BE  45 50  F 238             1037        BAL   R5,IDOSNS            BR. TO OUTPUT AVAILABLE INFO
017C2  92 01  F 003            1038        MVI   SECNO+3,X'01'        RESTORE TO ROUTINE 01
017C6  94 FE  F 0E5             1039        NI    ISW+1,X'FE'
017CA  92 00  F 0E4             1040        MVI   ISW,X'00'            RESET HANGUP SWITCH
017CE  47 F0  F 780             1041        BC    UNC,BLOOP
017D2  0A D0                    1042  SCAT   SVC   X'D0'
017D4  04                       1043        DC    X'04'
017D5  1F                       1044        DC    X'1F'
017D6  F7DA                     1045        DC    AL2(SCATEL-SECNO+REG)
017D8  0A D5                    1046        SVC   X'D5'
017DA  40C4C5E5C9C3C540         1047  SCATEL DC    C' DEVICE BYPASSED'
017E2  C2E8D7C1E2E2C5C4
017EA  60D5D640E4C3E240         1048        DC    C'-NO UCS DEFINED'
017F2  C4C5C6C9D5C5C4
017F9  00
017FA  07 00                    1049        CNOP  0,4
017FC  FFFF                     1050  SAVDEV DC    X'FFFF'
017FE  40D7D9C5E5C9D6E4         1051  HUNG   DC    C' PREVIOUS HANG U'
01806  E240C8C1D5C740E4
0180E  D740C4C5E3C5C3E3         1052        DC    C'P DETECTED'
01816  C5C4
01818                           1053        CNOP  0,4
01818  00000000                 1054  SAV10  DC    XL4'0'
0181C  00003FFF                 1055  MOD50  DC    X'00003FFF'
01820  40                       1056        DC    X'40'
01821                           1057  PRAR   DS    132C
018A5  00                       1058  RTSAV  DC    X'00'
                                1059  ********************************************************************************
                                1060  *                          LOAD UCS SUB-ROUTINE
                                1061  ********************************************************************************
018A6  D2 0F  F 9FB  F C15      1062  ECONMY MVC   LDAR(16),CHAR16       LOAD CHARACTERS INTO BUFFER
018AC  D2 DF  F A0B  F 9FB      1063        MVC   LDAR+16(224),LDAR      FILL BUFFER WITH 16 CHAR SETS
018B2  D2 01  F 8C6  5 000      1064  LOADIT MVC   MUMB(2),0(R5)         MOVE TEST NUMBER
018B8  41 55  0 002             1065        LA    R5,2(R5)             UPDATE RETURN REG
018BC  41 A0  F 8D0             1066        LA    R10,PRELD            LOAD CCW ADDRESS
018C0  45 B0  F 0E6             1067        BAL   R11,ISIO             BR. TO ISSUE SIO
018C4  3E00                     1068        DC    X'3E00'              CTRL SWITCHES
018C6  0000                     1069  MUMB   DC    X'0000'              TEST NUMBER
018C8  F000                     1070        DC    X'F000'              EXP COND CODE AND SENSE
018CA  F8E8                     1071        DC    AL2(LDCSW-SECNO+REG) EXP CSW ADDRESS
018CC  07 F5                    1072        BCR   UNC,R5               RETURN VIA R5
018CE  00 00
018D0  E800182140000001         1073  PRELD  CCW   X'E8',PRAR,X'40',1
018D8  7B00182140000001         1074        CCW   X'7B',PRAR,X'40',1
018E0  F80019F8000000F0         1075  LOAD   CCW   X'F8',LDAR,X'00',240
018E8  000018E8                 1076  LDCSW  DC    A(LDCSW)
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018EC  08000000                 1077        DC    X'08000000'
018F0  00000000                 1078        DC    XL4'0'
018F4  04000000                 1079        DC    X'04000000'
018F8                           1080        CNOP  0,4
                                1081  ********************************************************************************
                                1082  * ROUTINE 01 - THIS ROUTINE RUNS ON UCS PRINTERS ONLY. ISSUE A PRE -
                                1083  *               CONDITION LOAD COMMAND -E8-, COMMAND CHAINED TO A LOAD
                                1084  *               THE UCS BUFFER -FB- COMMAND.  REPEAT WITH LOAD WITH
                                1085  *               FOLDING -F3-. ISSUE LOAD WITH SHORT COUNT. ISSUE LOAD
                                1086  *               WITH LONG COUNT.
                                1087  ********************************************************************************
018F8  01                       1088  ROUT01 DC    X'01'                ROUTINE NUMBER
018F9  000968                   1089        DC    AL3(ROUT02-SECNO)    ADDRESS OF NEXT ROUTINE
018FC  45 40  F 720             1090        BAL   R4,INIT              BR. TO INITIALIZE
01900  45 50  F 8B2            1091        BAL   R5,LOADIT            BR. TO LOAD UCS
01904  0010                     1092        DC    X'0010'              T E S T  N U M B E R
01906  92 F3  F 8E0            1093        MVI   LOAD,X'F3'           SET UP FOR FOLDING COMMAND
0190A  45 50  F 8B2            1094        BAL   R5,LOADIT            BR. TO LOAD UCS
0190E  0020                     1095        DC    X'0020'              T E S T  N U M B E R
01910  92 FB  F 8E0            1096        MVI   LOAD,X'FB'           RESTORE LOAD COMMAND
01914  92 EF  F 957            1097        MVI   LDINC+7,X'EF'        SET UP SHORT COUNT
01918  92 00  F 95F            1098        MVI   INCCSW+7,X'00'       SET UP 0 RESIDUAL COUNT
0191C  41 A0  F 948            1099        LA    R10,PREINC           LOAD CCW ADDRESS
01920  45 B0  F 0E6            1100        BAL   R11,ISIO             BR. TO ISSUE SIO
01924  3E00                     1101        DC    X'3E00'              CTRL SWITCHES
01926  0030                     1102        DC    X'0030'              T E S T  N U M B E R
01928  F000                     1103        DC    X'F000'              EXP COND. CODE AND SENSE
0192A  F958                     1104        DC    AL2(INCCSW-SECNO+REG) EXP CSW ADDR
0192C  92 F1  F 957            1105        MVI   LDINC+7,X'F1'        SET UP LONG COUNT
01930  92 01  F 95F            1106        MVI   INCCSW+7,X'01'       SET UP 1 RESIDUAL COUNT
01934  41 A0  F 948            1107        LA    R10,PREINC           PLACE ADDR OF CCW IN REG 10
01938  45 B0  F 0E6            1108        BAL   R11,ISIO             BR. TO ISSUE SIO
0193C  3E00                     1109        DC    X'3E00'              CONTROL SWITCHES
0193E  0040                     1110        DC    X'0040'              T E S T  N U M B E R
01940  F000                     1111        DC    X'F000'              EXP COND CODE AND SENSE
01942  F958                     1112        DC    AL2(INCCSW-SECNO+REG) EXP CSW ADDRESS
01944  0A D6                    1113  EXIT01 SVC   X'D6'                ROUTINE EXIT
01946  00 00
01948  EB0019FB40000001         1114  PREINC CCW   X'EB',LDAR,X'40',1
01950  FB0019FB000000F0         1115  LDINC  CCW   X'FB',LDAR,X'00',240
01958  00001958                 1116  INCCSW DC    A(INCCSW)
0195C  08400000                 1117        DC    X'08400000'
01960  00000000                 1118        DC    XL4'0'
01964  04000000                 1119        DC    X'04000000'
01968                           1120        CNOP  0,4
                                1121  ********************************************************************************
                                1122  * ROUTINE 02 - LOAD UCS BUFFER WITH BLANKS.  COMMAND CHAIN A PRE -
                                1123  *               CONDITION LOAD -EB-, TO A WRITE NO SPACE -01- COMMAND.
                                1124  *               EXPECT UNIT CHECK AND EQUIPMENT CHECK.  ISSUE DIAGNOSTIC
                                1125  *               CHECK READ.  EXPECT PRINT CHECK IN EVERY POSITION.
                                1126  ********************************************************************************
01968  02                       1127  ROUT02 DC    X'02'                ROUTINE NUMBER
01969  000B48                   1128        DC    AL3(ROUT03-SECNO)    ADDRESS OF NEXT ROUTINE
0196C  45 40  F 720             1129        BAL   R4,INIT              BR. TO INITIALIZE
01970  45 50  F 8B2            1130        BAL   R5,LOADIT            GO TO UCS LOAD ROUTINE
01974  0050                     1131        DC    X'0050'              T E S T  N U M B E R
01976  41 A0  F AF0            1132        LA    R10,PCLOAD           PLACE CCW ADDRESS IN REG 10
0197A  45 B0  F 0E6            1133        BAL   R11,ISIO             GO DO SIO
0197E  3C00                     1134        DC    XL2'3C00'            CONTROL SWITCHES
01980  0060                     1135        DC    X'0060'              T E S T  N U M B E R
01982  F010                     1136        DC    X'F010'              EXP COND CODE - EXP SENSE
01984  FB00                     1137        DC    AL2(PCLCSW-SECNO+REG) ADDRESS OF CSW
01986  41 A0  F B10            1138        LA    R10,DOCKRD           LOAD ADDRESS OF CCW
0198A  45 B0  F 0E6            1139        BAL   R11,ISIO             GO DO SIO
0198E  3800                     1140        DC    X'3800'              CONTROL SWITCHES
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1403 PRINTER FUNCTION 3

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01990  0070                      DC    X'0070'                T E S T   N U M B E R
01992  F010                      DC    X'F010'                EXP COND CODE - EXP SENSE
01994  FB18                      DC    AL2(CHKRD-SECNO+REG)   ADDRESS OF CSW
01996  92 00  F C10              MVI   SKORCH,X'00'           TURN OFF TITLE SW
0199A  41 70  0 084              LA    R7,132                 INITIALIZE COUNT OF PRT POS
0199E  41 50  F 691              LA    R5,CKAR+131            INSERT ADDR OF CHECK READ AREA
019A2  91 02  5 000       AGAIN  TM    0(R5),X'02'            TEST FOR PRINT CHECK
019A6  47 80  F 9CA              BC    NONE,NOPTCK            BR. IF NO PRINT CHECK
019AA  46 50  F 9AE       CYCLE  BCT   R5,*+4                 DECREMENT CHECK READ POSITION
019AE  46 70  F 9A2              BCT   R7,AGAIN               DECREMENT  POSITION COUNTER
019B2  91 01  F C10              TM    SKORCH,X'01'           SEE IF TITLE PRINTED
019B6  47 80  F 9C8              BC    NONE,EXIT02            BR. IF NO TITLE PRINTED
019BA  41 A0  F AF0              LA    R10,PCLOAD             SET UP TO REPEAT WRITE CCW
019BE  45 B0  F 4A2              BAL   R11,IOPOUT             BR. TO PRINT LOOP OPTION AND HALT
019C2  000000000000              DC    XL6'0'
019C8  0A D6              EXIT02 SVC   X'D6'                  EXIT
019CA  91 01  F C10       NOPTCK TM    SKORCH,X'01'           CHECK FOR TITLE PRINTED
019CE  47 10  F 9E2              BC    ALL,DIDTLE             BR. IF TITLE PRINTED
019D2  96 01  F C10              OI    SKORCH,X'01'           TURN ON  TITLE SW
019D6  0A D0                     SVC   X'D0'
019D8  64                        DC    X'64'
019D9  09                        DC    X'09'
019DA  FB20                      DC    AL2(BLAB-SECNO+REG)
019DC  0A D0                     SVC   X'D0'
019DE  A0                        DC    X'A0'
019DF  1F                        DC    X'1F'
019E0  FB29                      DC    AL2(BLAB1-SECNO+REG)
019E2  4E 70  F 4D8       DIDTLE CVD   R7,WORK                CONVERT TO DECIMAL
019E6  F3 21  F C12  F 4DE       UNPK  POS+1(3),WORK+6(2)     UNPACK
019EC  96 F0  F C14              OI    POS+3,X'F0'
019F0  0A D0                     SVC   X'D0'
019F2  A0                        DC    X'A0'
019F3  04                        DC    X'04'
019F4  FC11                      DC    AL2(POS-SECNO+REG)
019F6  47 F0  F 9AA              BC    UNC,CYCLE              BR. FOR MORE
019FA  40                 BLANK  DC    X'40'                  BLANK
019FB                     LDAR   DS    240C                   UCS BUFFER LOAD AREA
01AEB  0000000000
01AF0  EB0019FB40000001   PCLOAD CCW   X'EB',LDAR,X'40',1     PRE-CONDITION LOAD
01AF8  0100182100000084   PRINTA CCW   X'01',PRAR,X'00',132        WRITE
01B00  00001B00           PCLCSW DC    A(PCLCSW)              ADDRESS OF CSW
01B04  08000000                  DC    X'08000000'            CSW
01B08  00000000                  DC    XL4'0'
01B0C  06000000                  DC    X'06000000'
01B10  0600160E20000084   DOCKRD CCW   X'06',CKAR,X'20',132   DIAG CHECK READ CCW
01B18  00001B18           CHKRD  DC    A(CHKRD)
01B1C  0E000000                  DC    X'0E000000'
01B20  40E3E2E340F0F0F8   BLAB   DC    C' TST 0080'           T E S T   N U M B E R
01B28  F0
01B29  40C6C1C9D3C5C440   BLAB1  DC    C' FAILED TO SET P'
01B31  E3D640E2C5E340D7
01B39  D9E340C3C8C5C3D2          DC    C'RT CHECK IN POS'
01B41  40C9D540D7D6E2
01B48                            CNOP  0,4
                          ***********************************************************
                          * ROUTINE 03 - LOAD UCS BUFFER WITH   16 CHARACTER SETS. PRINT 132
                          *              CHARACTERS WHICH ARE NOT IN THE UCS BUFFER.  EXPECT
                          *              UNIT CHECK AND DATA CHECK. ISSUE CHECK READ. EXPECT NO
                          *              PLC BITS TO BE SET ON.
                          ***********************************************************
01B48  03                 ROUT03 DC    X'03'                  ROUTINE NUMBER
01B49  000C28                    DC    AL3(ROUT04-SECNO)      ADDRESS OF NEXT ROUTINE
01B4C  45 40  F 720              BAL   R4,INIT                BR. TO INITIALIZE
01B50  45 50  F 8A6              BAL   R5,ECONMY              GO TO LOAD UCS ROUTINE
01B54  0090                      DC    X'0090'                T E S T   N U M B E R
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1403 PRINTER FUNCTION 3

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01B56  92 C1  F 821              MVI   PRAR,X'C1'             MOVE -A- INTO PRINT AREA
01B5A  D2 82  F 822  F 821       MVC   PRAR+1(131),PRAR       LOAD PRINT AREA WITH -A-
01B60  41 A0  F AF8              LA    R10,PRINTA             SET ADDRESS OF CCW IN REG 10
01B64  45 B0  F 0E6              BAL   R11,ISIO               GO DO SIO
01B68  3C00                      DC    XL2'3C00'              CONTROL SWITCHES
01B6A  0100                      DC    X'0100'                T E S T   N U M B E R
01B6C  F008                      DC    X'F008'                EXP COND CODE - EXP SENSE
01B6E  FB00                      DC    AL2(PCLCSW-SECNO+REG)  ADDRESS OF EXP CSW
01B70  41 A0  F B10              LA    R10,DOCKRD             LOAD ADDRESS OF CCW
01B74  45 B0  F 0E6              BAL   R11,ISIO               GO DO SIO
01B78  3800                      DC    X'3800'                CONTROL SWITCHES
01B7A  0110                      DC    X'0110'                T E S T   N U M B E R
01B7C  F010                      DC    X'F010'                EXP COND CODE - EXP SENSE
01B7E  FB18                      DC    AL2(CHKRD-SECNO+REG)   ADDRESS OF CSW
01B80  92 00  F C10              MVI   SKORCH,X'00'           RESET SWITCH
01B84  41 70  0 084              LA    R7,132                 SETUP TO CHECK 132 POS
01B88  41 80  F 691              LA    R8,CKAR+131            LOAD ADDR POS 132
01B8C  91 04  8 000       TECT   TM    0(R8),X'04'            CHECK FOR PLC BIT
01B90  47 10  F BB4              BC    ALL,ERED               BR. IF IF ON
01B94  46 80  F B98       TIC    BCT   R8,*+4                 DECREMENT ADDRESS
01B98  46 70  F B8C              BCT   R7,TECT                BR UNTIL 132 CHECKED
01B9C  91 01  F C10              TM    SKORCH,X'01'           SEE IF PRINTED HEADING
01BA0  47 80  F BB2              BC    NONE,EXIT03
01BA4  41 A0  F AF8              LA    R10,PRINTA             SET UP LOOP CCW
01BA8  45 B0  F 4A2              BAL   R11,IOPOUT             GO PRINT LOOP MESSAGE
01BAC  000000000000              DC    XL6'0'
01BB2  0A D6              EXIT03 SVC   X'D6'                  ROUTINE EXIT
01BB4  91 01  F C10       ERED   TM    SKORCH,X'01'           CHECK FOR HEADING PRINTED
01BB8  47 10  F BCC              BC    ALL,NOHDR              BR IF HEADING WAS PRINTED
01BBC  96 01  F C10              OI    SKORCH,X'01'           INDICATE HEADING PRINTED
01BC0  0A D0                     SVC   X'D0'
01BC2  64                        DC    X'64'
01BC3  09                        DC    X'09'
01BC4  FC07                      DC    AL2(TSTELL-SECNO+REG)
01BC6  0A D0                     SVC   X'D0'
01BC8  A0                        DC    X'A0'
01BC9  23                        DC    X'23'
01BCA  FBE4                      DC    AL2(MITHED-SECNO+REG)
01BCC  4E 70  F 4D8       NOHDR  CVD   R7,WORK                CORRECT PRINT POS TO DECIMAL
01BD0  F3 21  F C12  F 4DE       UNPK  POS+1(3),WORK+6(2)
01BD6  96 F0  F C14              OI    POS+3,X'F0'
01BDA  0A D0                     SVC   X'D0'
01BDC  A0                        DC    X'A0'
01BDD  04                        DC    X'04'
01BDE  FC11                      DC    AL2(POS-SECNO+REG)
01BE0  47 F0  F B94              BC    UNC,TIC
01BE4  40D7D3C340C2C9E3   MITHED DC    C' PLC BIT ERRONEO'
01BEC  40C5D9D9D6D5C5D6
01BF4  E4E2D3E840D6D540          DC    C'USLY ON IN POSIT'
01BFC  C9D540D7D6E2C9E3
01C04  C9D6D5                    DC    C'ION'
01C07  40E3E2E340F0F1F2   TSTELL DC    C' TST 0120'           T E S T   N U M B E R
01C0F  F0
01C10  00                 SKORCH DC    X'00'
01C11  40E7E7E7           POS    DC    C' XXX'
01C15  F0F1F2F3F4F5F6F7   CHAR16 DC    X'F0F1F2F3F4F5F6F7F8F9FAFBFCFDFEFF'
01C1D  F8F9FAFBFCFDFEFF
01C25  00
01C26  07 00                     CNOP  0,4
                          ***********************************************************
                          * ROUTINE 04 - LOAD UCS BUFFER WITH A 16 CHARACTER SET.  ISSUE BLOCK
                          *              DATA CHECK COMMAND  -73-.  PRINT A LINE OF CHARACTERS
                          *              WHICH WILL NOT COMPARE. EXPECT NO DATA CHECK.  ISSUE
                          *              ALLOW DATA CHECK COMMAND -78-. PRINT LINE AGAIN. EXPECT
                          *              DATA CHECK.
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                                1262  ************************************************************************
01C28  04                       1263  ROUT04 DC    X'04'                ROUTINE NUMBER
01C29  000C80                   1264         DC    AL3(ROUT05-SECNO)    ADDRESS OF NEXT ROUTINE
01C2C  45 40  F 720             1265         BAL   R4,INIT              BR. TO INITIALIZE
01C30  45 50  F 8A6             1266         BAL   R5,ECONMY            GO TO LOAD UCS ROUTINE
01C34  0130                     1267         DC    X'0130'              T E S T   N U M B E R
01C36  41 A0  F C88             1268         LA    R10,BLOCK            LOAD CCW ADDRESS
01C3A  45 B0  F 0E6             1269         BAL   R11,ISIO             BR. TO ISSUE SIO
01C3E  4A00                     1270         DC    XL2'4A00'            CONTROL SWITCHES
01C40  0140                     1271         DC    X'0140'              T E S T   N U M B E R
01C42  F100                     1272         DC    X'F100'              EXP COND CODE AND SENSE
01C44  FCA8                     1273         DC    AL2(NORM-SECNO+REG)  EXP CSW ADDRESS
01C46  92 C1  F 821             1274         MVI   PRAR,C'A'            FILL PRINT AREA WITH -A-
01C4A  D2 82  F 822  F 821      1275         MVC   PRAR+1(131),PRAR
01C50  41 A0  F AF8             1276         LA    R10,PRINTA           LOAD PRINT CCW ADDRESS
01C54  45 B0  F 0E6             1277         BAL   R11,ISIO             BR. TO ISSUE SIO
01C58  3C00                     1278         DC    XL2'3C00'            CONTROL SWITCHES
01C5A  0150                     1279         DC    X'0150'              T E S T   N U M B E R
01C5C  F000                     1280         DC    X'F000'              EXP COND. CODE AND SENSE
01C5E  FC98                     1281         DC    AL2(ZEIDER-SECNO+REG) EXP CSW ADDRESS
01C60  41 A0  F C90             1282         LA    R10,ALLOW            LOAD CCW ADDR.
01C64  45 B0  F 0E6             1283         BAL   R11,ISIO             BR. TO ISSUE SIO
01C68  4A00                     1284         DC    XL2'4A00'            CONTROL SWITCHES
01C6A  0160                     1285         DC    X'0160'              T E S T   N U M B E R
01C6C  F100                     1286         DC    X'F100'              EXP COND. CODE AND SENSE
01C6E  FCA8                     1287         DC    AL2(NORM-SECNO+REG)  EXP CSW ADDRESS
01C70  41 A0  F AF8             1288         LA    R10,PRINTA           LOAD CCW ADDRESS
01C74  45 B0  F 0E6             1289         BAL   R11,ISIO             BR. TO ISSUE SIO
01C78  3C00                     1290         DC    XL2'3C00'            CONTROL SWITCHES
01C7A  0170                     1291         DC    X'0170'              T E S T   N U M B E R
01C7C  F008                     1292         DC    X'F008'              EXP COND CODE AND SENSE
01C7E  FB00                     1293         DC    AL2(PCLCSW-SECNO+REG) EXP ADDR OF CSW
01C80  0A D6                    1294  EXIT04 SVC   X'D6'                ROUTINE EXIT
01C82  000000000000
01C88  7300182100000001         1295  BLOCK  CCW   X'73',PRAR,X'00',1
01C90  7800182100000001         1296  ALLOW  CCW   X'78',PRAR,X'00',1
01C98  00001800                 1297  ZEIDER DC    A(PCLCSW)
01C9C  08000000                 1298         DC    X'08000000'
01CA0  00000000                 1299         DC    XL4'0'
01CA4  04000000                 1300         DC    X'04000000'
01CA8  00000000                 1301  NORM   DC    XL4'0'
01CAC  0C000000                 1302         DC    X'0C000000'
01CB0                           1303         CNOP  0,4
                                1304  ************************************************************************
                                1305  * ROUTINE 05 - LOAD ENTIRE UCS BUFFER WITH A 16 CHARACTER SET. PRINT
                                1306  *              ONE OF THESE CHARACTERS.  ISSUE A LOAD WITH COUNT OF 1.
                                1307  *              PRINT CHARACTER AGAIN.
                                1308  ************************************************************************
01CB0  05                       1309  ROUT05 DC    X'05'                ROUTINE NUMBER
01CB1  000D04                   1310         DC    AL3(ROUT06-SECNO)    ADDRESS OF NEXT ROUTINE
01CB4  45 40  F 720             1311         BAL   R4,INIT              BR. TO INITIALIZE
01CB8  92 F0  F 8E7             1312         MVI   LOAD+7,X'F0'         INSURE COUNT OF 240
01CBC  45 50  F 8A6             1313         BAL   R5,ECONMY            GO TO LOAD UCS ROUTINE
01CC0  0180                     1314         DC    X'0180'              T E S T   N U M B E R
01CC2  92 F1  F 821             1315         MVI   PRAR,X'F1'           PUT -1- IN POSITION ONE OF PRT BFR
01CC6  41 A0  F AF8             1316         LA    R10,PRINTA           PLACE ADDR OF PRINT CCW IN REG. 10
01CCA  45 B0  F 0E6             1317         BAL   R11,ISIO             BR. TO PRINT ONE POSITION -1-
01CCE  3E00                     1318         DC    XL2'3E00'            CONTROL SWITCHES
01CD0  0190                     1319         DC    X'0190'              T E S T   N U M B E R
01CD2  F000                     1320         DC    X'F000'              EXP COND CODE - EXP SENSE
01CD4  FC98                     1321         DC    AL2(ZEIDER-SECNO+REG) ADDRESS OF EXPECTED CSW
01CD6  92 40  F 9FB            1322         MVI   LDAR,X'40'           PLACE BLANK IN 1ST POS OF BUFFER LDR
01CDA  92 01  F 8E7             1323         MVI   LOAD+7,X'01'         SET LOADER CCW FOR COUNT OF -1-
01CDE  92 20  F 8E4             1324         MVI   LOAD+4,X'20'         SUPPRESS INCORRECT LENGTH RECORD
01CE2  45 50  F 8B2             1325         BAL   R5,LOADIT            BR. TO LOAD UCS
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01CE6  0200                     1326         DC    X'0200'              T E S T   N U M B E R
01CE8  41 A0  F AF8             1327         LA    R10,PRINTA           PLACE ADDR OF PRINT CCW IN REG. 10
01CEC  45 B0  F 0E6             1328         BAL   R11,ISIO             BR. TO PRINT ONE POSITION -1-
01CF0  3E00                     1329         DC    XL2'3E00'            CONTROL SWITCHES
01CF2  0210                     1330         DC    X'0210'              T E S T   N U M B E R
01CF4  F000                     1331         DC    X'F000'              EXP COND CODE - EXP SENSE
01CF6  FC98                     1332         DC    AL2(ZEIDER-SECNO+REG) ADDRESS OF EXPECTED CSW
01CF8  92 F0  F 8E7             1333         MVI   LOAD+7,X'F0'         RESTORE CCW COUNT OF 240
01CFC  92 00  F 8E4             1334         MVI   LOAD+4,X'00'         RESTORE INCORRECT LENGTH CHECK
01D00  0A D6                    1335  EXIT05 SVC   X'D6'                ROUTINE EXIT
01D02  07 00                    1336         CNOP  0,4
                                1337  ************************************************************************
                                1338  * ROUTINE 06 - LOAD UCS BUFFER WITH 5 SETS OF 48 CHARACTERS. PRINT
                                1339  *              A LINE. ISSUE DIAGNOSTIC READ. COMPARE FOR CORRECT
                                1340  *              READ BACK.  LOAD FOURTH QUADRANT CHARACTERS (WITH
                                1341  *              FOLDING) INTO UCS BUFFER.  PRINT AREA CONTAINS FIRST
                                1342  *              QUADRANT CHARACTERS.  IF FOLDING IS OPERATING PROPERLY,
                                1343  *              EXPECT  N O  DATA CHECK ON THE PRINT COMMAND.
                                1344  ************************************************************************
01D04  06                       1345  ROUT06 DC    X'06'                ROUTINE NUMBER
01D05  000E34                   1346         DC    AL3(ROUT07-SECNO)    ADDRESS OF NEXT ROUTINE
01D08  45 40  F 720             1347         BAL   R4,INIT              BR. TO INITIALIZE
01D0C  41 80  0 030             1348         LA    R8,48                PLACE COUNT INTO REG 8
01D10  41 70  0 0F0             1349         LA    R7,240               PUT 1ST CHAR -F0- INTO REG 7
01D14  42 78  F 9FA             1350  MORGEN STC   R7,LDAR-1(R8)        STORE CHAR INTO BUFF LOAD AREA
01D18  46 70  F D1C             1351         BCT   R7,**+4              MODIFY CHARACTER BEING STORED
01D1C  46 80  F D14             1352         BCT   R8,MORGEN            REDUCE COUNT AND STOR POS OF NEXT CH
01D20  D2 8F  F A2B  F 9FB      1353         MVC   LDAR+48(192),LDAR    GEN -5- 48 CHAR SETS IN BUFF LOAD AR
01D26  45 50  F 8B2             1354         BAL   R5,LOADIT            BR. TO LOAD BUFFER
01D2A  0220                     1355         DC    X'0220'              T E S T   N U M B E R
01D2C  D2 2F  F 821  F 9FB      1356         MVC   PRAR(48),LDAR        MOVE CHARACTERS INTO PRINT AREA
01D32  D2 53  F 851  F 821      1357         MVC   PRAR+48(84),PRAR     FILL PRINT AREA WITH CHARACTERS
01D38  41 A0  F AF8             1358         LA    R10,PRINTA           PLACE ADDR OF PRINT CCW IN REG 10
01D3C  45 B0  F 0E6             1359         BAL   R11,ISIO             BR. TO PRINT A LINE
01D40  3E00                     1360         DC    XL2'3E00'            CONTROL SWITCHES
01D42  0230                     1361         DC    X'0230'              T E S T   N U M B E R
01D44  F000                     1362         DC    X'F000'              EXP COND CODE - EXP SENSE
01D46  FC98                     1363         DC    AL2(ZEIDER-SECNO+REG) ADDRESS OF EXP CSW
01D48  41 A0  F 718             1364         LA    R10,RDCCW            PLACE ADDR OF DIAG READ  CCW IN R10
01D4C  45 B0  F 0E6             1365         BAL   R11,ISIO             BR. TO DO DIAG READ
01D50  3A00                     1366         DC    X'3A00'              CONTROL SWITCHES
01D52  0240                     1367         DC    X'0240'              T E S T   N U M B E R
01D54  F000                     1368         DC    X'F000'              EXP COND CODE - EXP SENSE
01D56  FDF0                     1369         DC    AL2(DIDRED-SECNO+REG) ADDRESS OF EXP CSW
01D58  92 00  F C10             1370         MVI   SKORCH,X'00'
01D5C  D5 83  F 821  F 692      1371         CLC   PRAR(132),DRAR
01D62  47 60  F D94             1372         BC    UNEQ,BADONE
01D66  92 F3  F 8E0             1373         MVI   LOAD,X'F3'           INSURE LOAD WITH FOLDING
01D6A  45 50  F 8B2             1374         BAL   R5,LOADIT            BR. TO LOAD UCS BUFFER
01D6E  0260                     1375         DC    X'0260'              T E S T   N U M B E R
01D70  41 80  0 030             1376         LA    R8,48                INSERT FIRST CHAR TO BE LOADED
01D74  42 88  F 820             1377  FOLDES STC   R8,PRAR-1(R8)        GENERATE FIRST QUADRANT CHARACTERS
01D78  46 80  F D74             1378         BCT   R8,FOLDES
01D7C  D2 53  F 851  F 821      1379         MVC   PRAR+48(84),PRAR
01D82  41 A0  F AF8             1380         LA    R10,PRINTA
01D86  45 B0  F 0E6             1381         BAL   R11,ISIO             BR. TO ISSUE SIO
01D8A  3E00                     1382         DC    X'3E00'              CONTROL SWITCHES
01D8C  0270                     1383         DC    X'0270'              T E S T   N U M B E R
01D8E  F000                     1384         DC    X'F000'              EXP COND. CODE AND SENSE
01D90  FC98                     1385         DC    AL2(ZEIDER-SECNO+REG) EXP CSW ADDRESS
01D92  0A D6                    1386  EXIT06 SVC   X'D6'                ROUTINE EXIT
01D94  1B 88                    1387  BADONE SR    R8,R8
01D96  1B 77                    1388         SR    R7,R7
01D98  41 50  0 084             1389         LA    R5,132
01D9C  43 75  F 820             1390  ANYMOR IC    R7,PRAR-1(R5)
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01DA0  43 85  F 691          1391          IC    R8,DRAR-1(R5)
01DA4  19 78                 1392          CR    R7,R8
01DA6  47 60  F DC0          1393          BC    UNEQ,INFRM
01DAA  46 50  F D9C          1394  CKMORE  BCT   R5,ANYMOR
01DAE  41 A0  F AF8          1395          LA    R10,PRINTA              SET UP TO LOOP
01DB2  45 B0  F 4A2          1396          BAL   R11,IOPOUT                ,,
01DB6  000000000000          1397          DC    XL6'0'                    ,,
01DBC  47 F0  F D92          1398          BC    UNC,EXIT06
01DC0  91 01  F C10          1399  INFRM   TM    SKORCH,X'01'
01DC4  47 10  F DD8          1400          BC    ALL,DIDDO
01DC8  96 01  F C10          1401          OI    SKORCH,X'01'
01DCC  0A D0                 1402          SVC   X'D0'
01DCE  64                    1403          DC    X'64'
01DCF  09                    1404          DC    X'09'
01DD0  FE2A                  1405          DC    AL2(BLAB2-SECNO+REG)
01DD2  0A D0                 1406          SVC   X'D0'
01DD4  A0                    1407          DC    X'A0'
01DD5  32                    1408          DC    X'32'
01DD6  FDF8                  1409          DC    AL2(SAYIT-SECNO+REG)
01DD8  4E 50  F 4D8          1410  DIDDO   CVD   R5,WORK
01DDC  F3 21  F C12  F 4DE   1411          UNPK  POS+1(3),WORK+6(2)
01DE2  96 F0  F C14          1412          OI    POS+3,X'F0'
01DE6  0A D0                 1413          SVC   X'D0'
01DE8  A0                    1414          DC    X'A0'
01DE9  04                    1415          DC    X'04'
01DEA  FC11                  1416          DC    AL2(POS-SECNO+REG)
01DEC  47 F0  F DAA          1417          BC    UNC,CKMORE
01DF0                        1418          CNOP  0,4
01DF0  00001720              1419  DIDRED  DC    A(INIT)
01DF4  0C000000              1420          DC    X'0C000000'
01DF8  40E3D9C1D5E2D3C1      1421  SAYIT   DC    C' TRANSLATOR OR B'
01E00  E3D6D940D6D940C2
01E08  E4C6D940D6D7C5D9      1422          DC    C'UFR OPERATED INC'
01E10  C1E3C5C440C9D5C3
01E18  D6D9D9C5C3E340C9      1423          DC    C'ORRECT IN POSITI'
01E20  D540D7D6E2C9E3C9
01E28  D6D5                  1424          DC    C'ON'
01E2A  40E3E2E340F0F2F5      1425  BLAB2   DC    C' TST 0250'            T E S T   N U M B E R
01E32  F0
01E33  00
01E34                        1426          CNOP  0,4
                             1427  ********************************************************************
                             1428  * ROUTINE 07 - SECTION SENSE SWITCH 24 MUST BE ON  TO INDICATE DUALING
                             1429  *              MODE, OR THIS ROUTINE WILL BE BYPASSED.  THE UCS BUFFER
                             1430  *              IS LOADED WITH 5 SETS OF CHARACTERS.  EACH SET CONSISTS
                             1431  *              OF 4 DUALING CHARACTERS AND 44 BLANKS.  PRINT THE FOUR
                             1432  *              DUALING CHARACTERS TO CHECK PRINT BUFFER TRANSLATE. THEN
                             1433  *              PRINT 4 DUALING CHARACTERS TO CHECK DATA BUFFER
                             1434  *              TRANSLATE. ISSUE DIAGNOSTIC READ TO CHECK RESULTS
                             1435  ********************************************************************
01E34  07                    1436  ROUT07  DC    X'07'                   ROUTINE NUMBERS
01E35  000EF0                1437          DC    AL3(ROUT08-SECNO)       ADDRESS OF NEXT ROUTINE
01E38  45 40  F 720          1438          BAL   R4,INIT                 BR. TO INITIALIZE
01E3C  91 80  F 007          1439          TM    SNSW+3,X'80'            TEST FOR NO DUALING MODE
01E40  47 10  F E4E          1440          BC    ALL,GOMAN               HAVE DUALING, GO TEST IT
01E44  0A D0                 1441          SVC   X'D0'                   PRINT OUT BYPASS MESSAGE
01E46  04                    1442          DC    X'04'                       ,,
01E47  0D                    1443          DC    X'0D'                       ,,
01E48  FFE2                  1444          DC    AL2(BYPS-SECNO+REG)         ,,
01E4A  47 F0  F EA6          1445          BC    UNC,EXIT07              GO TO NEXT DEVICE
01E4E  D2 03  F 9FB  F FA4   1446  GOMAN   MVC   LDAR(4),REGDUL          PUT DUAL CHARS INTO 1ST BUFFER SET
01E54  D2 BF  F A2B  F 9FB   1447          MVC   LDAR+48(192),LDAR       FILL BUFFER, 4 DUAL + BLANKS, 5 SETS
01E5A  45 50  F 8B2          1448          BAL   R5,LOADIT               BR. TO LOAD BUFFER
01E5E  0280                  1449          DC    X'0280'                 T E S T   N U M B E R
01E60  D2 03  F 821  F FA0   1450          MVC   PRAR(4),XLTDUL          PLACE TRANSLATED DUAL CHARS IN PRT
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01E66  41 A0  F F88          1451          LA    R10,PRINTB              ADDR OF CCW INTO REG 10
01E6A  45 B0  F 0E6          1452          BAL   R11,ISIO                BR. TO ISSUE SIO
01E6E  3C00                  1453          DC    XL2'3C00'               CONTROL SWITCHES
01E70  0290                  1454          DC    X'0290'                 T E S T   N U M B E R
01E72  F000                  1455          DC    X'F000'                 EXP COND CODE - EXP SENSE
01E74  FF90                  1456          DC    AL2(SAME-SECNO+REG)     ADDR OF EXP CSW
01E76  D2 03  F 821  F FA4   1457          MVC   PRAR(4),REGDUL          PLACE UNTRANSLATED DUAL CHARS IN PRT
01E7C  41 A0  F F88          1458          LA    R10,PRINTB              ADDR OF CCW INTO REG 10
01E80  45 B0  F 0E6          1459          BAL   R11,ISIO                BR. TO ISSUE SIO
01E84  3C00                  1460          DC    XL2'3C00'               CONTROL SWITCHES
01E86  0300                  1461          DC    X'0300'                 T E S T   N U M B E R
01E88  F000                  1462          DC    X'F000'                 EXP COND CODE - EXP SENSE
01E8A  FF90                  1463          DC    AL2(SAME-SECNO+REG)     ADDR OF EXP CSW
01E8C  41 A0  F 718          1464          LA    R10,RDCCW               ADDR OF DIAG READ INTO REG 10
01E90  45 B0  F 0E6          1465          BAL   R11,ISIO                BR. TO ISSUE SIO
01E94  3800                  1466          DC    X'3800'                 CONTROL SWITCHES
01E96  0310                  1467          DC    X'0310'                 T E S T   N U M B E R
01E98  F000                  1468          DC    X'F000'                 EXP COND CODE - EXP SENSE
01E9A  FDF0                  1469          DC    AL2(DIDRED-SECNO+REG)   ADDR OF EXP CSW
01E9C  D5 03  F 692  F FA0   1470          CLC   DRAR(4),XLTDUL          COMPARE FOR XLATED DUALING CHARACTER
01EA2  47 60  F EA8          1471          BC    UNEQ,XLTERR             BR. IF NO COMPARE
01EA6  0A D6                 1472  EXIT07  SVC   X'D6'                   ROUTINE EXIT
01EA8  0A D0                 1473  XLTERR  SVC   X'D0'
01EAA  64                    1474          DC    X'64'
01EAB  09                    1475          DC    X'09'
01EAC  FFD9                  1476          DC    AL2(BLAB3-SECNO+REG)
01EAE  0A D0                 1477          SVC   X'D0'
01EB0  A0                    1478          DC    X'A0'
01EB1  0F                    1479          DC    X'0F'
01EB2  FF2C                  1480          DC    AL2(SAYIT1-SECNO+REG)
01EB4  0A DD                 1481          SVC   X'DD'
01EB6  0004                  1482          DC    AL2(4)
01EB8  0FA0                  1483          DC    AL2(XLTDUL-SECNO)
01EBA  0F78                  1484          DC    AL2(SHUDRD+5-SECNO)
01EBC  D2 02  F F6F  F FA8   1485          MVC   SAYIT2+25(3),INSERT
01EC2  0A D0                 1486          SVC   X'D0'
01EC4  A0                    1487          DC    X'A0'
01EC5  2D                    1488          DC    X'2D'
01EC6  FF56                  1489          DC    AL2(SAYIT2-SECNO+REG)
01EC8  0A DD                 1490          SVC   X'DD'
01ECA  0004                  1491          DC    AL2(4)
01ECC  0692                  1492          DC    AL2(DRAR-SECNO)
01ECE  0F78                  1493          DC    AL2(SHUDRD+5-SECNO)
01ED0  D2 02  F F6F  F F6E   1494          MVC   SAYIT2+25(3),SAYIT2+24
01ED6  0A D0                 1495          SVC   X'D0'
01ED8  A0                    1496          DC    X'A0'
01ED9  2D                    1497          DC    X'2D'
01EDA  FF56                  1498          DC    AL2(SAYIT2-SECNO+REG)
01EDC  41 A0  F F88          1499          LA    R10,PRINTB              SET UP TO LOOP
01EE0  45 B0  F 4A2          1500          BAL   R11,IOPOUT                ,,
01EE4  000000000000          1501          DC    XL6'0'                    ,,
01EEA  47 F0  F EA6          1502          BC    UNC,EXIT07
01EEE  07 00                 1503          CNOP  0,4
                             1504  ********************************************************************
                             1505  * ROUTINE 08 - LOAD THE UCS BUFFER WITH A 16 CHAR. SET WITH FOLDING.
                             1506  *              PRINT A LINE OF HEX CHARACTERS -80-, AND -C0-.  THESE
                             1507  *              CHARACTERS SHOULD BE CONSIDERED VALID UNPRINTABLES IN
                             1508  *              FOLDING MODE.  NO DATA CHECK SHOULD BE SET.
                             1509  ********************************************************************
01EF0  08                    1510  ROUT08  DC    X'08'                   ROUTINE NUMBER
01EF1  00FFFF                1511          DC    X'00FFFF'               ADDRESS OF NEXT ROUTINE
01EF4  45 40  F 720          1512          BAL   R4,INIT                 BR. TO INITIALIZE.
01EF8  92 F3  F 8E0          1513          MVI   LOAD,X'F3'              SET UP FOR FOLDING MODE
01EFC  45 50  F 8A6          1514          BAL   R5,ECONMY               GO TO LOAD UCS ROUTINE
01F00  0330                  1515          DC    X'0330'                 T E S T   N U M B E R
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1403 PRINTER FUNCTION 3

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01F02  92 80  F 821          1516          MVI   PRAR,X'80'
01F06  92 C0  F 822          1517          MVI   PRAR+1,X'C0'          FILL PRINT AREA WITH -80- AND -C0-
01F0A  D2 40  F 823  F 821   1518          MVC   PRAR+2(65),PRAR
01F10  41 A0  F AF8          1519          LA    R10,PRINTA            LOAD CCW ADDRESS
01F14  45 B0  F 0E6          1520          BAL   R11,ISIO              BR. TO ISSUE SIO
01F18  3C00                  1521          DC    X'3C00'               CONTROL SWITCHES
01F1A  0340                  1522          DC    X'0340'               T E S T   N U M B E R
01F1C  F000                  1523          DC    X'F000'               EXP COND. CODE AND SENSE
01F1E  FC98                  1524          DC    AL2(ZEIDER-SECND+REG) WXP CSW ADDRESS
01F20  92 FB  F 8E0          1525          MVI   LOAD,X'FB'            RESTORE LOAD NO FOLD
01F24  0A D0                 1526          SVC   X'D0'                 PRINT RESTORE MSG
01F26  04                    1527          DC    X'04'
01F27  1B                    1528          DC    X'1B'
01F28  FF3B                  1529          DC    AL2(BASHED-SECND+REG)
01F2A  0A D6                 1530          SVC   X'D6'                 ROUTINE EXIT
01F2C  40C4E4C1D3C9D5C7      1531  SAYIT1  DC    C' DUALING FAILED'
01F34  40C6C1C9D3C5C4
01F3B  40D9C5E2E3D6D9C5      1532  BASHED  DC    C' RESTORE UCS BUFR WITH F837'
01F43  40E4C3E240C2E4C6
01F4B  D940E6C9E3C840C6
01F53  F8F3F7
01F56  40C4C1E3C140C2E4      1533  SAYIT2  DC    C' DATA BUFR POSIT'
01F5E  C6D940D7D6E2C9E3
01F66  C9D6D5E240F160F4      1534          DC    C'IONS 1-4     CON'
01F6E  4040404040C3D6D5
01F76  E3C1C9D540E7E7E7      1535  SHUDRD  DC    C'TAIN XXXXXXXX'
01F7E  E7E7E7E7E7
01F83  D5D6E3                1536  NOT     DC   C'NOT'
01F86  0000
01F88  0100182120000004      1537  PRINTB  CCW   X'01',PRAR,X'20',4
01F90  00001F90              1538  SAME    DC    A(SAME)
01F94  08000000              1539          DC    X'08000000'
01F98  00000000              1540          DC    XL4'0'
01F9C  04000000              1541          DC    X'04000000'
01FA0  6C4C7B7C              1542  XLTDUL  DC    X'6C4C7B7C'
01FA4  4D5D7E7D              1543  REGDUL  DC    X'4D5D7E7D'
01FA8  E2C8C4                1544  INSERT  DC    C'SHD'
01FAB  40E2C5C340E2E240      1545  FERRO   DC    C' SEC SS 24 IS OF'
01FB3  F2F440C9E240D6C6
```


1403 PRINTER FUNCTION 3

```
 LOC   OBJECT CODE    A     STMT    SOURCE STATEMENT                                                    DOS CL2-4
01F8B  C640E2C5E340C9E3      1546          DC    C'F SET IT OFF IF '
01FC3  40D6C6C640C9C640
01FCB  D5D6E340C4E4C1D3      1547          DC    C'NOT DUALING'
01FD3  C9D5C7
01FD6  D6C6C6                1548  OFF     DC    C'OFF'
01FD9  40E3E2E340F0F3F2      1549  BLAB3   DC    C' TST 0320'          T E S T   N U M B E R
01FE1  F0
01FE2  40D9E3D540C2E8D7      1550  BYPS    DC    C' RTN BYPASSED'
01FEA  C1E2E2C5C4
                             1551  ********************************************************************************
                             1552  *       EQUATES                                                                *
                             1553  ********************************************************************************
00000                        1554  NEVER   EQU   0
00007                        1555  NCCO    EQU   7
0000F                        1556  UNC     EQU   15
00008                        1557  NONE    EQU   8
00004                        1558  SOME    EQU   4
00001                        1559  ALL     EQU   1
00005                        1560  ANY     EQU   5
00008                        1561  CC0     EQU   8
00004                        1562  CC1     EQU   4
00002                        1563  CC2     EQU   2
00001                        1564  CC3     EQU   1
00008                        1565  EQ      EQU   8
00004                        1566  LO      EQU   4
00002                        1567  HI      EQU   2
00006                        1568  UNEQ    EQU   6
0000C                        1569  EQLO    EQU   12
0000A                        1570  EQHI    EQU   10
00080                        1571  LOGOUT  EQU   X'80'
00181                        1572  SYSMOD  EQU   X'181'
0F000                        1573  REG     EQU   X'F000'
0005A                        1574  WHAT    EQU   90
00000                        1575  R0      EQU   0
00001                        1576  R1      EQU   1
00002                        1577  R2      EQU   2
00003                        1578  R3      EQU   3
00004                        1579  R4      EQU   4
00005                        1580  R5      EQU   5
00006                        1581  R6      EQU   6
00007                        1582  R7      EQU   7
00008                        1583  R8      EQU   8
00009                        1584  R9      EQU   9
0000A                        1585  R10     EQU   10
0000B                        1586  R11     EQU   11
0000C                        1587  R12     EQU   12
0000D                        1588  R13     EQU   13
0000E                        1589  R14     EQU   14
0000F                        1590  R15     EQU   15
00198                        1591  WT      EQU   408
0005A                        1592  WAHT    EQU   90
00040                        1593  HCSW    EQU   64
00048                        1594  HCAW    EQU   72
00009                        1595  NMIXED  EQU   9                     NOT MIXED      0     3
00008                        1596  Z       EQU   8                     ZERO           0
0000D                        1597  NCC2    EQU   13                    NOT BUSY       0 1   3
00004                        1598  NOTZRO  EQU   4                     NOT ZERO - AND -   1
0000C                        1599  MIXNON  EQU   12                    MIXED OR NONE  0 1
0000B                        1600  NCC1    EQU   11                    CSW NOT STORED 0   2 3
                             1601  *
                             1602  *       GENERAL EQUATES
                             1603  *
00078                        1604  HION    EQU   120                   HARDWARE I/O NEW PSW LOCATION
```

1403 PRINTER FUNCTION 3

```
001BC                 1605  DMIO   EQU   444
001A0                 1606  DMSSW  EQU   416
                      1607         END
```

DMIO TABLE

1403 PRINTER FUNCTION 3

POST ASSEMBLY DATA

RELOCATION DICTIONARY

LOCATION	LENGTH
01015	3
0107C	4
015E9	3
015F0	3
01719	3
018D1	3
018D9	3
018E1	3
018E8	4
01949	3
01951	3
01958	4
01AF1	3
01AF9	3
01B00	4
01B11	3
01B18	4
01C89	3
01C91	3
01C98	4
01DF0	4
01F89	3
01F90	4

LABEL CROSS-REFERENCE BY STATEMENT NUMBERS

LABEL	LEN	VALUE	DEFN	REFERENCES
AGAIN	4	0019A2	1147	1150
ALL	1	000001	1559	0668 0710 0725 0734 0742 0758 0761 0790 0817 0943 1010 1020 1158 1220 1230 1400 1440
ALLOW	8	001C90	1296	1282
ANY	1	000005	1560	0941
ANYMOR	4	001D9C	1390	1394
BADONE	2	001D94	1387	1372
BASHED	27	001F3B	1532	1529
BLAB	9	001B20	1187	1163
BLAB1	16	001B29	1188	1167
BLAB2	9	001E2A	1425	1405
BLAB3	9	001FD9	1549	1476
BLANK	1	0019FA	1176	
BLOCK	8	001C88	1295	1268
BLOOP	4	001780	1019	1002 1041
BYPS	13	001FE2	1550	1444
CAW	4	001048	0519	
CC0	1	000008	1561	0690 0696
CC1	1	000004	1562	0697 0754
CC2	1	000002	1563	0698
CC3	1	000001	1564	
CHAR16	16	001C15	1254	1062
CHKRD	4	001B18	1185	1143 1185 1215
CKAR	1	00160E	0988	1146 1184 1218
CKMORE	4	001DAA	1394	1417
CLUIN	16	0015F5	0986	1036
CSW	8	001040	0518	
CYCLE	4	0019AA	1149	1175
DARIO	2	001778	1014	1010
DIDDO	4	001DD8	1410	1400
DIDRED	4	001DF0	1419	1369 1469
DIDTLE	4	0019E2	1168	1158
DMIO	1	0001BC	1605	
DMSSW	1	0001A0	1606	
DOCKRD	8	001B10	1184	1138 1210
DRAR	1	001692	0989	0990 1371 1391 1470 1492
ECONMY	6	0018A6	1062	1200 1266 1313 1514
EQ	1	000008	1565	0785 1002
EQHI	1	00000A	1570	
EQLO	1	00000C	1569	
ERED	4	001BB4	1229	1220
EXIT01	2	001944	1113	
EXIT02	2	0019C8	1156	1152
EXIT03	2	001BB2	1228	1224
EXIT04	2	001C80	1294	
EXIT05	2	001D00	1335	
EXIT06	2	001D92	1386	1398
EXIT07	2	001EA6	1472	1445 1502
EXNPSW	5	001058	0521	
EXOPSW	8	001018	0513	
FERRD	16	001FAB	1545	1006 1007 1008 1011 1012 1013 1013 1017
FLAG1	1	00100E	0509	
FLAG2	1	00100F	0510	
FOLDES	4	001D74	1377	1378
GOMAN	6	001E4E	1446	1440
GREG	4	001154	0689	0691
HANGUP	6	0017A0	1026	1020
HCAW	1	000048	1594	0662 0750 0939
HCSW	1	000040	1593	0663 0663 0704 0726 0729 0763
HI	1	000002	1567	
HION	1	000078	1604	

HUNG	16	0017FE	1051	1033
IACSNS	11	001570	0972	0766 0906 0907 0911 0982
IACT	3	00155F	0969	0880 0890
IACTCC	10	00150A	0955	0694 0699 0701 0703 0707 0768 0866
IBLAH	16	001545	0967	0837 0850 0851 0855 0867 0871 0880 0885 0890
IBSN	6	00128E	0768	0740 0744 0746 0756
ICAW	12	001533	0964	0828 0831 0832 0836
ICCOUT	6	0013A4	0857	0827 0843
ICCSW1	6	001280	0776	0775
ICCSW2	6	0012D2	0784	0783
ICCW	3	001542	0966	0837
ICHNG1	6	0013E2	0876	0873
ICHNG2	6	001412	0886	0875
ICM	2	00100A	0506	
ICNT	1	00139F	0854	0838 0868
ICOUT	2	001388	0846	0841 0877 0882 0887 0892
ICSW	3	00153F	0965	0867
ICSW1	8	0015D2	0980	0704 0726 0741 0776 0776 0881
ICSW2	8	0015DA	0981	0729 0745 0784 0784 0891
ICWOUT	6	00136E	0840	0845
IDID	4	00141C	0888	0884
IDIDI	4	0013EC	0878	0870
IDOSNS	4	001238	0747	0738 0742 1037
IDUNCK	4	0012E0	0787	0759 0762 0785
IEXP	3	001562	0970	0871 0885
IEXPCC	10	001500	0954	0857 0862
IEXSNS	11	001565	0971	0893 0898 0899 0903
IFLAG1	1	001310	0801	0787 0793
IFLAG2	1	0014A4	0932	0788 0794
IHANG	4	001134	0680	0685
IHI	4	00114C	0687	0679 0683
ILEAVE	4	0014C0	0944	0792
ILINK	16	001523	0960	0806 0809 0810 0814 0938
ILOKE	4	001278	0763	0754
ILOOP	4	001124	0676	
IMORST	4	001404	0883	0879
INCCSW	4	001958	1116	1098 1104 1106 1112 1116
INDER	4	0012DC	0786	0752 0758 0761 0767 0769 0773 0777 0781
INFRM	4	001DC0	1399	1393
INIT	2	001720	0994	1090 1129 1199 1265 1311 1347 1419 1438 1512
INOEX1	4	001260	0757	0771
INOEX2	4	00126C	0760	0779
INOW	4	0011A4	0708	0668 0700 0702 0706
INPSW	5	001010	0511	
INSERT	3	001FA8	1544	1485
INT3	4	0011F8	0731	0728
IOADDR	15	001514	0956	0821 0825
IOADR	3	0015F0	0983	0820
IOCSW	6	0013BA	0867	0817
IOLOG	16	00157B	0973	0919 0920 0921 0922 0926
IONE	4	00118E	0703	0697
IONPSW	4	001078	0526	
IOOPSW	8	001038	0517	
IOPOUT	2	0014A2	0931	0913 0928 1154 1226 1396 1500
IOPT1	16	0015A0	0976	0934 1006 1012
IOUTIT	6	001300	0795	0790
IPAS	6	001434	0893	0889
IPASS	4	00145E	0912	0895
IRETRN	4	0011D4	0723	0527
ISAVE	8	0014F0	0952	0661 0948
ISEN	4	001210	0737	0710 0719 0732 0734
ISENSE	8	0015E8	0982	0749
ISIO	6	0010E6	0659	1067 1100 1108 1133 1139 1205 1211 1269 1277 1283 1289 1317 1328 1359 1365 1381 1452 1459 1465 1520
ISLAVE	8	0014F8	0953	0660 0858 1029

ISSUE	4	00116E	0695	0826	0983											
ISV2	6	0011EE	0729	0725												
ISW	2	0010E4	0655	0692	0692	0693	0705	0708	0711	0714	0718	0723	0724	0727	0730	0733
				0735	0739	0743	0757	0760	0765	0772	0780	0786	0789	0878	0888	0894
				0894	0927	0929	0942	1019	1027	1028	1039	1040				
ITIC	4	001258	0755	0764												
ITIOLP	4	001250	0753	0755												
ITRY1	4	00111C	0674	0677	0681	0941										
ITRY2	4	00112C	0678	0675												
ITSTNO	9	001597	0975	0659	0795	0798	0799	0803								
ITWO	4	001186	0701	0698												
IUP	4	0014CC	0947	0945												
IWAIT	4	001184	0712	0736	0930											
IZERO	4	0011A0	0707	0696												
JOHN	6	001160	0692	0670	0690											
LDAR	1	0019FB	1177	1022	1023	1023	1024	1062	1063	1063	1075	1114	1115	1178	1322	1350
				1353	1353	1356	1446	1447	1447							
LDCSW	4	0018E8	1076	1071	1076											
LDINC	8	001950	1115	1097	1105											
LO	1	000004	1566													
LOAD	8	0018E0	1075	0998	1093	1096	1312	1323	1324	1333	1334	1373	1513	1525		
LOADIT	6	0018B2	1064	1091	1094	1130	1325	1354	1374	1448						
LOGOUT	1	000080	1571	0666	0666	0914										
MCNPSW	8	001070	0525													
MCOPSW	8	001030	0516													
MITHED	16	0018E4	1248	1239												
MIXNON	1	00000C	1599													
MOD44	4	00110C	0667	0665												
MOD50	4	00181C	1055	1000												
MORGEN	4	001D14	1350	1352												
MSK1	1	0015F3	0984	0715												
MSK2	1	0015F4	0985	0717												
MUMB	2	0018C6	1069	1064												
NCC0	1	000007	1555	0681	0752	0764										
NCC1	1	00000B	1600													
NCC2	1	00000D	1597													
NEVER	1	000000	1554													
NIOU	1	00100D	0508													
NITWIT	4	001730	0999	0996												
NMIXED	1	000009	1595													
NOHDR	4	001BCC	1240	1230												
NONE	1	000008	1557	0670	0675	0679	0683	0732	0738	0740	0744	0746	0771	0773	0779	0781
				0792	0843	0870	0879	0884	0889	0895	0928	0945	0996	1005	1148	1152
				1152	1224											
NOPTCK	4	0019CA	1157	1148												
NORM	4	001CA8	1301	1273	1287											
NOT	3	001F83	1536	1008												
NOTZRO	1	000004	1598													
OFF	3	001FD6	1548	1007	1011											
PCLCSW	4	001B00	1180	1137	1180	1209	1293	1297								
PCLOAD	8	001AF0	1178	1132	1153											
PGNPSW	8	001068	0524													
PGOPSW	8	001028	0515													
POS	4	001C11	1253	1169	1170	1174	1241	1242	1246	1411	1412	1416				
PRAR	1	001821	1057	1024	1073	1074	1179	1202	1203	1203	1274	1275	1275	1295	1296	1315
				1356	1357	1357	1371	1377	1379	1379	1390	1450	1457	1516	1517	1518
				1518	1518	1537										
PREINC	8	001948	1114	1099	1107											
PRELD	8	0018D0	1073	1066												
PRINTA	8	001AF8	1179	1204	1225	1276	1288	1316	1327	1358	1380	1395	1519			
PRINTB	8	001F88	1537	1451	1458	1499										
RDCCW	8	001718	0990	1364	1464											
REG	1	00F000	1573	0803	0814	0825	0836	0855	0862	0866	0903	0911	0926	0934	0938	1017
				1033	1036	1045	1071	1104	1112	1137	1143	1163	1167	1174	1209	1215
				1215	1235	1239	1246	1273	1281	1287	1293	1321	1332	1363	1369	1385

				1385	1405	1409	1416	1444	1456	1463	1469	1476	1480	1489	1498	1524
				1524	1529											
REGDUL	4	001FA4	1543	1446	1457											
ROUT01	1	0018F8	1088	0512												
ROUT02	1	001968	1127	1089												
ROUT03	1	001B48	1197	1128												
ROUT04	1	001C28	1263	1198												
ROUT05	1	001C80	1309	1264												
ROUT06	1	001D04	1345	1310												
ROUT07	1	001E34	1436	1346												
ROUT08	1	001EF0	1510	1437												
RTSAV	1	0018A5	1058	1021	1026											
R0	1	000000	1575													
R1	1	000001	1576	0687	0688	0691										
R10	1	00000A	1585	0660	0662	0828	0839	0840	0842	0844	0844	0858	0939	1029	1066	1099
				1107	1132	1138	1153	1204	1210	1225	1268	1276	1282	1288	1316	1327
				1327	1358	1364	1380	1395	1451	1458	1464	1499	1519			
R11	1	00000B	1586	0659	0660	0667	0709	0731	0737	0766	0768	0770	0774	0778	0795	0805
				0806	0815	0815	0816	0857	0869	0872	0883	0893	0944	0946	0946	0947
				0947	0947	0949	1029	1067	1100	1108	1133	1139	1154	1205	1211	1226
				1226	1269	1277	1283	1289	1317	1328	1359	1365	1381	1396	1452	1459
				1459	1465	1500	1520									
R12	1	00000C	1587	0676	0680	0684	0689	0695	0751	0753	0999	1000	1001	1003		
R13	1	00000D	1588	0662	0663	0663	0704	0750	0763	0939	0994	0994	0997			
R14	1	00000E	1589	0664	0712	0747	0912	0995								
R15	1	00000F	1590	0726	0729	0997										
R2	1	000002	1577													
R3	1	000003	1578													
R4	1	000004	1579	1025	1090	1129	1199	1265	1311	1347	1438	1512				
R5	1	000005	1580	0943	1037	1064	1065	1065	1072	1091	1094	1130	1146	1147	1149	1200
				1266	1313	1325	1354	1374	1389	1390	1391	1394	1410	1448	1514	
R6	1	000006	1581													
R7	1	000007	1582	1145	1150	1168	1217	1222	1240	1349	1350	1351	1388	1388	1390	1392
R8	1	000008	1583	0661	0749	0750	0774	0775	0782	0782	0783	0804	0805	0872	0873	0874
				0874	0875	0948	1218	1219	1221	1348	1350	1352	1376	1377	1377	1378
				1378	1387	1387	1391	1392								
R9	1	000009	1584	0661	0712	0713	0716	0747	0748	0755	0841	0856	0877	0882	0887	0892
				0948												
SAME	4	001F90	1538	1456	1463	1538										
SAVDEV	2	0017FC	1050	1001	1003											
SAV10	4	001818	1054	0839												
SAYIT	16	001DF8	1421	1409												
SAYIT1	15	001F2C	1531	1480												
SAYIT2	16	001F56	1533	1485	1489	1494	1494	1498								
SCAT	2	0017D2	1042	1005												
SCATEL	16	0017DA	1047	1045												
SDMF	1	00100C	0507													
SECNO	4	001000	0503	0798	0799	0803	0809	0810	0814	0820	0821	0825	0831	0832	0836	0848
				0849	0855	0862	0866	0898	0899	0903	0906	0907	0911	0917	0918	0926
				0926	0934	0938	1017	1021	1026	1033	1036	1038	1045	1071	1089	1104
				1104	1112	1128	1137	1143	1163	1167	1174	1198	1209	1215	1235	1239
				1239	1246	1264	1273	1281	1287	1293	1310	1321	1332	1346	1363	1369
				1369	1385	1405	1409	1416	1437	1444	1456	1463	1469	1476	1480	1483
SHUDRD	13	001F76	1535	1484	1493											
SKORCH	1	001C10	1252	1144	1151	1157	1159	1216	1223	1229	1231	1370	1399	1401		
SNSW	4	001004	0504	0669	0674	0678	0682	0791	0940	1009	1439					
SOME	1	000004	1558													
SRET	3	00105D	0522													
STAY	2	00177E	1018													
SVNPSW	8	001060	0523													
SVOPSW	8	001020	0514													
SYSMOD	1	000181	1572	0664	0912											
TECT	4	00188C	1219	1222												
TIC	4	001B94	1221	1247												
TSTELL	9	001C07	1251	1235												

```
UNC            1 00000F 1556     0677  0685  0700  0702  0706  0719  0728  0736  0756  0759  0762  0845  0856
                                 0930  0949  1025  1041  1072  1175  1247  1398  1417  1445  1502
UNEQ           1 000006 1568     0665  0767  0769  0777  0827  0913  1372  1393  1471
UNIT1          1 0010E0 0529     0999  1004
U1ADDR         2 0010E2 0531
U1OP           1 0010E1 0530
WAHT           1 00005A 1592
WHAT           1 00005A 1574
WORK           1 0014D8 0951     0840  0848  0849  0850  0851  0876  0876  0881  0886  0886  0891  0914  0917
                                 0918  0919  0920  0921  0922  1168  1169  1240  1241  1410  1411
WT             1 000198 1591     0687  0712  0747
XF8325         1 001000 0003
XLTDUL         4 001FA0 1542     1450  1470  1483
XLTERR         2 001EA8 1473     1471
Z              1 000008 1596
ZEIDER         4 001C98 1297     1281  1321  1332  1363  1385  1524
```

NO STATEMENTS FLAGGED IN THIS ASSEMBLY

OBJECT DECK LIST. PERIODS CORRESPOND TO BLANK COLUMNS.

```
COLS.  1 THROUGH 20    COLS.  21 THROUGH 40    COLS.  41 THROUGH 60    COLS.  61 THROUGH 80

BESD......AA..AAXF83   25..AAAA.AGP........    ..................840   109.131812..83250001
9         YQ  Y9         YYQY Y8Y
          99  9          9999 999

BTXT.AAA..A8..AA82&A   AAAAAAAAAA&AADAAAAQ8    AAAAAAAAAAAAAAAAAAAA    AAAAAAAAAAAA83250002
9    YQY  Y9  Y9 9 Y   YYYYYYYYY9-Y99YYYY9     YYYYYYYYYYYYYYYYYYYY    YYYYYYYYYYYY
     999  9   9    9   999999999  9  9999      99999999999999999999    999999999999

BTXT.AA8..A8..AAAAAA   AAAAAAAAAAAAAAAAAAAA    AAAAAAAAADAAAAAAAAAA    AAAAAAAAAAAA83250003
9    YQ9  Y9  Y9YYYY   YYYYYYYYYYYYYYYYYYYY    YYYYYYYYY9YYYYYYYYYY    YYYYYYYYYYYY
     99   9   9 9999   99999999999999999999    999999999 9999999999    999999999999

BTXT.AA&..AA..AAAAAA   AAAAADAAAAJM........    ....................    ............83250004
9    YQ-  YQ  Y9YYYY   YYYY99YYYY9
     990  99  9 9999   9999  9999

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9    YQ8  Y9  Y90YYY   YY 9 QQ9QY  Q0   YYZ     90 0 -QZOZ  8 8YYYY    -YQYZQ 0-- 9
     99   9   9  9 9   99   0            9            Z     9 99 9       09 9

BTXT.AJQ..A8..AAGA1-   AAODGA1UDA&AG01MA.OD    GA1DEA&AG&1MA.ODGA1D    DA&AG014HOAH83250006
9    Y99  Y9  Y9ZY     -Y 9ZY 8QY-YZ  8-  9    ZY 8QY-YZ- 8-  9ZY 8    QY-YZ  9R89-
     9    9   9              9 9 9   9             9 9 0 9              9 9    9

BTXT.AJ&..A8..AAHAAC   EA&AGA1-FA1DPAOUOUFA    OUBX5GDA&AGA1JG.1FGJ    1FB35GG01MB283250007
9    Y9   Y9  Y90QY9   QY-YZY  ZQ R 9   -Y       -  8QY-YZY YZ  YZY     0-  8Z  0-
     9    9   9  99     9 9    9                    9 9 9          9          9

BTXT.AJH..A8..AA5GGO   1MB15GKG5K-.F.OUG01M    BO5GD7OUA.AAGA2AFAOU    HFAHHAACFAOU83250008
9    Y90  Y9  Y9 8Z     0-  8 9  0 -   Z  0    -  8-8  - QYZQ Q-Q      RQ9-0QY9-Y
     9    9   9  9            9                   9      09 9 9 9             9

BTXT.AJ&..A8..AAAA53   FA1DAA54D7OUG02AD7OU    A.OUGA1OKG5KO.F.OUGO    18KG5BO.FJOU83250009
9    Y9-  Y9  Y9YY     ZQ  YY  -8  Z  Q-8      -   ZQ Y 9    -   Z        9 Q  -Y
     9    9   9  9            9        9             9 9                  9    9

BTXT.AJ8..A8..AAAAAA   GA2AAHOUGA2AFHOUG01D    ABAAGA28A.OUGA2FAB5O    GA28AJOUGA2F83250010
9    Y9   Y9  Y9-QQY   ZY Q-9  ZQ Q-9  Z  -    -9QYZY 9-   ZY Y-9      ZQ 9-Y  ZY Y
     9    9   9  909       9      9 9      0      09                    9   9

BTXT.AKA..A8..AAAB5F   GA2FHFAHHAADAA5Y&EAH    DA&AG&2DEA&AG.2HFA2&    G02FA.OUGA2D83250011
9    Y9Q  Y9  Y9-9 Q   ZY YRQ9-0QY9ZY    YYZ   QY-YZ- QQY-YZ  RZQ      Z  Y-   ZQ Q
     9 Z  9   9    9                9      9    9 9 0 9 9 9   0                  9 9

BTXT.AKQ..A8..AAG02S   AJOUGA2DG02SED-DG&2H    FDOUNA5EAEG-2DNA5GAD    G-2DAHAAGA2-83250012
9    Y9Z  Y9  Y9Z  8   -Y  ZQ QZ  8-80ZZ- R    -9   Y RQ9Z  Q Y 8Q9    Z  Q-9QYZY
     9    9   9         9   9 9     9  0            9 00    9 9 90        9  09

BTXT.AKJ..A8..AAA.OU   GA2DHCAF.A2DNG5K5KG-    2DADAAGA2UAJOUGA2DAH    AH.A2ONG5B5B83250013
9    Y9Y  Y9  Y9-      ZY QZYY9 Y - 9    Z      Q-9QYZY 8-Y  ZY QZO    Y9 Y   9 Q Q
     9    9   9           9 9   0               9  09    9     9       9        9 9

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     9 9  9   9  9       9 90 0  999  9  9    9   09   09 9 0999        99  9

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     9    9   9                999  9  9  9                       9

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     9    9   9   9         999                   9 9      9  0        9  9 99  9

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     9 0  9   9  9        9 9    09    9          9        9

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     9    9   9                           09     9                      9

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     9    9   9             9  9 9999                  9           9   9  9

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     9    9   9    Z        09      9         9        9         09      9 09  09

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     9    9   9         Z 9

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9    Y9   Y9  Y9YYYY   YYYYYYYYYYYY                                         Y
     9    9   9 9999   999999999999                                         9

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     9    9   9                  9

BTXT.AN3..A8..AA.CAW   .XXXXXX.CSWCCW.CSW.X   XXXXXXX.XXXXXXXX.EXP   ACTEXP.SNS.X83250026
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     9    9   9

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     9    9   9

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9    Y90  Y9  Y9                          8                            YYYYYYYYY
     9    9   9                                                        999999999

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     9 9  9   9 9999   999999999 9 0999 9     Z

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9    Y99  Y9  Y9YY9Y   9-YYY08Q- Z-ZY Q9Q-Q    8R- 8R- 88- QZY Y -    Q-Q ZZY   9
     9    9   9 99 9     999 99        Z 9 Z              9   Z       Z 9
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     9    9   9 ZO       Z Z   Z9Z       9 0    ZOZ   Z      Z9Z99    9Z 99     9

BTXT.APF..A8..AA7JKA   8NOCB.9CKP9D9CKC8/9C   G4KAOC8ND7OUFAOVHL48   B-MK7FB-JJ5583250032
9    Y90  Y9  Y9 Y Y    0 9-  Q Y Q Q 0 9 Q   9  Y 9 0-8  -9  -Y     80Z8 Q80Y8
     9    9   9    9           Z 9 Z Z     Z     9                    9  9 Z9  9

BTXT.APF..A8..AAE&28   BAOCDFOVBAOUGO7AB-DP   7BBN.DEVICE.BYPASSED   -NO.UCS.DEFI83250033
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     9 0  9   9             Z    9       9  9    99

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     9    99  9     9    9ZZ                              9999999Z

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     9    9   9 9 9    ZZ  9Z9 Z       9  9        0  9999 9     999   9   99  9

BTXT.AQE..A8..AAAAAC   AJCAAAOAAQYHAAAAAAAD   AAAAAAQE.7JE&8BAAB38   SE&8BAJBC8SB83250036
9    Y9Q  Y9  Y9YY9Q   Y8QYYY YY9 9YYYYYYYY9   YYY9Y8ZZ  YZ  -YQ-     8Z  -YY-Q 8-
     9 9  9   9 99 Z   99Z999 99    9999999   999 99    9   099          099 Z

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9    Y89  Y9  Y9Y R-   Y 8ZY ZZQ  8YYQ Y R-     R-9 8ZY ZZQ  8YY      Y R8 YYYY8Q
     99   9   9 9      9        0  999Z 9                  0  999     9  9 99999Z

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9    Y88  Y9  Y9YY9Q   Y8QYYY YY8R9 YYYYYY9   YYY9Y8ZZ  YZ  -Y ZYQ     ZQ  8YY   QQ
     99   9   9 99 Z   99Z999 999   999999    999 99    9   09   Z     0  999  9Z

BTXT.AJE..A8..AAAAJC   AEAOW8AA&OACQBADAA&A   DA&6AAB&AGA9BF&9OF&9   KAADAGA9HAJB83250039
9    Y80  Y9  Y9YZYQ   QZQ  9YY- QQ9-YQQZ-Y   OZ  --9 YZY YZ  YZ-    O-9QQZY  ZYQ
     99   9   9 9  Z   9 0   990 9Z  9Z9 09            9   9     0      Z9       Z

BTXT.AJE..A8..AAOEA4   KAAAAAABOAADAGA9SFAD   AB-MACJB-JPC/F&4Q3/D   K4FFODMB-JDD83250040
9    Y8Q  Y9  Y9 ZQ    OYYYYYY8 -9QQZQ  -9Q   Q8OZ8QY8OY8Q88-   9Q   9 Q- Q98OY9Q
     990  9   9   0     9999999   Z9 9     Z   99  9Z99  9Z9 0    Z      9  Z 9   Z

BTXT.AJ5..AF..AAJGO9   K...................   ....................   ...........83250041
9    Y8   Y9  Y99Z     Y
     99   9   9

BTXT.AKL..A8..AAAAAA   ALAJC.AAAAAQ/AAADAAL   AHAAAAAAAFAAAFAOFJAA   DAALQFAAA.TS83250042
9    Y8Y  Y9  Y9YYYY   YYY8Q YY99Y99YYYOYY8   Y9YYYYYYYY9YYY9Y98YYY   OYY898YYY
     999  9   9 9999   9999Z 99  9  999 999   9 9999999 999 9 9999     999 9999

BTXT.ALT..A8..AAT.OO   8O.FAILED.TO.SET.PRT   .CHECK.IN.POSCADYE.7   JE&8OAABA8/K83250043
9    Y89  Y9  Y9                                          9Y89Z      YZ  OYQ-  9
     99   9   9                                            99        9    9

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     99   9   9           Z  0  99 9  Z9  Z   9 0    9 9 9Z  9Z9 09          9 9Z

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9    Y8-  Y9  Y9-ZYQ   -Z-QY-9QQZYQ-ZYQ ZQ    OYYYYYY8 -9QQZQQY-9Q   Q8OZ8Q98OY9Q
     99   9   9 0  Z     OZ   Z9  ZO  Z  O     9999999   Z9 9Z9  Z   99  9Z 9   Z

BTXT.ALC..A8..AAUF&4   Q3/DK4FFODMB-JDDJGOC   D.PLC.BIT.ERRONEOUSL   Y.ON.IN.POSI83250046
9    Y8Y  Y9  Y9 8-      9Q9 Q- Q98OY9Q9Z Q   -
     999  9   9   0       Z 9  Z 9   Z   Z
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1403 PRINTER FUNCTION 3

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9    Y89  Y9  Y9              Y                      QQQQQQY9Y9Y8QZ   YZ  O9QZYQOZ
     99   9   9               9                      ZZZZZZ9 9 990    9     Z  Z

BTXT.AM3..A8..AAAOWB     AA.1ADQBA8/KB8S8/AJB   8EAOW4AA&OADHAJDAEAO   WBAA-1ADQAJB83250048
9    Y88  Y9  Y9Q  8    Y9  YQO-  9 0 9 9ZYQ    ZQ  8Y9  YQ-ZYQQZQ     8Y9  YQOZYQ
     999  9   9 0          9   9Z             Z    0  99   9Z   Z  0      9   9Z   Z

BTXT.AMC..A8..AA8EAO     W4AA&OHCABOAAAAAACAQ   /AAAA3AQ/AAAAAALAHAA   AAAAADAAAAAA83250049
9    Y8R  Y9  Y9 ZQ      8Y9- 9QY8 YYYYYYRY9    9YYY98Y99YYY9YY8Y9YY   YYYYY9YYYYYY
     990  9   9  0        99 0  Z99 99999909     999  9  999 9999 99     99999 999999

BTXT.AML..A8..AAADAA     AEAEDE.7JBO8XE&8OAAB   18/AJB8EAOW6AAAOADHB   .9CBA8XBJ8UE83250050
9    Y8Y  Y9  Y9Y8YY     Y9Y89Z  Y-   Z  O9Y-    9ZYQ ZQ  8Y9Q YQ--     Q-9  -Y  Z
     99   9   9 9999     9 99    9               Z  0  99   9Z           Z    9

BTXT.AMT..A8..AA&8BB     AAJB8EAOW6ABAOADHBO8   XBA8UBOGAFAF4E.7JAAA   AA&AOBH9BF&E83250051
9    Y8   Y9  Y9  -9      YZYQ ZQ  8Y9Q YQ--     -Y  8 9Y9Y89Z  YZYY   QZ-Y ZR QZ-Q
     99   9   9   0       9  Z  0  99 9 9Z       9  9  9 99    9  9    Z 09  0 Z OZ

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9    Y88  Y9  Y98ZYQ     9 QQ8 QZ  -9Y 8 9 Q     R R 9ZYQ ZQ  8Y9Q YQ     -ZY 9ZQ  8Y9
     999  9   9 9  Z       OZ9 Z   0 9 9   Z           Z  0  99 Z 9Z          0  99

BTXT.ANC..A8..AA.OAE     OBADANC8/6BG-ED838SE   &8BB-AAAABH8JFAEDKC8   A8/AJB8EAOW683250053
9    Y8R  Y9  Y9  YQ      -YQQ 0 9 -Z Q--  8Z     -9 ZYYQZO YZYQR R      R 9ZYQ ZQ  8
     99   9   9   9Z       9Z9        Z           0   9Z   9  ZO            Z  0  9

BTXT.ANC..A8..AAAB&O     ADHBOLHLGA&ADCE8JCE6   AJHG-E&F&EDAJB8EA4KA   AAAAAGOEBAAD83250054
9    Y8Y  Y9  Y9Y9-      YQ-8 808RZ YOZR YZO    -8RZ Q-Z QQZYQ ZQ OY   YYYYYZ Q--9Q
     99   9   9 9 0     9Z 9 9 90  9  0 9       9O  Z   Z   Z  0  9    99999  Z   Z

BTXT.ANC..A8..AAAGAE     QFADAB-MAFSB-J2E8F&4   Q3/DK4FFODMB-JDDJGOE   KAAPJDAAA.TR83250055
9    Y8   Y9  Y9QZQQ     -9QQ8OZ8Q88OY9Q 8      9Q9 Q-  Q98OY9Q9Z Q   YYY9Y8YYY
     99   9   9 9 9Z       Z99  9Z99   Z          Z  9  Z 9   Z   Z     99 99999

BTXT.ANC..A8..AAANSL     ATOR.OR.BUFR.OPERATE   D.INCORRECT.IN.POSIT   ION.TST.025083250056
9    Y8Q  Y9  Y9
     99Z  9   9

BTXT.AO3..A8..AAAGAF     OE.7JAAOGGAFFB-DEGSG   OFOKC9CGMKGBT9CE&8BB   AKC8/GJAJGHE83250057
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     99   9   9 9 99         9     9Z 9  9Z       Z    ZZ  OZ9 Z   0          Z   Z

BTXT.AOT..A8..AAAOW4     ABAOAGAKC8/GMAJGHEAO   W4ACAOAGAAJ7QEAOW8AC   AOAEONC6BGJG83250058
9    Y88  Y9  Y9Q  8      Y9Q YQQ 9 9QOZYQOZQ     8Y9Y YQQZY 9ZQ  9Y9     Q YQ  9 -QYZ
     99   9   9 0  9      9   9Z      Z   Z  0     99 9 9Z      0   9     9 9Z      Z

BTXT.AOL..A8..AA-FQB     OB-MAGRB-JGGUBEADGJG   3KBGXGQB-JVGFBEADFBG   3KBGXGWB-JVG83250059
9    Y8O  Y9  Y9 QO8      8OZ8Q 8OY8Q88QY98Y8    8 9Q8QO8OY8QR8QY99-8   8 9Q8Q88OY8Q
     99   9   9  Z 9      9  9Z 9  9Z9999 9 9       Z Z 9  9Z 999   9      Z Z 9  9Z

BTXT.AOC..A8..AAFAJG     HEA4KAAAAAAGOFOGAHAG   GE.7JB38SE&8OCA8A8/B   &8SK.8T8/AJB83250060
9    Y8Q  Y9  Y9RZYQ     OZQ OYYYYYYZ QO9Y9YQ    QZ  Y-  8Z  O9Q-Y 9-    - 9   9 9ZYQ
     999  9   9    Z       0  999999  Z  9 9Z    Z   9          Z              Z

BTXT.APL..A8..AA8EAO     W4AC.OADHBC8SB-DLG3B   O.DUALING.FAILED.RES   TORE.UCS.BUF83250061
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     99   9   9  0        99   9Z  Z  9  9Z99

BTXT.APC..A8..AAR.WI     TH.F837.DATA.BUFR.PO   SITIONS.1-4.....CONT   AIN.XXXXXXXX83250062
9    Y88  Y9  Y9
     99   9   9
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1403 PRINTER FUNCTION 3

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9    Y80  Y9  Y9   Y      Y9Y99YYY9YY8Q9YYYYYY   Y9YYY88888888
     99   9   9    9      9 9  999 999  999999    9 999

BTXT.APC..A4..AAF.SE     T.IT.OFF.IF.NOT.DUAL   INGOFF.TST.0320.RTN.   BYPASSED....83250064
9    Y8Q  Y9  Y9
     990  9   9

BRLD......A4....AAAA     AAANEAA4AANZAANOAAPJ   AAQJAAQRAAQJEAQYAAJA   AAJADAJH....83250065
9         Y9    Y9Y9     8YQ98YQ88Y9 8Y9 8Y98   8Y9 8Y9 8Y9Z8Y9 8Y88    8Y8R8Y8R
          9     9 9      999 999 99  99  99 9   99  99  99  99  999     999 999

BRLD......AA....AAAA     AAK1AAK9EALAAALJEALQ   AAMIAAMAEAMHEANOAAPI   DAPA.........83250066
9         YQ    Y9Y9     8Y8 8Y8 8Y8Y8Y898Y89   8Y808Y8-8Y8-8Y8 8Y80    8Y8Q
          9Z    9 9      999 999 9999999 999    999 999 999 999 999     999

BEND.................    ......................   ......................   ............83250067
9

BLDT.................    ......................   ......................   ............83250068
9
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1403 RIPPLE PRINT TEST
DESCRIPTION

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1. PURPOSE

1.1 INTENT.

TO PRINT ALL CHARACTERS IN EVERY PRINT POSITION BY MEANS OF A RIPPLE PATTERN. TO INDICATE BY PRINT POSITION, ALL DETECTED FAILURES.

2. PREREQUISITES

2.1 PROGRAM REQUIREMENTS.

THE SECTION IS RELOCATABLE.
THE EXCLUSIVE CPU FLAG IS ON.
A DIAGNOSTIC MONITOR MUST BE USED TO CONTROL THIS PROGRAM.

THE UNIT DEFINITION TABLE-UDT-ENTRY MUST BE PUNCHED AS FOLLOWS.

UNIT CODE		OPTIONAL FEATURE DIGIT 1	OPTIONAL FEATURE DIGIT 2

UNIT	ZZ	BIT 0 HEX 8	BIT 1 HEX 4	BIT 2 HEX 2	BIT 3 HEX 1	BIT 4 HEX 8	BIT 5 HEX 4	BIT 6 HEX 2	BIT 7 HEX 1
1403 PRINTER OR 1404 PRINTER CONTINUOUS FORMS	83	ASCII	SEL TAPE		UNIV. CHAR.	HI-SPEED PTR.	120 PRINT POS.	2821 2 CHNL SWITCH	

2.2 EQUIPMENT REQUIREMENTS.

INPUT DEVICE FOR PROGRAM LOADING.
OUTPUT DEVICE OTHER THAN TEST DEVICE.
4K OF STORAGE FOR THIS PROGRAM.
CPU
CHANNEL

3. OPERATING PROCEDURE

3.1 PROGRAM LOADING.

STANDARD AS DESCRIBED IN USERS GUIDE.

3.2 PROGRAM OPERATE.

********** NOTE **********
* IF 2 CHANNEL SWITCH FEATURE INSTALLED, DISABLE THE UNUSED *
* INTERFACE TO PREVENT NOT READY TO READY STATUS FROM BEING *
* PRESENTED TO THE OTHER CHANNEL. *
****

3.2.1 SENSE SWITCH USAGE.

SENSE SW. #	FUNCTION	SECTION OR ROUTINE	BYTE AND BIT
0	OFF-PROCEED NORMALLY.	F836	X004
	ON--GO INTO TIO SIO LOOP ON CURRENT COMMAND.	ALL	0
24	OFF-PROGRAM WILL ASSUME THE PRINTER DOES HAVE A PCS EMITTER CHAIN, AND IS THEREFORE NOT IN DUALING MODE	F836 01	X007 0
	ON--PROGRAM WILL ASSUME THE PRINTER DOES NOT HAVE PCS EMITTER AND IS IN DUALING MODE		

3.2.2 PROGRAM HALTS.

THE PROGRAM WILL HALT ONCE FOR EACH UCS PRINTER TO BE TESTED, AFTER INSTRUCTING THE OPERATOR TO CHECK SECTION SENSE SWITCH 24.

3.2.3 PROGRAM OUTPUT ON TEST DEVICE.

ROUTINE 01 - UCS PRINTERS

16 GROUPS OF 16 LINES EACH, WITH A TRIPLE SPACE BETWEEN EACH GROUP WILL BE PRINTED ON THE DEVICE UNDER TEST. THE FIRST 15 GROUPS SHOULD APPEAR AS A TRUE RIPPLE PATTERN. THE 16TH GROUP MAY NOT APPEAR AS A TRUE RIPPLE PATTERN. THIS SHOULD BE EXPECTED AND NOT CONSIDERED AN ERROR.
THE 16 GROUPS WILL BE REPEATED IN FOLDING MODE.

ROUTINE 02 - BASIC PRINTERS

4 GROUPS OF 64 LINES EACH, WITH A TRIPLE SPACE BETWEEN EACH GROUP WILL BE PRINTED ON THE DEVICE UNDER TEST. EACH GROUP SHOULD APPEAR AS A TRUE RIPPLE PATTERN.

4. PRINTOUTS

4.1 OPERATOR INSTRUCTIONS

-SEC SS 24 IS OFF SET IT ON FOR DUALING MODE-
-SEC SS 24 IS ON SET IT OFF IF NOT DUALING MODE-

ONE OF THE ABOVE MESSAGES WILL APPEAR ONCE FOR EACH UCS PRINTER PRIOR TO A HALT. THE OPERATOR SHOULD CHECK FOR THE PROPER SETTING OF THIS SWITCH BEFORE EACH DEVICE IS TESTED. IMPROPER SETTING OF THIS SWITCH COULD CAUSE FALSE ERRORS.

- RESTORE UCS BUFR WITH F837-

THE ABOVE MESSAGE WILL OCCUR AT TERMINATION OF THE TEST ON EACH DEVICE. THIS IS TO REMIND THE OPERATOR THE ORIGINAL CONTENTS OF THE UCS BUFFER HAS BEEN DESTROYED, AND THAT SECTION F837 IS A MEANS OF RESTORING IT.

4.2 STATUS MESSAGES

4.2.1 SAMPLE ERROR PRINTOUT FOR UCS PRINTER

```
LINE     MESSAGE

 01 -*SDO  F8363 01    001400 00E-
 02 - TST 0020-
 03 - ADR 001D52 LINK-
 04 - ADR 001142 SIO-
 05 - CAW 001E10-
 06 - CCW E8001A5D 00000001-
 07 - CCW 09001A5D 00000084-
 08 - CC 0 EXP-
 09 - CC 0 ACT-
 10 - CSW 00001E20 08000000 EXP-
 11 - CSW 00001E20 08000000 ACT-
 12 - CSW 00000000 04000000 EXP-
 13 - CSW 00000000 06000000 ACT-
 14 - SNS 00 EXP-
 15 - SNS 10 ACT-
 16 - LOG 00 000000 000000 000000-
 17 - UCS ADDR 001 TO 016 CONTAIN 00 THRU OF REST BLANKS-
 18 - PRINT  SHD        PRT PAR-
 19 -  POS WR RD RD PLC CHK CHK-
 20 -  132 03 03 03  1   1   0 -
 21 -  131 02 02 02  1   1   0 -
 22 -  130 01 01 01  1   1   0 -
 23 - SS 0 ON FOR LOOP ON SIO-
 24 - HLT
- IN FOLDING MODE-
```

THE ABOVE MESSAGE WILL OCCUR IF THE UCS BUFFER WAS LOADED WITH FOLDING, AND A PRINT ERROR IS DETECTED. THE MESSAGE WILL APPEAR BETWEEN LINES 17 AND 18 OF THE SAMPLE PRINTOUT.

4.2.2 ANALYSIS OF SAMPLE PRINTOUT

LINE — EXPLANATION

01 — THIS IS THE HEADER LINE PRINTED BY DM. IF AN ASTERISK PRECEEDS THE -SDO- AN ERROR HAS CAUSED THE MESSAGE PRINTOUT. IF NO ASTERISK IS PRINTED, THE MESSAGE IS A RESULT OF EITHER HAVING THE CORRECT PRINTOUT SWITCH ON OR AN OPERATOR MESSAGE IS TO FOLLOW. ALL LINES THAT FOLLOW THE -SDO- ARE PART OF THAT SAME MESSAGE. THE START OF A NEW MESSAGE IS INDICATED BY ANOTHER -SDO- PRINTOUT. THE -F830R- IS THE SECTION ID NUMBER WHERE -R- REPRESENTS THE REVISION LEVEL OF THE PROGRAM. THE -08- IS THE PROGRAM ROUTINE NUMBER WHILE THE -00E- IS THE ADDRESS OF THE DEVICE UNDER TEST.

02 — THIS IS THE TEST NUMBER ASSOCIATED WITH THE MESSAGE. AT THE BEGINNING OF THE PROGRAM LISTING, THERE IS A LIST OF TEST NUMBERS. WITH THE TEST NUMBER IS A SHORT EXPLANATION OF WHAT WAS BEING DONE, AND WHAT SHOULD OCCUR.

03 — THIS LINE SHOWS THE ADDRESS FROM WHICH THE I-O HANDLER SUB-ROUTINE WAS ENTERED. ALL I-O COMMANDS ARE ISSUED FROM THIS SUB-ROUTINE, SO IT IS ENTERED MANY TIMES FROM MANY PLACES. TO INSURE THE SPECIFIC I-O OPERATION WILL BE THE NEXT ONE PERFORMED, RESTART THE PROGRAM WITH A SYSTEM RESET, PSW RESTART, AND ADDRESS STOP AT THE GIVEN ADDRESS.

04 — THIS LINE SHOWS THE ADDRESS OF THE START I-O, TEST I-O, OR HALT I-O THAT WAS ISSUED IN THE I-O HANDLER SUB-ROUTINE.

05 — THIS LINE SHOWS THE ADDRESS OF THE CCW TO BE ISSUED BY A START I-O COMMAND. IF CCWS ARE CHAINED, THE ADDRESS GIVEN REFERS TO THE FIRST CCW IN THE CHAIN.

06 — THIS LINE DISPLAYS THE FIRST CCW. THE FIRST BYTE CONTAINS THE COMMAND CODE. THE NEXT 3 BYTES CONTAIN AN ADDRESS IN STORAGE, WHICH WILL BE USED IF DATA TRANSFER IS PERFORMED. THE NEXT BYTE CONTAINS FLAGS USED BY THE CHANNEL. THE LAST 3 BYTES ARE THE COUNT FIELD. IF CHAINING IS INDICATED IN BYTE 4, ADDITIONAL CCWS WILL BE SHOWN BELOW THIS LINE.

07 — THIS LINE SHOWS THE CONDITION CODE EXPECTED, BY THE PROGRAM, IN RESPONSE TO ISSUING THE I-O COMMAND.

08 — THIS LINE SHOWS THE ACTUAL CONDITION CODE SET IN RESPONSE TO THE I-O COMMAND.

09 — THIS LINE DISPLAYS THE FIRST CSW EXPECTED BY THE PROGRAM. A BIT BY BIT DESCRIPTION OF THE DEVICE STATUS BYTE PORTION OF THE CSW, APPEARS IN THE PROGRAM LISTING, FOLLOWING THE TEST NUMBER DESCRIPTIONS.

10 — THIS LINE DISPLAYS THE ACTUAL CSW RECIEVED BY THE PROGRAM.
NOTE...FOR EVERY EXPECTED -EXP- CSW PRINTED OUT THERE SHOULD BE A CORRESPONDING ACTUAL -ACT- CSW PRINTED OUT ON THE NEXT LINE. THE ABSENCE OF A -ACT- CSW PRINTOUT INDICATES A MACHINE FAILURE. A MACHINE FAILURE IS ALSO INDICATED IF THERE ARE -ACT- CSW PRINTOUTS WHEN THERE ARE NONE EXPECTED.

11 — THIS LINE WILL APPEAR IF THE PROGRAM EXPECTS MORE THAN ONE CSW.

12 — THIS LINE WILL APPEAR IF THE PROGRAM RECIEVED A SECOND CSW.

13 — THIS LINE SHOWS THE SENSE BYTE EXPECTED BY THE PROGRAM. A BIT BY BIT DESCRIPTION OF THE 1403 SENSE BYTE APPEARS IN THE PROGRAM LISTING, AFTER THE SECTION PREFACE.

14 — THIS LINE SHOWS THE ACTUAL SENSE BYTE RECIEVED BY THE PROGRAM.

15 — THIS LINE DISPLAYS THE CPU AND CHANNEL LOGOUT AREA ON MODEL 30 SYSTEMS. IT WILL NOT APPEAR ON ANY OTHER SYSTEM.

16 — THIS LINE SHOWS THE SECTION SENSE SWITCH LOOP OPTIONS. IF AN ERROR HAD OCCURRED, AND DM SENSE SWITCH 25 WAS ON, A HALT WOULD NOW OCCUR, TO ALLOW SETTING OF THE SECTION SENSE SWITCHES. TO INSURE THAT YOU WILL LOOP ON THE COMMAND THAT FAILED, YOU SHOULD REQUEST A HALT ON ERROR. SET THE PROPER SENSE SWITCH ON, AND PRESS THE EXTERNAL INTERRUPT KEY TO LOOP.

17 — THIS LINE DESCRIBES THE PATTERN OF CHARACTERS IN THE UCS BUFFER.

18 AND 19 — COLUMN HEADINGS READ VERTICALLY. THE FIRST COLUMN IS THE PRINT POSITION, NEXT DATA WRITTEN, DATA SHOULD READ BACK, DATA READ BACK, THEN THE STATE OF THE PRINT LINE COMPLETE BIT, THE PRINT CHECK BIT AND PARITY CHECK BIT.

20 AND 22 THESE LINES INDICATE IN WHICH PRINT POSITIONS AN ERROR WAS DETECTED, WHAT WAS WRITTEN IN THAT POSITION, WHAT SHOULD BE READ BACK, WHAT WAS READ BACK, AND IF THE PRINT LINE COMPLETE BIT, THE PRINT CHECK BIT, OR PARITY CHECK BIT WAS SET ON. A 1 INDICATES THE BIT IS ON, A ZERO, THAT IT IS OFF.

23 THIS LINE SHOWS THE SECTION SENSE SWITCH LOOP OPTIONS.

FURTHER ANALYSIS OF THE ABOVE PRINTOUT INDICATES A PRINT CHECK PROBLEM IN POSITIONS 130, 131, AND 132. A LOOK AT THE LOGIC, SHOWS ONE COMMON INPUT TO THE INDICATED HAMMER DRIVERS -- TENS DRIVE 13 IN THE HAMMER FIRE SELECT MATRIX. THIS COULD BE THE FAILING AREA.

- PREVIOUS HANGUP DETECTED-
- SEE DESCRIPTION-COMMENTS -

5. COMMENTS

THE ABOVE MESSAGE WILL APPEAR IF A SYSTEM RESET PSW RESTART IS PERFORMED AFTER A HANGUP CONDITION ON AN I-O COMMAND. FOLLOWING THIS LINE WILL BE A PRINTOUT SIMILAR TO THE ABOVE SAMPLE MESSAGE ALL THE INFORMATION THAT CAN BE COLLECTED ABOUT THE ERROR, WILL BE PRINTED. NOTE - SYSTEM RESET WILL RESET THE SENSE INFORMATION.

A FALSE HANG UP MESSAGE PRINTOUT CAN OCCUR IF THE OPERATOR PERFORMS A SYSTEM RESET-PSW RESTART WHILE THE PROGRAM IS RUNNING. THE PROGRAM WILL RESTART AFTER PRINTING THE MULTI-LINE ERROR MESSAGE, OR ANOTHER SYSTEM RESET PSW RESTART MAY BE PERFORMED TO BYPASS THE ERROR MESSAGE.

1403 RIPPLE PRINT

PROGRAM LENGTH = 4073 (DECIMAL)

```
                        2          PRINT ON,GEN,DATA
01000                   3  XF8364  START 4096
01000                   4          USING *,15
                        5  *
                        6  ********************************************************************************
                        7  * REVISION LEVEL 4.  THIS REVISION DIFFERS FROM VERSION 3 AS FOLLOWS...
                        8  *      1.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE RIPPLE OF ALL
                        9  *          CHARACTERS IN FOLDING MODE ON UCS PRINTERS.
                       10  *      2.  THE PROGRAM HAS BEEN MODIFIED TO CONSIDER HEX CHARACTERS
                       11  *          -80- AND -CO-, AS VALID UNPRINTABLE CHARACTERS, ON UCS
                       12  *          PRINTERS IN FOLDING MODE.
                       13  *      3.  INCLUDES CHANGES TO ENABLE PROGRAM TO RUN WITH DM-44.
                       14  * E.C. PREREQUISITIES
                       15  *      MACHINE . . . 2821 MUST BE AT EC 125673
                       16  *      PROGRAM . . . NONE
                       17  ********************************************************************************
                       18  * MODIFICATIONS
                       19  * REVISION LEVEL 3.  THIS REVISION DIFFERS FROM VERSION 2 AS FOLLOWS...
                       20  *      1.  THIS PROGRAM NO LONGER RESTORES THE UCS BUFFER.  USE PROGRAM
                       21  *          ID F837 TO RESTORE THE UCS BUFFER.
                       22  *      2.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE -TEST NUMBERS-
                       23  *      3.  ON UCS PRINTERS, THE RIPPLE PATTERN OUTPUT HAS BEEN MODIFIED
                       24  *          TO INSURE USING ALL AVAILABLE UCB ADDRESSES.
                       25  *      4.  THE REQUIRED NUMBER OF LINES PRINTED BY THIS TEST HAS BEEN
                       26  *          REDUCED TO CUT RUNNING TIME.
                       27  * E.C. PREREQUISITES
                       28  *      MACHINE . . . 2821 MUST BE AT E.C. 125655.
                       29  *      PROGRAM . . . NONE
                       30  * USE DESCRIPTION F836* AT EC 125655, DATED NOV 15, 1966 OR LATER.
                       31  ********************************************************************************
                       32  * REVISION LEVEL 2.  THIS REVISION DIFFERS FROM VERSION 1 AS FOLLOWS...
                       33  *      1.  THE PROGRAM HAS BEEN MODIFIED TO RESET THE BLOCK DATA CHECK
                       34  *          LATCH, ON UCS PRINTERS, DURING INITIALIZATION OF THE SECTION.
                       35  * E.C. PREREQUISITES
                       36  *      MACHINE . . . 2821 MUST BE AT MINIMUM E.C. LEVEL 124265.
                       37  *      PROGRAM . . . NONE
                       38  ********************************************************************************
                       39  ******************                                  ******************
                       40  * SECTION PREFACE ********************************** SECTION PREFACE *
                       41  ******************                                  ******************
01000  F8364000        42  SECNO   DC    XL4'F8364000'       PROGRAM,SECTION AND REVISION NOS.  *
01004  00000000        43  SNSW    DC    XL4'00'             SECTION SENSE SWITCHES             *
01008  0000            44          DC    XL2'00'                                                *
0100A  0000            45  ICM     DC    XL2'00'             INTERRUPTION CONDITION MASK        *
0100C  00              46  SDMF    DC    XL1'00'             SECTION DM FLAGS                   *
0100D  01              47  NIOU    DC    XL1'01'             NUMBER OF UNIT TABLE ENTRYS        *
0100E  C0              48  FLAG1   DC    X'C0'               EXCLUSIVE CPU                      *
0100F  00              49  FLAG2   DC    X'00'               I/O INT ARE ERR, EXT INT TO PROG   *
01010  0104000000      50  INPSW   DC    X'0104000000'       DISABLED, SPVSR STATE, NO PGM MASK *
01015  001D38          51          DC    AL3(ROUT01)         ADR OF 1ST ROUTINE PREFIX          *
01018  0000000000000000 52  EXOPSW  DC    XL8'0'              SECTION OLD EXTERNAL PSW           *
01020  0000000000000000 53  SVOPSW  DC    XL8'00'             CLEAR ALL OLD PSWS                 *
01028  0000000000000000 54  PGOPSW  DC    XL8'00'             PROGRAM OLD PSW                    *
01030  0000000000000000 55  MCOPSW  DC    XL8'00'             MACHINE CHECK OLD PSW              *
01038  0000000000000000 56  IOOPSW  DC    XL8'00'             I/O OLD PSW                        *
01040  0000000000000000 57  CSW     DC    XL8'00'             CHANNEL STATUS WORD                *
01048  00000000        58  CAW     DC    XL4'00'             CAW                                *
0104C  0000000000000000 59          DC    XL12'00'            RESERVED FOR DM USE                *
01054  00000000
01058  0004000000      60  EXNPSW  DC    X'0004000000'       EXTERNAL NEW PSW                   *
0105D  000000          61  SRET    DC    XL3'0'              ADR OF EXT INTRPT ROUTINE          *
01060  0000000000000000 62  SVNPSW  DC    XL8'00'             SUPERVISOR NEW PSW                 *
```


1403 RIPPLE PRINT

```
01068  0000000000000000 63  PGNPSW  DC    XL8'00'             PROGRAM NEW PSW                    *
01070  0000000000000000 64  MCNPSW  DC    XL8'00'             MACHINE CHECK NEW PSW              *
01078  01040000         65  IONPSW  DC    XL4'01040000'       I/O NEW PSW                        *
0107C  000011E8         66          DC    AL4(IRETRN)         ADDRESS OF I/O INTRPT ROUTINE      *
01080                   67          DS    96C                 96 BYTE REG DUMP AREA FOR DM USE   *
010E0  83               68  UNIT1   DC    X'83'               UNIT TYPE - 1419 MICR              *
010E1  00               69  U1OP    DC    X'00'               OPTIONAL FEATURES BYTE             *
010E2  8000             70  U1ADDR  DC    X'8000'             FLAGS AND CHAN/UNIT ADDRESS        *
                        71  ********************************************************************************
                        72
                        73  ********************************************************************************
                        74  *                              1403 SENSE BYTE
                        75  ********************************************************************************
                        76  *       BIT   MEANING
                        77  *        0    COMMAND REJECT
                        78  *        1    INTERVENTION REQUIRED
                        79  *        2    BUS OUT CHECK
                        80  *        3    EQUIPMENT CHECK - HAMMER FIRE CHECK
                        81  *        4    DATA CHECK - UCS PRINTERS ONLY - UNCOMPARABLE CHARACTER
                        82  *        5    BUFFER PARITY CHECK - REFERS TO UCS BUFFER
                        83  *        6    NOT USED
                        84  *        7    CHANNEL 9
                        85  ********************************************************************************
                        86  ********************************************************************************
                        87  *                              1403 DEVICE STATUS
                        88  ********************************************************************************
                        89  *       BIT   MEANING
                        90  *        0    ATTENTION - NOT USED
                        91  *        1    STATUS MODIFIER - 2 CHANNEL SWITCH FEATURE ONLY
                        92  *        2    CONTROL UNIT END - 2 CHANNEL SWITCH FEATURE ONLY
                        93  *        3    DEVICE BUSY
                        94  *        4    CHANNEL END
                        95  *        5    DEVICE END
                        96  *        6    UNIT CHECK
                        97  *        7    UNIT EXCEPTION - CHANNEL 12
                        98  ********************************************************************************
                        99  *                          1403 DIAGNOSTIC CHECK READ DATA
                       100  ********************************************************************************
                       101  *       BIT   MEANING
                       102  *        5    ON  - THE PRINT LINE COMPLETE BIT HAS BEEN SET FOR THIS
                       103  *                  POSITION.
                       104  *             OFF - ON BASIC PRINTERS, A COMPARE BETWEEN THE DATA BEING
                       105  *                  PRINTED, AND THE PRINT CHARACTER GENERATOR DID NOT
                       106  *                  OCCUR IN THIS POSITION, AND THE CHARACTER WAS NOT
                       107  *                  CONSIDERED A VALID UNPRINTABLE.
                       108  *
                       109  *                  ON UCS PRINTERS, A COMPARE BETWEEN THE DATA BUFFER
                       110  *                  AND THE UNIVERSAL CHARACTER SET BUFFER DID NOT OCCUR
                       111  *                  AND THE CHARACTER WAS NOT CONSIDERED A NULL OR BLANK
                       112  *
                       113  *        6    ON  - THE PRINT CHECK PLANE FOR THIS POSITION WAS SET ON.
                       114  *                  THIS PLANE IS SET BY---
                       115  *                  1. A HAMMER FIRE AND AN EQUAL CHECK.
                       116  *                  2. NO HAMMER FIRE AND NO EQUAL CHECK.
                       117  *                  3. LINE FULL, NOT VALID UNCOMPARABLE CHARACTER, AND
                       118  *                     NOT A PRINT LINE COMPLETE BIT IN THIS POSITION.
                       119  *             OFF - THE PRINT CHECK PLANE FOR THIS POSITION IS NOT SET.
                       120  *
                       121  *        7    ON  - A PARITY CHECK IN THE DATA BUFFER WAS DETECTED IN
                       122  *                  THIS POSITION.
                       123  *
                       124  *             OFF - THIS POSITION OF THE DATA BUFFER HAS CORRECT PARITY.
                       125  ********************************************************************************
                       126  ********************************************************************************
                       127  *                          PARAMETERS USED TO ENTER
```

```
*                         THE I-O HANDLER ROUTINE
*************************************************************************
*      BAL    R11,ISIO                LINK TO I-O HANDLER
*      DC     XL2'0000'               CONTROL SWITCHES
*      DC     X'0014'                 TEST NO. IN DEC EXPRESSED IN HEX
*      DC     X'F0'                   EXPECTED COND. CODE
*      DC     X'00'                   EXPECTED SENSE DATA
*      DC     AL2(ADR-BASE+REG)       ADDR. OF EXPECTED CSW IF NEEDED
*************************************************************************
*************************************************************************
*                         I-O HANDLER CONTROL SWITCHES
*                         2 BYTE PARAMETER FOLLOWING BAL
*************************************************************************
* SWITCH     DESCRIPTION
*   0 ----   OFF - ISSUE AN I-O COMMAND
*            ON  - DO NOT ISSUE AN I-O COMMAND
*   1 ----   OFF - ENABLE
*            ON  - DO NOT ENABLE
*   2 ----   OFF - EXPECT NO INTERRUPT
*            ON  - EXPECT AN INTERRUPT
*   3 ----   OFF - DO NOT EXPECT 2 INTERRUPTS
*            ON  - EXPECT 2 INTERRUPTS
*   4 ----   OFF - EXPECT NO CSWS
*            ON  - EXPECT A CSW
*   5 ----   OFF - DO NOT EXPECT 2 CSWS
*            ON  - EXPECT 2 CSWS
*   6 ----   OFF - ALWAYS TRY TO ISSUE SENSE
*            ON  - SENSE ON UNIT CHECK ONLY
*   7 ---- OFF - GIVE HALT OPTION ON DETECTED ERROR
*          ON  - RETURN WITHOUT HALT OPTION
*
*   8 ---- OFF - DO NOT ISSUE DIAGNOSTIC READ.
*          ON  - ISSUE DIAGNOSTIC READ IF UNIT CHECK.
*
*   9 ---- OFF - DO NOT ISSUE DIAGNOSTIC CHECK READ.
*          ON  - ISSUE DIAGNOSTIC CHECK READ IF UNIT CHECK.
*
*  10 ---- OFF - PRINT HEADER
*          ON  - DO NOT PRINT HEADER
*
*************************************************************************
*                         SWITCHES USED BY I-O HANDLER
*************************************************************************
* SWITCH     DESCRIPTION
*   0 ----   OFF - NO HANGUP ON INTERFACE
*            ON  - HANGUP OCCURRED
*   1 ----   OFF - NO CSWS STORED
*            ON  - ONE CSW STORED
*   2 ----   OFF - SECOND CSW NOT RECIEVED
*            ON  - SECOND CSW RECIEVED
*   3 ----   OFF - DID NOT ENABLE
*            ON  - ENABLED ONCE
*   4 ----   OFF - DID NOT ENABLE TWICE
*            ON  - ENABLED TWICE
*   5 ----   OFF - NO SENSE DATA RECIEVED
*            ON  - SENSE DATA RECIEVED
*   6 ----   OFF - NO UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*            ON  - UNEXPECTED INTERRUPT FROM UNKNOWN DEVICE
*   7 ----   OFF - NO ERROR DETECTED
*            ON  - AN ERROR WAS DETECTED
*   8 ---- OFF - NO DATA RECIEVED
*          ON  - DATA RECIEVED
*
*   9 ---- OFF - NO DIAGNOSTIC CHECK READ DATA RECIEVED
*          ON  - DIAGNOSTIC CHECK READ DATA RECIEVED
```



```
                                *
                                *  10 ---- OFF - NO DIAGNOSTIC READ DATA RECIEVED
                                *          ON  - DIAGNOSTIC READ DATA RECIEVED
                                *
                                *  11 ---- OFF - HEADINGS NOT PREVIOUSLY PRINTED
                                *          ON  - HEADINGS PREVIOUSLY PRINTED
                                *
                                *************************************************************************
                                *                    REGISTERS USED IN I-O HANDLER
                                *************************************************************************
                                *      REG         COMMENTS
                                *       5     USED AS LINK TO ERROR OUTPUT FROM INITIALIZE ROUTINE IF
                                *             PREVIOUS HANGUP ON INTERFACE DETECTED.
                                *
                                *       8     USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
                                *
                                *       9     USED AS WORK REGISTER. WILL BE RESTORED UPON RETURN.
                                *
                                *      10     MUST CONTAIN CCW ADDRESS UPON ROUTINE ENTRY
                                *
                                *      11     MUST BE USED AS LINK REG TO THIS ROUTINE
                                *
                                *      12     MUST CONTAIN DEVICE ADDRESS
                                *
010E4  0000                     ISW     DC    XL2'0'
                                *************************************************************************
                                *                       * I-O HANDLER SUB-ROUTINE *
                                *************************************************************************
010E6  D2 01  F 7C8  B 002      ISIO    MVC   ITSTNO+5(2),2(R11)    SAVE TEST NUMBER
010EC  90 79  F 830                     STM   R7,R9,ISAVE
010F0  92 00  F 796                     MVI   IEXSNS+5,X'00'
010F4  50 AD  0 048                     ST    R10,HCAW(R13)         STORE COMMAND ADDRESS
010F8  D7 07  D 040  D 040              XC    HCSW(8,R13),HCSW(R13)
010FE  90 AB  F B9C                     STM   R10,R11,ISLAVE        SAVE REGS 10 AND 11
01102  95 30  E 181                     CLI   SYSMOD(R14),X'30'     CHECK FOR MODEL 30
01106  47 60  F 110                     BC    UNEQ,MOD44            BR. IF NOT
0110A  D7 0B  0 080  0 080              XC    LOGOUT(12),LOGOUT     CLEAR MOD 30 LOGOUT AREA
01110  91 80  B 000             MOD44   TM    0(R11),X'80'          CHECK CONTROL SWITCH FOR NO I-O
01114  47 10  F 194                     BC    ALL,INOW              BR. IF ON
01118  91 80  F 004                     TM    SNSW,X'80'
0111C  47 80  F 150                     BC    NONE,JOHN
                                *************************************************************************
                                *                           SENSE SWITCH LOOPS
                                *************************************************************************
01120  50 AD  0 048             ITRY1   ST    R10,HCAW(R13)
01124  91 80  F 004                     TM    SNSW,X'80'            CHECK SECTION SENSE SWITCH 0
01128  47 80  F 13C                     BC    NONE,IHI              BR. IF OFF
0112C  9D 00  C 000             IHANG   TIO   0(R12)                TEST I-O
01130  47 70  F 120                     BC    NCC0,ITRY1            BR. IF NOT COND. CODE 0
01134  9C 00  C 000                     SIO   0(R12)                START I-O
01138  47 F0  F 120                     BC    UNC,ITRY1             BR. UNCONDITIONAL
                                *************************************************************************
0113C  58 1E  0 198             IHI     L     R1,WT(14)
01140  88 10  0 003                     SRL   R1,3
01144  9D 00  C 000             GREG    TIO   0(R12)
01148  47 80  F 150                     BC    CC0,JOHN
0114C  46 10  F 144                     BCT   R1,GREG
01150  D7 01  F 0E4  F 0E4      JOHN    XC    ISW(2),ISW
01156  96 80  F 0E4                     OI    ISW,X'80'
0115A  92 E7  F 739                     MVI   IACTCC+5,C'X'         MOVE IN A -X-
0115E  9C 00  C 000             ISSUE   SIO   0(R12)                I-O COMMAND- SIO, TIO, OR HIO
01162  47 80  F 190                     BC    CC0,IZERO             BR. IF COND. CODE 0
01166  47 40  F 17E                     BC    CC1,IONE              BR. IF COND. CODE 1
0116A  47 20  F 176                     BC    CC2,ITWO              BR. IF COND. CODE 2
0116E  92 F3  F 739                     MVI   IACTCC+5,X'F3'        INDICATE COND. CODE 3
```

```
01172  47 F0  F 194          258          BC    UNC,INOW          BR. UNCONDITIONAL
01176  92 F2  F 739          259  ITWO    MVI   IACTCC+5,X'F2'    INDICATE COND. CODE 2
0117A  47 F0  F 194          260          BC    UNC,INOW          BR. UNCONDITIONAL
0117E  92 F1  F 739          261  IONE    MVI   IACTCC+5,X'F1'    INDICATE COND. CODE 1
01182  D2 07  F 7E6  D 040   262          MVC   ICSW1(8),HCSW(R13) SAVE CSW
01188  96 40  F 0E4          263          OI    ISW,X'40'         INDICATE 1 CSW
0118C  47 F0  F 194          264          BC    UNC,INOW          BR. UNCONDITIONAL
01190  92 F0  F 739          265  IZERO   MVI   IACTCC+5,X'F0'    INDICATE COND. CODE 0
01194  94 7F  F 0E4          266  INOW    NI    ISW,X'7F'         TURN OFF HANG UP SWITCH
01198  91 40  B 000          267          TM    0(R11),X'40'      CHECK CONTROL SWITCH FOR NO ENABLE
0119C  47 10  F 224          268          BC    ALL,ISEN          BR. IF ON
011A0  96 10  F 0E4          269          OI    ISW,X'10'         INDICATE ENABLED ONCE
011A4  58 9E  0 198          270  IWAIT   L     R9,WT(R14)        LOAD DM WAIT FACTOR
011A8  88 90  0 003          271          SRL   R9,3              ADJUST
011AC  96 80  F 0E4          272          OI    ISW,X'80'         TURN ON HANG UP SWITCH
011B0  80 00  F 803          273          SSM   MSK1              ENABLE
011B4  46 90  F 1B4          274          BCT   R9,*              WAIT
011B8  80 00  F 804          275          SSM   MSK2              DISABLE
011BC  94 7F  F 0E4          276          NI    ISW,X'7F'         TURN OFF HANG UP SWITCH
011C0  95 F0  F 739          277  TRUBL   CLI   IACTCC+5,X'F0'    CHECK FOR COND. CODE 0
011C4  47 60  F 22C          278          BC    UNEQ,ISPED        BR. IF NOT
011C8  9D 00  C 000          279          TIO   0(R12)            TEST I-O
011CC  47 80  F 22C          280          BC    NCC1,ISPED        BR. IF NOT COND. CODE 1
011D0  91 10  D 044          281          TM    HCSW+4(R13),X'10' CHECK FOR DEVICE BUSY
011D4  47 80  F 22C          282          BC    NONE,ISPED        BR. IF NOT
011D8  0A D0                 283          SVC   X'D0'
011DA  64                    284          DC    X'64'             PRINT BUSY MESSAGE
011DB  24                    285          DC    X'24'
011DC  FA5D                  286          DC    AL2(NODEV-SECNO+REG)
011DE  96 80  F 0E4          287          OI    ISW,X'80'         INDICATE HANG UP
011E2  0A DA                 288          SVC   X'DA'             HALT
011E4  47 F0  F 1C0          289          BC    UNC,TRUBL
                             290  ********************************************************************
                             291  *                    ALL I-O INTERRUPTS RETURN HERE
                             292  ********************************************************************
011E8  94 7F  F 0E4          293  IRETRN NI    ISW,X'7F'         RESET HANGUP SWITCH
011EC  91 40  F 0E4          294          TM    ISW,X'40'
011F0  47 10  F 202          295          BC    ALL,ISV2          BR. IF 1 CSW ALREADY STORED
011F4  D2 07  F 7E6  F 040   296          MVC   ICSW1(8),HCSW(R15) SAVE CSW 1
011FA  96 40  F 0E4          297          OI    ISW,X'40'         INDICATE 1 CSW STORED
011FE  47 F0  F 20C          298          BC    UNC,INT3          BR. UNCONDITIONAL
01202  D2 07  F 7EE  F 040   299  ISV2    MVC   ICSW2(8),HCSW(R15) SAVE CSW 2
01208  96 20  F 0E4          300          OI    ISW,X'20'         INDICATE 2 CSWS STORED
0120C  91 10  B 000          301  INT3    TM    0(R11),X'10'      CHECK CTRL SW FOR 2 INTR EXPECTED
01210  47 80  F 224          302          BC    NONE,ISEN         BR. IF NOT
01214  91 08  F 0E4          303          TM    ISW,X'08'
01218  47 10  F 224          304          BC    ALL,ISEN          BR. IF ALREADY ENABLED TWICE
0121C  96 08  F 0E4          305          OI    ISW,X'08'         INDICATE ENABLED TWICE
01220  47 F0  F 1A4          306          BC    UNC,IWAIT
01224  91 20  F 0E4          307  ISEN    TM    ISW,X'20'         CHECK FOR SECOND INTERRUPT
01228  47 80  F 1C0          308          BC    NONE,TRUBL        BR. IF NOT
0122C  91 20  B 000          309  ISPED   TM    0(R11),X'20'      CHK CTRL SW FOR SNS ON UC ONLY
01230  47 10  F 23C          310          BC    ALL,IDECI         BR. IF ON
01234  91 C0  B 001          311          TM    1(R11),X'C0'      CHK CTRL SW FOR DIAG ON UNIT CHECK
01238  47 80  F 33A          312          BC    NONE,IBSN         BR. IF NONE
0123C  91 40  F 0E4          313  IDECI   TM    ISW,X'40'         CHECK FOR CSW STORED
01240  47 80  F 33A          314          BC    NONE,IBSN         BR. IF NONE
01244  91 02  F 7EA          315          TM    ICSW1+4,X'02'     CHECK FOR UNIT CHECK
01248  47 10  F 25C          316          BC    ALL,IDOSNS        BR. IF YES
0124C  91 20  F 0E4          317          TM    ISW,X'20'         CHECK FOR SECOND CSW
01250  47 80  F 33A          318          BC    NONE,IBSN         BR. IF NONE
01254  91 02  F 7F2          319          TM    ICSW2+4,X'02'     CHECK FOR UNIT CHECK
01258  47 80  F 33A          320          BC    NONE,IBSN         BR. IF NONE
0125C  41 80  F 7F8          321  IDOSNS  LA    R8,ISENSE         LOAD SENSE CCW ADDRESS
01260  45 70  F 2F0          322          BAL   R7,IOEXRA         BR. TO ISSUE SENSE
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01264  91 80  F 0E5          323          TM    ISW+1,X'80'       CHK FOR DATA RECIEVED
01268  47 80  F 2AC          324          BC    NONE,IFUR         BR. IF NOT
0126C  96 04  F 0E4          325          OI    ISW,X'04'         INDICATE SENSE RECIEVED
01270  94 7F  F 0E5          326          NI    ISW+1,X'7F'       RESET DATA RECIEVED SWITCH
01274  D2 00  F 796  B 005   327          MVC   IEXSNS+5(1),5(R11) MOVE IN EXPECTED SENSE
01278  91 01  F 7A1          328          TM    IACSNS+5,X'01'    CHECK FOR CHANNEL 9
0127E  47 80  F 286          329          BC    NONE,ILKSEN       BR. IF NONE
01282  96 01  F 796          330          OI    IEXSNS+5(1),X'01' SET UP 9 AS EXPECTED
01286  D5 00  F 7A1  F 796   331  ILKSEN CLC   IACSNS+5(1),IEXSNS+5
0128C  47 80  F 2AC          332          BC    EQ,IFUR           BR. IF EQUAL
01290  96 01  F 0E4          333          OI    ISW,X'01'         INDICATE AN ERROR
01294  91 40  F 7A1          334          TM    IACSNS+5,X'40'    CHECK FOR INTERVENTION REQUIRED
01298  47 80  F 2AC          335          BC    NONE,IFUR         BR. IF NOT
0129C  0A D0                 336          SVC   X'D0'             PRINT
0129E  64                    337          DC    X'64'             -READY DEVICE
0129F  0D                    338          DC    X'0D'
012A0  FA81                  339          DC    AL2(READY-SECNO+REG)
012A2  0A DA                 340          SVC   X'DA'             HALT TO PERFORM INTERVENTION
012A4  9D 00  C 000          341  HOPE    TIO   0(R12)            TEST I-O
012A8  47 70  F 2A4          342          BC    NCC0,HOPE
012AC  91 40  B 001          343  IFUR    TM    1(R11),X'40'      CHK CTRL SWITCH FOR DIAG CHECK READ
012B0  47 80  F 2CC          344          BC    NONE,ISEA         BR. IF NOT
012B4  41 80  F 808          345          LA    R8,DCKRD          LOAD CHECK READ CCW ADDRESS
012B8  45 70  F 2F0          346          BAL   R7,IOEXRA         BR. TO ISSUE CHECK READ
012BC  91 80  F 0E5          347          TM    ISW+1,X'80'       CHECK FOR DATA RECIEVED
012C0  47 80  F 2CC          348          BC    NONE,ISEA         BR. IF NOT
012C4  96 40  F 0E5          349          OI    ISW+1,X'40'       INDICATE CHECK READ DATA RECIEVED
012C8  94 7F  F 0E5          350          NI    ISW+1,X'7F'       RESET DATA RECIEVED
012CC  91 80  B 001          351  ISEA    TM    1(R11),X'80'      CHK CTRL SWITCH FOR DIAG READ
012D0  47 80  F 33A          352          BC    NONE,IBSN         BR. IF NOT
012D4  41 80  F 948          353          LA    R8,RDCCW          LOAD DIAGNOSTIC READ CCW ADDRESS
012D8  45 70  F 2F0          354          BAL   R7,IOEXRA         BR. TO ISSUE DIAGNOSTIC READ
012DC  91 80  F 0E5          355          TM    ISW+1,X'80'       CHECK FOR DATA RECIEVED
012E0  47 80  F 33A          356          BC    NONE,IBSN         BR. IF NONE
012E4  96 20  F 0E5          357          OI    ISW+1,X'20'       INDICATE READ DATA RECIEVED
012E8  94 7F  F 0E5          358          NI    ISW+1,X'7F'       RESET DATA RECIEVED SWITCH
012EC  47 F0  F 33A          359          BC    UNC,IBSN          BR. UNCONDITIONAL
012F0  58 9E  0 198          360  IOEXRA  L     R9,WT(R14)        LOAD DM WAIT FACTOR
012F4  88 90  0 004          361          SRL   R9,4              ADJUST
012F8  50 8D  0 048          362          ST    R8,HCAW(R13)      STORE CAW
012FC  9C 00  C 000          363          SIO   0(R12)            START I-O
01300  47 70  F 310          364          BC    NCC0,IBACK        BR. IF NOT ACCEPTED
01304  9D 00  C 000          365  ICLEAR  TIO   0(R12)            TEST I-O
01308  47 40  F 312          366          BC    CC1,ILOKE         BR. IF CSW STORED
0130C  46 90  F 304          367  ITICK   BCT   R9,ICLEAR
01310  07 F7                 368  IBACK   BCR   UNC,R7            RETURN VIA REG 7
01312  91 04  D 044          369  ILOKE   TM    HCSW+4(R13),X'04' CHECK FOR DEVICE END
01316  47 80  F 30C          370          BC    NONE,ITICK        BR. IF NOT
0131A  96 80  F 0E5          371          OI    ISW+1,X'80'       INDICATE DATA RECIEVED
0131E  47 F0  F 310          372          BC    UNC,IBACK
01322  91 40  F 0E4          373  INOEX1  TM    ISW,X'40'
01326  47 10  F 3B4          374          BC    ALL,INDER
0132A  47 F0  F 3B8          375          BC    UNC,IDUNCK
0132E  91 20  F 0E4          376  INOEX2  TM    ISW,X'20'
01332  47 10  F 3B4          377          BC    ALL,INDER
01336  47 F0  F 3B8          378          BC    UNC,IDUNCK
0133A  D5 00  F 739  B 004   379  IBSN    CLC   IACTCC+5(1),4(R11) COMPARE FOR EXPECTED COND. CODE
01340  47 60  F 3B4          380          BC    UNEQ,INDER        BR. IF UNEQUAL
01344  91 08  B 000          381          TM    0(R11),X'08'
01348  47 80  F 322          382          BC    NONE,INOEX1       BR. IF NO CSW EXPECTED
0134C  91 40  F 0E4          383          TM    ISW,X'40'
01350  47 80  F 3B4          384          BC    NONE,INDER        BR. IF NO CSW RECIEVED
01354  48 8B  0 006          385          LH    R8,6(R11)         LOAD CSW ADDR
01358  40 80  F 360          386          STH   R8,ICCSW1+4       STORE IN COMPARE INSTR.
0135C  D5 07  F 7E6  F 7E6   387  ICCSW1 CLC   ICSW1(8),ICSW1     COMPARE FOR EXPECTED CSW
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01362  47 60  F 3B4          388          BC    UNEQ,INDER              BR. IF UNEQUAL
01366  91 04  B 000          389          TM    0(R11),X'04'
0136A  47 80  F 32E          390          BC    NONE,INOEX2             BR. IF NO CSW 2 EXPECTED
0136E  91 20  F 0E4          391          TM    ISW,X'20'
01372  47 80  F 3B4          392          BC    NONE,INDER              BR. IF NO CSW 2 RECIEVED
01376  41 88  0 008          393          LA    R8,8(R8)                UPDATE TO SECOND CSW
0137A  40 80  F 3AE          394          STH   R8,ICCSW2+4
0137E  41 88  0 004          395          LA    R8,4(R8)
01382  40 80  F 388          396          STH   R8,ICLRDT+2
01386  94 FC  F 818          397 ICLRDT   NI    WORK,X'FC'
0138A  40 80  F 39C          398          STH   R8,IFIX9+2
0138E  40 80  F 3A8          399          STH   R8,IFIX12+2
01392  91 01  F 796          400          TM    IEXSNS+5,X'01'
01396  47 80  F 39E          401          BC    NONE,IS12
0139A  96 02  F 818          402 IFIX9    OI    WORK,X'02'
0139E  91 01  F 7F2          403 IS12     TM    ICSW2+4,X'01'           CHECK FOR CHANNEL 12
013A2  47 80  F 3AA          404          BC    NONE,ICCSW2
013A6  96 01  F 818          405 IFIX12   OI    WORK,X'01'
013AA  D5 07  F 7EE  F 7EE   406 ICCSW2   CLC   ICSW2(8),ICSW2           COMPARE FOR EXPECTED CSW 2
013B0  47 80  F 3B8          407          BC    EQ,IDUNCK               BR. IF EQUAL
013B4  96 01  F 0E4          408 INDER    OI    ISW,X'01'               INDICATE AN ERROR
013B8  92 64  F 3E8          409 IDUNCK   MVI   IFLAG1,X'64'            SET UP FOR ERROR PRINTOUT
013BC  92 C0  F 56E          410          MVI   IFLAG2,X'C0'
013C0  91 01  F 0E4          411          TM    ISW,X'01'               CHECK FOR A DETECTED ERROR
013C4  47 10  F 3D8          412          BC    ALL,IOUTIT              BR. IF ERROR DETECTED
013C8  91 01  F 004          413          TM    SNSW,X'01'              CHECK SECTION SENSE SWITCH 7
013CC  47 80  F 58A          414          BC    NONE,ILEAVE             BR. IF OFF
013D0  92 24  F 3E8          415          MVI   IFLAG1,X'24'            SET UP FOR CORRECT PRINTOUT
013D4  92 80  F 56E          416          MVI   IFLAG2,X'80'
013D8  D2 01  F 7C8  B 002   417 IOUTIT   MVC   ITSTNO+5(2),2(R11)     MOVE TEST NUMBER TO PRINT
013DE  0A DD                 418          SVC   X'DD'                   CONVERT TEST NUMBER
013E0  0002                  419          DC    AL2(2)
013E2  07C8                  420          DC    AL2(ITSTNO+5-SECNO)
013E4  07C8                  421          DC    AL2(ITSTNO+5-SECNO)
013E6  0A D0                 422          SVC   X'D0'                   PRINT TEST NUMBER
013E8  64                    423 IFLAG1   DC    X'64'
013E9  09                    424          DC    X'09'
013EA  F7C3                  425          DC    AL2(ITSTNO-SECNO+REG)
013EC  41 80  0 004          426          LA    R8,4                    ADJUST LINK ADDRESS FOR PRINTOUT
013F0  18 88                 427          SR    R11,R8
013F2  50 80  F 754          428          ST    R11,ILINK+5
013F6  0A DD                 429          SVC   X'DD'                   CONVERT LINK ADDRESS
013F8  0003                  430          DC    AL2(3)
013FA  0755                  431          DC    AL2(ILINK+6-SECNO)
013FC  0754                  432          DC    AL2(ILINK+5-SECNO)
013FE  0A D0                 433          SVC   X'D0'                   PRINT LINK ADDRESS
01400  E0                    434          DC    X'E0'
01401  10                    435          DC    X'10'
01402  F74F                  436          DC    AL2(ILINK-SECNO+REG)
01404  41 80  0 004          437          LA    R11,4(R11)
01408  91 80  B 000          438          TM    0(R11),X'80'
0140C  47 10  F 492          439          BC    ALL,IOCSW               BR. IF NO I-O COMMAND ISSUED
01410  0A DD                 440          SVC   X'DD'                   CONVERT I-O ADDRESS
01412  0003                  441          DC    AL2(3)
01414  0800                  442          DC    AL2(IOADR-SECNO)
01416  0743                  443          DC    AL2(IOADDR+5-SECNO)
01418  0A D0                 444          SVC   X'D0'                   PRINT I-O ADDRESS
0141A  E0                    445          DC    X'E0'
0141B  0F                    446          DC    X'0F'
0141C  F73E                  447          DC    AL2(IOADDR-SECNO+REG)
0141E  95 9C  F 15E          448          CLI   ISSUE,X'9C'             COMPARE FOR SIO COMMAND
01422  47 60  F 47C          449          BC    UNEQ,ICCOUT             BR. IF NOT
01426  50 A0  F 764          450          ST    R10,ICAW+5              STORE CCW ADDR.
0142A  0A DD                 451          SVC   X'DD'                   CONVERT CAW
0142C  0003                  452          DC    AL2(3)
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0142E  0765                  453          DC    AL2(ICAW+6-SECNO)
01430  0764                  454          DC    AL2(ICAW+5-SECNO)
01432  0A D0                 455          SVC   X'D0'                   PRINT CAW
01434  E0                    456          DC    X'E0'
01435  0B                    457          DC    X'0B'
01436  F75F                  458          DC    AL2(ICAW-SECNO+REG)
01438  D2 02  F 772  F 76E   459          MVC   IBLAH+1(3),ICCW         MOVE -CCW- TO MESSAGE
0143E  92 16  F 477          460          MVI   ICNT,X'16'              ADJUST COUNT
01442  50 A0  F B98          461          ST    R10,SAV10               MOVE CONTENTS OF REG 10 TO SAVE
01446  D2 07  F 818  A 000   462 ICWOUT   MVC   WORK(8),0(R10)          MOVE CCW TO WORK AREA
0144C  45 90  F 460          463          BAL   R9,ICOUT                BR. TO OUTPUT CCW
01450  91 C0  A 004          464          TM    4(R10),X'C0'            CHECK FOR ANY CHAIN FLAGS
01454  47 80  F 47C          465          BC    NONE,ICCOUT             BR. IF NONE
01458  41 AA  0 008          466          LA    R10,8(R10)              UPDATE TO NEXT CCW
0145C  47 F0  F 446          467          BC    UNC,ICWOUT              BR. UNCONDITIONAL
01460  0A DD                 468 ICOUT    SVC   X'DD'                   CONVERT
01462  0008                  469          DC    AL2(8)
01464  0818                  470          DC    AL2(WORK-SECNO)
01466  0818                  471          DC    AL2(WORK-SECNO)
01468  D2 07  F 776  F 818   472          MVC   IBLAH+5(8),WORK         MOVE TO MESSAGE
0146E  D2 07  F 77F  F 820   473          MVC   IBLAH+14(8),WORK+8
01474  0A D0                 474          SVC   X'D0'                   PRINT
01476  E0                    475          DC    X'E0'
01477  1A                    476 ICNT     DC    X'1A'
01478  F771                  477          DC    AL2(IBLAH-SECNO+REG)
0147A  07 F9                 478          BCR   UNC,R9                  RETURN VIA REG 9
0147C  D2 00  F 72F  B 004   479 ICCOUT   MVC   IEXPCC+5(1),4(R11)      MOVE EXP CC TO MESSAGE
01482  58 A0  F B9C          480          L     R10,ISLAVE
01486  0A D0                 481          SVC   X'D0'                   PRINT EXPECTED COND. CODE
01488  E0                    482          DC    X'E0'
01489  0A                    483          DC    X'0A'
0148A  F72A                  484          DC    AL2(IEXPCC-SECNO+REG)
0148C  0A D0                 485          SVC   X'D0'                   PRINT ACTUAL COND. CODE
0148E  E0                    486          DC    X'E0'
0148F  0A                    487          DC    X'0A'
01490  F734                  488          DC    AL2(IACTCC-SECNO+REG)
01492  D2 02  F 772  F 76B   489 IOCSW    MVC   IBLAH+1(3),ICSW         MOVE -CSW- TO MESSAGE
01498  92 1A  F 477          490          MVI   ICNT,X'1A'              ADJUST COUNT
0149C  91 08  B 000          491          TM    0(R11),X'08'
014A0  47 80  F 4C4          492          BC    NONE,IDIDI              BR. IF NO CSW EXPECTED
014A4  D2 02  F 788  F 78E   493          MVC   IBLAH+23(3),IEXP        MOVE -EXP- TO MESSAGE
014AA  48 8B  0 006          494          LH    R8,6(R11)
014AE  40 80  F 4BE          495          STH   R8,ICHNG1+4
014B2  41 88  0 008          496          LA    R8,8(R8)
014B6  40 80  F 4EE          497          STH   R8,ICHNG2+4
014BA  D2 07  F 818  F 818   498 ICHNG1   MVC   WORK(8),WORK            MOVE EXPECTED CSW TO WORK AREA
014C0  45 90  F 460          499          BAL   R9,ICOUT                BR. TO OUTPUT EXPECTED CSW
014C4  91 40  F 0E4          500 IDIDI    TM    ISW,X'40'
014C8  47 80  F 4DC          501          BC    NONE,IMORST             BR. IF NO CSW STORED
014CC  D2 02  F 788  F 78B   502          MVC   IBLAH+23(3),IACT        MOVE -ACT- TO MESSAGE
014D2  D2 07  F 818  F 7E6   503          MVC   WORK(8),ICSW1           MOVE ACTUAL CSW TO WORK AREA
014D8  45 90  F 460          504          BAL   R9,ICOUT                BR. TO OUTPUT ACTUAL CSW
014DC  91 04  B 000          505 IMORST   TM    0(R11),X'04'
014E0  47 80  F 4F4          506          BC    NONE,IDID               BR. IF NOT EXPECTING 2 CSWS
014E4  D2 02  F 788  F 78E   507          MVC   IBLAH+23(3),IEXP        MOVE -EXP- TO MESSAGE
014EA  D2 07  F 818  F 818   508 ICHNG2   MVC   WORK(8),WORK            MOVE EXPECTED CSW TO WORK AREA
014F0  45 90  F 460          509          BAL   R9,ICOUT                BR. TO OUTPUT EXPECTED CSW 2
014F4  91 20  F 0E4          510 IDID     TM    ISW,X'20'
014F8  47 80  F 50C          511          BC    NONE,IPAS               BR. IF NO SECOND CSW STORED
014FC  D2 02  F 788  F 78B   512          MVC   IBLAH+23(3),IACT        MOVE -ACT- TO MESSAGE
01502  D2 07  F 818  F 7EE   513          MVC   WORK(8),ICSW2           MOVE CSW TO WORK AREA
01508  45 90  F 460          514          BAL   R9,ICOUT
0150C  91 04  F 0E4          515 IPAS     TM    ISW,X'04'
01510  47 80  F 530          516          BC    NONE,IPASS              BR. IF NO SENSE DATA RECIEVED
01514  0A DD                 517          SVC   X'DD'                   CONVERT EXPECTED SENSE
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01516  0001                    518          DC    AL2(1)
01518  0796                    519          DC    AL2(IEXSNS+5-SECNO)
0151A  0796                    520          DC    AL2(IEXSNS+5-SECNO)
0151C  0A DO                   521          SVC   X'DO'                  PRINT EXPECTED SENSE
0151E  EO                      522          DC    X'EO'
0151F  0B                      523          DC    X'0B'
01520  F791                    524          DC    AL2(IEXSNS-SECNO+REG)
01522  0A DD                   525          SVC   X'DD'
01524  0001                    526          DC    AL2(1)
01526  07A1                    527          DC    AL2(IACSNS+5-SECNO)
01528  07A1                    528          DC    AL2(IACSNS+5-SECNO)
0152A  0A DO                   529          SVC   X'DO'                  PRINT ACTUAL SENSE DATA
0152C  EO                      530          DC    X'EO'
0152D  0B                      531          DC    X'0B'
0152E  F79C                    532          DC    AL2(IACSNS-SECNO+REG)
01530  95 30  E 181            533  IPASS   CLI   SYSMOD(R14),X'30'      CHECK FOR MODEL 30
01534  47 60  F 564            534          BC    UNEQ,IOPOUT            BR. IF NOT
01538  D2 0B  F 818  0 080     535          MVC   WORK(12),LOGOUT        MOVE LOGOUT TO WORK AREA
0153E  0A DD                   536          SVC   X'DD'                  CONVERT
01540  000C                    537          DC    AL2(12)
01542  0818                    538          DC    AL2(WORK-SECNO)
01544  0818                    539          DC    AL2(WORK-SECNO)
01546  D2 01  F 7AC  F 818     540          MVC   IOLOG+5(2),WORK        MOVE LOG OUT TO MESSAGE
0154C  D2 05  F 7AF  F 81A     541          MVC   IOLOG+8(6),WORK+2
01552  D2 05  F 7B6  F 822     542          MVC   IOLOG+15(6),WORK+10
01558  D2 05  F 7BD  F 82A     543          MVC   IOLOG+22(6),WORK+18
0155E  0A DO                   544          SVC   X'DO'                  PRINT LOG OUT
01560  EO                      545          DC    X'EO'
01561  1C                      546          DC    X'1C'
01562  F7A7                    547          DC    AL2(IOLOG-SECNO+REG)
01564  91 60  F 0E5            548  IOPOUT  TM    ISW+1,X'60'            CHECK FOR DIAGNOSTIC DATA
01568  47 50  F 5A0            549          BC    ANY,IOUT               BR. IF ANY
0156C  0A DO                   550  IPRLOP  SVC   X'DO'                  PRINT LOOP OPTIONS
0156E  C0                      551  IFLAG2  DC    X'C0'
0156F  18                      552          DC    X'18'
01570  F7CC                    553          DC    AL2(IOPT1-SECNO+REG)
01572  0A DO                   554          SVC   X'DO'                  SPACE A LINE
01574  A0                      555          DC    X'A0'
01575  01                      556          DC    X'01'
01576  F74F                    557          DC    AL2(ILINK-SECNO+REG)
01578  50 AD  0 048            558          ST    R10,HCAW(R13)          STORE CAW
0157C  91 80  F 004            559          TM    SNSW,X'80'             CHECK SECTION SENSE SWITCH 0
01580  47 50  F 120            560          BC    ANY,ITRY1              BR. IF ANY ON
01584  91 01  F 0E5            561          TM    ISW+1,X'01'
01588  07 15                   562          BCR   ALL,R5                 RETURN VIA REG 5 IF HANG UP
0158A  91 08  B 000            563  ILEAVE  TM    0(R11),X'08'
0158E  47 80  F 596            564          BC    NONE,IUP               BR. IF NO CSW EXPECTED
01592  41 BB  0 002            565          LA    R11,2(R11)             UPDATE LINK ADDRESS FOR RETURN
01596  41 BB  0 006            566  IUP     LA    R11,6(R11)
0159A  98 79  F 830            567          LM    R7,R9,ISAVE
0159E  07 FB                   568          BCR   UNC,R11                RETURN VIA REG 11
015A0  90 27  F B80            569  IOUT    STM   R2,R7,LARGE
015A4  1B 77                   570          SR    R7,R7
015A6  1B 33                   571          SR    R3,R3
015A8  41 20  0 084            572          LA    R2,132                 SET UP FOR 132 POSITIONS
015AC  41 60  F AA8            573          LA    R6,PRAR-1
015B0  91 10  F 0E1            574          TM    UNIT1+1,X'10'          CHECK FOR UCS FEATURE
015B4  47 10  F 5BC            575          BC    ALL,NIXT-2             BR. IF DEFINED
015B8  41 60  F BFC            576          LA    R6,LDAR-1
015BC  1B 55                   577          SR    R5,R5
015BE  43 32  F AA8            578  NIXT    IC    R3,PRAR-1(R2)          PICK UP CHAR WRITTEN
015C2  43 42  F 83B            579          IC    R4,CKAR-1(R2)          PICK UP CHECK BYTE
015C6  43 52  F 8BF            580          IC    R5,DRAR-1(R2)          PICK UP CHAR READ
015CA  43 76  2 000            581          IC    R7,0(R6,R2)            PICK UP CHAR SHD READ
015CE  42 40  F BEC            582          STC   R4,INFO+16             STORE CHECK BYTE
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015D2  19 57                   583          CR    R5,R7                  COMPARE FOR CORRECT READ BACK
015D4  47 60  F 6F4            584          BC    UNEQ,RANK              BR. IF UNEQUAL
015D8  95 04  F BEC            585  HOKAY   CLI   INFO+16,X'04'          COMPARE FOR PLC ONLY
015DC  47 60  F 5EC            586          BC    UNEQ,HONK              BR. IF UNEQUAL
015E0  46 20  F 5BE            587  CRUDE   BCT   R2,NIXT                BR. UNTIL 132 POSITIONS CHECKED
015E4  98 27  F B80            588          LM    R2,R7,LARGE
015E8  47 F0  F 56C            589          BC    UNC,IPRLOP
015EC  91 10  F 0E5            590  HONK    TM    ISW+1,X'10'            CHECK FOR PREVIOUS HEADING PRINT
015F0  47 10  F 680            591          BC    ALL,SZABO              BR. IF THERE WAS
015F4  91 10  F 0E1            592          TM    UNIT1+1,X'10'
015F8  47 80  F 670            593          BC    NONE,CHIRP             BR. IF NOT
015FC  95 F0  F BFD            594          CLI   LDAR,X'F0'             CHECK FOR LAST GROUP
01600  47 60  F 60E            595          BC    UNEQ,HARDER            BR. IF NOT
01604  0A DO                   596          SVC   X'DO'                  PRINT
01606  EO                      597          DC    X'EO'
01607  1F                      598          DC    X'1F'
01608  F82D                    599          DC    AL2(LSTGRP-SECNO+REG)
0160A  47 F0  F 670            600          BC    UNC,CHIRP
0160E  58 90  F B90            601  HARDER  L     R9,LARGE+16            PICK UP LDAR ADDRESS BEING FILLED
01612  41 80  F BFC            602          LA    R8,LDAR-1              PICK UP LDAR ADDRESS
01616  41 99  0 001            603          LA    R9,1(R9)
0161A  1B 98                   604          SR    R9,R8                  SUBTRACT
0161C  43 89  F BFC            605          IC    R8,LDAR-1(R9)          PICK UP FIRST CHAR
01620  42 80  F B69            606          STC   R8,TUFF+29
01624  4E 90  F 818            607          CVD   R9,WORK                CONVERT UCB ADDRESS TO DECIMAL
01628  F3 21  F B56  F 81E     608          UNPK  TUFF+10(3),WORK+6(R2)
0162E  96 F0  F B58            609          OI    TUFF+12,X'F0'
01632  41 99  0 00F            610          LA    R9,15(R9)              UP TO LAST CHAR IN FIELD
01636  4E 90  F 818            611          CVD   R9,WORK                CONVERT HIGH ADDR TO DECIMAL
0163A  F3 21  F B5D  F 81E     612          UNPK  TUFF+17(3),WORK+6(2)
01640  96 F0  F B5F            613          OI    TUFF+19,X'F0'
01644  43 89  F BFC            614          IC    R8,LDAR-1(R9)          PICK UP LAST CHAR
01648  42 80  F B71            615          STC   R8,TUFF+37
0164C  0A DD                   616          SVC   X'DD'
0164E  0001                    617          DC    AL2(1)
01650  0869                    618          DC    AL2(TUFF+29-SECNO)
01652  0869                    619          DC    AL2(TUFF+29-SECNO)
01654  0A DD                   620          SVC   X'DD'
01656  0001                    621          DC    AL2(1)
01658  0871                    622          DC    AL2(TUFF+37-SECNO)
0165A  0871                    623          DC    AL2(TUFF+37-SECNO)
0165C  0A DO                   624          SVC   X'DO'                  PRINT UCB ADDR AND DATA RANGE
0165E  EO                      625          DC    X'EO'
0165F  33                      626          DC    X'33'
01660  FB4C                    627          DC    AL2(TUFF-SECNO+REG)
01662  95 FB  F D20            628          CLI   LOAD,X'FB'             COMPARE FOR FOLDING MODE
01666  47 80  F 670            629          BC    EQ,CHIRP               BR. IF NOT FOLDING
0166A  0A DO                   630          SVC   X'DO'                  PRINT FOLDING MSG
0166C  EO                      631          DC    X'EO'
0166D  10                      632          DC    X'10'
0166E  FEB7                    633          DC    AL2(FOLDNG-SECNO+REG)
01670  0A DO                   634  CHIRP   SVC   X'DO'                  PRINT HEADINGS
01672  EO                      635          DC    X'EO'
01673  1A                      636          DC    X'1A'
01674  FBA8                    637          DC    AL2(HED1-SECNO+REG)
01676  0A DO                   638          SVC   X'DO'
01678  EO                      639          DC    X'EO'
01679  1A                      640          DC    X'1A'
0167A  FBC2                    641          DC    AL2(HED2-SECNO+REG)
0167C  96 10  F 0E5            642          OI    ISW+1,X'10'            INDICATE HEADINGS PRINTED
01680  42 30  F BE2            643  SZABO   STC   R3,INFO+6              STORE DATA
01684  42 50  F BE8            644          STC   R5,INFO+12
01688  42 70  F BE5            645          STC   R7,INFO+9
0168C  0A DD                   646          SVC   X'DD'                  CONVERT DATA
0168E  0001                    647          DC    AL2(1)
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01690  0BE2                  648          DC    AL2(INFO+6-SECNO)
01692  0BE2                  649          DC    AL2(INFO+6-SECNO)
01694  0A DD                 650          SVC   X'DD'
01696  0001                  651          DC    AL2(1)
01698  0BE5                  652          DC    AL2(INFO+9-SECNO)
0169A  0BE5                  653          DC    AL2(INFO+9-SECNO)
0169C  0A DD                 654          SVC   X'DD'
0169E  0001                  655          DC    AL2(1)
016A0  0BE8                  656          DC    AL2(INFO+12-SECNO)
016A2  0BE8                  657          DC    AL2(INFO+12-SECNO)
016A4  4E 20  F 818          658          CVD   R2,WORK                 CONVERT PRINT POSITION TO DECIMAL
016A8  F3 21  F BDD  F 81E   659          UNPK  INFO+1(3),WORK+6(2)
016AE  96 F0  F BDF          660          OI    INFO+3,X'F0'
016B2  42 40  F BEC          661          STC   R4,INFO+16              STORE CK RD BYTE
016B6  92 F0  F BF0          662          MVI   INFO+20,X'F0'
016BA  91 02  F BEC          663          TM    INFO+16,X'02'           CHECK FOR PRINT CHECK BIT
016BE  47 80  F 6C6          664          BC    NONE,OBER1              BR. IF OFF
016C2  92 F1  F BF0          665          MVI   INFO+20,X'F1'
016C6  92 F0  F BF4          666  OBER1   MVI   INFO+24,X'F0'
016CA  91 01  F BEC          667          TM    INFO+16,X'01'           CHECK FOR PARITY CHECK BIT
016CE  47 80  F 6D6          668          BC    NONE,OBER2              BR. IF OFF
016D2  92 F1  F BF4          669          MVI   INFO+24,X'F1'
016D6  91 04  F BEC          670  OBER2   TM    INFO+16,X'04'           CHECK FOR PLC
016DA  47 80  F 6E6          671          BC    NONE,OBER3              BR. IF OFF
016DE  92 F1  F BEC          672          MVI   INFO+16,X'F1'
016E2  47 F0  F 6EA          673          BC    UNC,OBER4
016E6  92 F0  F BEC          674  OBER3   MVI   INFO+16,X'F0'
016EA  0A DO                 675  OBER4   SVC   X'DO'                   PRINT FAILING POSITION
016EC  E0                    676          DC    X'E0'
016ED  19                    677          DC    X'19'
016EE  F8DC                  678          DC    AL2(INFO-SECNO+REG)
016F0  47 F0  F 5E0          679          BC    UNC,CRUDE
016F4  91 10  F 0E1          680  RANK    TM    UNIT1+1,X'10'           CHECK FOR UCS FEATURE
016F8  47 80  F 5EC          681          BC    NONE,HONK               BR. IF NOT
016FC  91 80  F 007          682          TM    SNSW+3,X'80'            CHECK SENSE SWITCH 24 FOR DUALING
01700  47 80  F 5EC          683          BC    NONE,HONK               BR. IF OFF - NOT DUALING
01704  1B 88                 684          SR    R8,R8                   CLEAR REG 8
01706  41 40  0 004          685          LA    R4,4                    SET UP FOR 4 DUALABLE CHARACTERS
0170A  43 84  F BF4          686  SWING   IC    R8,DUABLE-1(R4)
0170E  19 83                 687          CR    R8,R3                   COMPARE FOR DUALABLE CHAR
01710  47 80  F 71C          688          BC    EQ,SWUNG                BR. IF IT IS
01714  46 40  F 70A          689          BCT   R4,SWING                BR. UNTIL 4 CHECKED
01718  47 F0  F 5EC          690          BC    UNC,HONK
0171C  43 74  F BF8          691  SWUNG   IC    R7,DUALED-1(R4)         INSERT DUALED IN SHD READ
01720  19 57                 692          CR    R5,R7                   COMPARE TO READ
01722  47 60  F 5EC          693          BC    UNEQ,HONK               BR. IF UNEQUAL
01726  47 F0  F 5D8          694          BC    UNC,HOKAY
0172A  40C3C34040E740C5      695  IEXPCC  DC    C' CC  X EXP'
01732  E7D7
01734  40C3C34040E740C1      696  IACTCC  DC    C' CC  X ACT'
0173C  C3E3
0173E  40C1C4D940E7E7E7      697  IOADDR  DC    C' ADR XXXXXX SIO'
01746  E7E7E740E2C9D6
0174D  00                    698          DC    X'00'
0174E  07 00                 699          CNOP  0,4
0174F                        700          ORG   *-1
0174F  40C1C4D940E7E7E7      701  ILINK   DC    C' ADR XXXXXX LINK'
01757  E7E7E740D3C9D5D2
0175F  00                    702          DC    X'00'
01760                        703          CNOP  0,4
0175F                        704          ORG   *-1
0175F  40C3C1E640E7E7E7      705  ICAW    DC    C' CAW XXXXXX '
01767  E7E7E740
0176B  C3E2E6                706  ICSW    DC    C'CSW'
0176E  C3C3E6                707  ICCW    DC    C'CCW'
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01771  40C3E2E640E7E7E7      708  IBLAH   DC    C' CSW XXXXXXXX XX'
01779  E7E7E7E7E740E7E7
01781  E7E7E7E7E7E740C5      709          DC    C'XXXXXX EXP'
01789  E7D7
0178B  C1C3E3                710  IACT    DC    C'ACT'
0178E  C5E7D7                711  IEXP    DC    C'EXP'
01791  40E2D5E240E7E740      712  IEXSNS  DC    C' SNS XX EXP'
01799  C5E7D7
0179C  40E2D5E240E7E740      713  IACSNS  DC    C' SNS XX ACT'
017A4  C1C3E3
017A7  40D3D6C740E7E740      714  IOLOG   DC    C' LOG XX XXXXXX X'
017AF  E7E7E7E7E7E740E7
017B7  E7E7E7E7E740E7E7      715          DC    C'XXXXX XXXXXX'
017BF  E7E7E7E7
017C3  40E3E2E340E7E7E7      716  ITSTNO  DC    C' TST XXXX'
017CB  E7
017CC  40E2E240F040D6D5      717  IOPT1   DC    C' SS 0 ON FOR LOO'
017D4  40C6D6D940D3D6D6
017DC  D740D6D540E2C9D6      718          DC    C'P ON SIO'
017E4  D6D7                  719          DC    C'OP'
017E6  0000000000000000      720  ICSW1   DC    XL8'0'
017EE  0000000000000000      721  ICSW2   DC    XL8'0'
017F6  0000
017F8  040017A100000001      722  ISENSE  CCW   X'04',IACSNS+5,X'00',1
01800  00115E                723  IOADR   DC    AL3(ISSUE)
01803  FE                    724  MSK1    DC    X'FE'
01804  01                    725  MSK2    DC    X'01'
01805  000000
01808  0600183C00000084      726  DCKRD   CCW   X'06',CKAR,X'00',132
01810  00001810              727  CRDCSW  DC    A(CRDCSW)
01814  0C000000              728          DC    X'0C000000'
01818                        729          CNOP  0,8
01818                        730  WORK    DS    24C
01830  0000000000000000      731  ISAVE   DC    XL12'0'
01838  00000000
0183C                        732  CKAR    DS    132C
018C0                        733  DRAR    DS    132C
01944  00000000
01948  020018C000000084      734  RDCCW   CCW   X'02',DRAR,X'00',132
                             735  ********************************************************************************
                             736  *                          INITIALIZE ROUTINE
                             737  ********************************************************************************
01950  1B DD                 738  INIT    SR    R13,R13                 ZERO REG 13
01952  91 40  E 196          739          TM    406(R14),X'40'          CHECK FOR FORCED PROBLEM STATE
01956  47 80  F 95C          740          BC    NONE,NITWIT             BR. IF NOT
0195A  18 DF                 741          LR    R13,R15                 SET UP FOR PROBLEM STATE
0195C  58 C0  F 0E0          742  NITWIT  L     R12,UNIT1               LOAD REG 12 WITH UNIT TABLE ENTRY
01960  54 C0  F BA4          743          N     R12,MOD50               AND OUT UNUSED BITS
01964  49 C0  F A10          744          CH    R12,SAVDEV              COMPARE FOR CURRENT DEVICE ADDRESS
01968  47 80  F 9BC          745          BC    EQ,BLOOP                BR. IF EQUAL
0196C  40 C0  F A10          746          STH   R12,SAVDEV              SAVE CURRENT DEVICE ADDRESS
01970  91 10  F 0E1          747          TM    UNIT1+1,X'10'           CHECK FOR UCS FEATURE
01974  47 80  F 9BC          748          BC    NONE,BLOOP              BR. IF NOT DEFINED
01978  D2 02  F A3A  F 7D2   749          MVC   FERRO+14(3),IOPT1+6     MOVE WORD -ON - TO MSG
0197E  D2 02  F A45  F A57   750          MVC   FERRO+25(3),OFF         MOVE WORD -OFF- TO MSG
01984  D2 02  F A4C  F A5A   751          MVC   FERRO+32(3),NOT         MOVE WORD -NOT- TO MSG
0198A  91 80  F 007          752          TM    SNSW+3,X'80'            TEST FOR DUALING MODE
0198E  47 10  F 9A4          753          BC    ALL,DARIO               BR. IF DUALING MODE
01992  D2 02  F A3A  F A57   754          MVC   FERRO+14(3),OFF         MOVE WORD -OFF- TO MSG
01998  D2 02  F A45  F 7D2   755          MVC   FERRO+25(3),IOPT1+6     MOVE WORD -ON - TO MSG
0199E  D2 02  F A4C  F A4B   756          MVC   FERRO+32(3),FERRO+31    BLANK OUT WORD -NOT-
019A4  0A D0                 757  DARIO   SVC   X'D0'                  PRINT SS 24 MSG
019A6  04                    758          DC    X'04'
019A7  2B                    759          DC    X'2B'
019A8  FA2C                  760          DC    AL2(FERRO-SECNO+REG)
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019AA  0A DA                          761  STAY   SVC   X'DA'                HALT FOR SS ALTERATION
019AC  41 A0  F F28                   762         LA    R10,PRINT1
019B0  45 B0  F 0E6                   763         BAL   R11,ISIO             GO DO SPACE
019B4  2CC0                           764         DC    X'2CC0'              CONTROL SWITCHES
019B6  0005                           765         DC    X'0005'
019B8  F100                           766         DC    X'F100'
019BA  FF30                           767         DC    AL2(PRT1-SECNO+REG)
019BC  91 80  F 0E4                   768  BLOOP  TM    ISW,X'80'            CHECK FOR HANG UP
019C0  47 10  F 9DC                   769         BC    ALL,HANGUP           BR. IF DETECTED
019C4  D2 00  F A12  F 003            770         MVC   RTSAV(1),SECNO+3     SAVE ROUTINE NUMBER
019CA  92 40  F BFD                   771         MVI   LDAR,X'40'           CLEAR LOAD  AREA
019CE  D2 EF  F BFE  F BFD            772         MVC   LDAR+1(240),LDAR
019D4  D2 83  F AA9  F BFD            773         MVC   PRAR(132),LDAR       CLEAR PRINT AREA
019DA  07 F4                          774         BCR   UNC,R4               RETURN VIA REG 4
019DC  D2 00  F 003  F A12            775  HANGUP MVC   SECNO+3(1),RTSAV     MOVE RTN NO. THAT HANG WAS FOUND
019E2  94 7F  F 0E4                   776         NI    ISW,X'7F'
019E6  96 01  F 0E5                   777         OI    ISW+1,X'01'
019EA  98 AB  F B9C                   778         LM    R10,R11,ISLAVE       RESTORE REGS 10 AND 11
019EE  0A D0                          779         SVC   X'D0'                PRINT
019F0  64                             780         DC    X'64'                -PREVIOUS HANGUP DETECTED-
019F1  1A                             781         DC    X'1A'
019F2  FA8E                           782         DC    AL2(HUNG-SECNO+REG)
019F4  0A D0                          783         SVC   X'D0'
019F6  A019                           784         DC    X'A019'
019F8  FA13                           785         DC    AL2(CLUIN-SECNO+REG)
019FA  45 50  F 25C                   786         BAL   R5,IDOSNS            BR. TO OUTPUT AVAILABLE INFO
019FE  92 00  F 0E4                   787         MVI   ISW,X'00'            RESET HANGUP SWITCH
01A02  94 FE  F 0E5                   788         NI    ISW+1,X'FE'
01A06  92 01  F 003                   789         MVI   SECNO+3,X'01'        RESTORE TO ROUTINE 01
01A0A  47 F0  F 9BC                   790         BC    UNC,BLOOP
01A0E  07 00                          791         CNOP  0,4
01A10  FFFF                           792  SAVDEV DC    X'FFFF'
01A12  00                             793  RTSAV  DC    X'00'
01A13  40E2C5C540C4C5E2               794  CLUIN  DC    C' SEE DESCRIPTION'
01A1B  C3D9C9D7E3C9D6D5
01A23  60C3D6D4D4C5D5E3               795         DC    C'-COMMENTS'
01A2B  E2
01A2C  40E2C5C340E2E240               796  FERRO  DC    C' SEC SS 24 IS OF'
01A34  F2F440C9E240D6C6
01A3C  C640E2C5E340C9E3               797         DC    C'F SET IT OFF IF '
01A44  40D6C6C640C9C640
01A4C  D5D6E340C4E4C1D3               798         DC    C'NOT DUALING'
01A54  C9D5C7
01A57  D6C6C6                         799  OFF    DC    C'OFF'
01A5A  D5D6E3                         800  NOT    DC   C'NOT'
01A5D  40C8E4D5C740E4D7               801  NODEV  DC    C' HUNG UP BUSY- S'
01A65  40C2E4E2E86040E2
01A6D  E8E240D9C5E2C5E3               802         DC    C'YS RESET PSW RES'
01A75  40D7E2E640D9C5E2
01A7D  E3C1D9E3                       803         DC    C'TART'
01A81  40D9C5C1C4E840C4               804  READY  DC    C' READY DEVICE'
01A89  C5E5C9C3C5
01A8E  40D7D9C5E5C9D6E4               805  HUNG   DC    C' PREVIOUS HANG U'
01A96  E240C8C1D5C740E4
01A9E  D740C4C5E3C5C3E3               806         DC    C'P DETECTED'
01AA6  C5C4
01AA8  40                             807         DC    X'40'
01AA9                                 808  PRAR   DS    132C
001A0                                 809  DMSSW  EQU   416
01B2D  40E4C3C240C8C1E2               810  LSTGRP DC    C' UCB HAS 16 CHAR'
01B35  40F1F640C3C8C1D9
01B3D  40E2C5E340C6F040               811         DC    C' SET F0 THRU FF'
01B45  E3C8D9E440C6C6
01B4C  40E4C3E240C1C4C4               812  TUFF   DC    C' UCS ADDR XXX TO'
01B54  D940E7E7E740E3D6
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01B5C  40E7E7E740C3D6D5               813         DC    C' XXX CONTAIN XX '
01B64  E3C1C9D540E7E740
01B6C  E3C8D9E440E7E740               814         DC    C'THRU XX REST BLA'
01B74  D9C5E2E340C2D3C1
01B7C  D5D2E2                         815         DC    C'NKS'
01B7F  00
01B80                                 816         CNOP  0,4
01B80                                 817  LARGE  DS    24C
01B98  00000000                       818  SAV10  DC    XL4'0'
01B9C  0000000000000000               819  ISLAVE DC    XL8'00'
01BA4  00003FFF                       820  MOD50  DC    X'00003FFF'
01BA8  40D7D9C9D5E34040               821  HED1   DC    C' PRINT  SHD     '
01BB0  E2C8C44040404040
01BB8  404040D7D9E340D7               822         DC    C'   PRT PAR'
01BC0  C1D9
01BC2  4040D7D6E240E6D9               823  HED2   DC    C'  POS WR RD RD P'
01BCA  40D9C440D9C440D7
01BD2  D3C340C3C8D240C3               824         DC    C'LC CHK CHK'
01BDA  C8D2
01BDC  40E7E7E74040E7E7               825  INFO   DC    C' XXX  XX XX XX  '
01BE4  40E7E740E7E74040
01BEC  E7404040E7404040               826         DC    C'X   X   X'
01BF4  E7
01BF5  4D5D7E7D                       827  DUABLE DC    X'4D5D7E7D'
01BF9  6C4C7B7C                       828  DUALED DC    X'6C4C7B7C'
01BFD                                 829  LDAR   DS    240C
                                      830  ********************************************************************************
                                      831  *                          LOAD UCS SUB-ROUTINE
                                      832  ********************************************************************************
01CED  00
01CEE  D2 01  F D02  5 000            833  LOADIT MVC   MUMB(2),0(R5)         MOVE TEST NUMBER
01CF4  41 55  0 002                   834         LA    R5,2(R5)             UPDATE RETURN REG
01CF8  41 A0  F D10                   835         LA    R10,PRELD            LOAD CCW ADDRESS
01CFC  45 B0  F 0E6                   836         BAL   R11,ISIO             BR. TO ISSUE SIO
01D00  3E00                           837         DC    X'3E00'              CTRL SWITCHES
01D02  0000                           838  MUMB   DC    X'0000'              TEST NUMBER
01D04  F000                           839         DC    X'F000'              EXP COND CODE AND SENSE
01D06  FD28                           840         DC    AL2(LDCSW-SECNO+REG) EXP CSW ADDRESS
01D08  07 F5                          841         BCR   UNC,R5               RETURN VIA R5
01D0A  000000000000
01D10  EB001AA940000001               842  PRELD  CCW   X'EB',PRAR,X'40',1
01D18  7B001AA940000001               843         CCW   X'7B',PRAR,X'40',1
01D20  FB0018FD000000F0               844  LOAD   CCW   X'FB',LDAR,X'00',240
01D28  00001D28                       845  LDCSW  DC    A(LDCSW)
01D2C  08000000                       846         DC    X'08000000'
01D30  00000000                       847         DC    XL4'0'
01D34  04000000                       848         DC    X'04000000'
01D38                                 849         CNOP  0,4
                                      850  ********************************************************************************
                                      851  ********************************************************************************
                                      852  * ROUTINE 01 - THIS ROUTINE WILL RUN ON 1403 PRINTERS WITH THE UCS
                                      853  *              FEATURE ONLY. ALL 256 POSIBLE CHARACTERS WILL BE PRINTED
                                      854  *              IN EACH PRINT POSITION. THE 256 CHARACTER CODES WILL BE
                                      855  *              RIPPLED THROUGH THE PRINT AREA IN GROUPS OF 16 CODES AT
                                      856  *              A TIME. EXCEPT FOR THE LAST GROUP OF 16 CODES, ONLY ONE
                                      857  *              AREA OF THE UCS BUFFER WILL CONTAIN MATCHING CHARACTERS.
                                      858  *              FOR EACH OF THESE GROUPS, A DIFFERENT AREA OF THE UCS
                                      859  *              BUFFER WILL CONTAIN THE MATCHING CODES, THE REST OF THE
                                      860  *              BUFFER CONTAINING BLANKS. FOR THE LAST GROUP OF 16 CODES
                                      861  *              THE ENTIRE UCS BUFFER WILL BE FILLED WITH MATCHING CODES
                                      862  *              EACH GROUP OF 16 LINES WILL BE SEPARATED BY A TRIPLE
                                      863  *              SPACE. THE FIRST 15 GROUPS WILL APPEAR AS A TRUE RIPPLE
                                      864  *              OUTPUT. THE LAST GROUP WILL NOT BECAUSE MANY PRINT SLUGS
                                      865  *              ARE ASSIGNED THE SAME CODE.
                                      866  ********************************************************************************
```

```
01D38  01                                867  ROUT01 DC    X'01'                ROUTINE NUMBER
01D39  000F44                            868         DC    AL3(ROUT02-SECNO)    ADDRESS OF NEXT ROUTINE
01D3C  91 10  F 0E1                      869         TM    UNIT1+1,X'10'        CHECK FOR UCS FEATURE
01D40  47 80  F FE6                      870         BC    NONE,EXIT02          BR. IF NOT DEFINED
01D44  45 40  F 950                      871         BAL   R4,INIT              BR. TO INITIALIZE
01D48  92 F8  F D20                      872         MVI   LOAD,X'F8'           SET UP LOAD NO FOLD
01D4C  41 20  0 00F                      873  AGAIN  LA    R2,15                SET UP FOR 15 GROUPS
01D50  41 40  0 00F                      874         LA    R4,15                SET UP FOR 00 TO 0F
01D54  41 60  F BFC                      875         LA    R6,LDAR-1            SET UP FOR UCS ADDR 1 TO 16
01D58  92 40  F BFD                      876  KLEER  MVI   LDAR,X'40'
01D5C  D2 EE  F BFE  F BFD               877         MVC   LDAR+1(239),LDAR
01D62  18 54                             878         LR    R5,R4                LOAD STARTING CHARACTER
01D64  41 70  0 010                      879         LA    R7,16                SET UP FOR 16 CHARACTERS
01D68  42 56  7 000                      880  STC    STC   R5,0(R6,R7)          STORE CHAR IN UCS LOAD AREA
01D6C  42 57  F AA8                      881         STC   R5,PRAR-1(R7)        STORE CHARACTER IN PRINT AREA
01D70  95 F3  F D20                      882         CLI   LOAD,X'F3'           COMPARE FOR FOLDING MODE
01D74  47 60  F D7E                      883         BC    UNEQ,*+10            BR. IF NOT
01D78  D6 00  7 006  F F40               884         OC    R6(1,R7),FOLD        OR IN BITS 0 AND 1
01D7E  46 50  F D82                      885         BCT   R5,*+4               DECREMENT CHARACTER
01D82  46 70  F D68                      886         BCT   R7,STC               BR. UNTIL 16 STORED
01D86  91 80  F 007                      887         TM    SNSW+3,X'80'         CHECK SECTION SENSE SWITCH 24
01D8A  47 10  F E62                      888         BC    ALL,ADJUST           BR. IF ON  - DUALING
01D8E  D2 73  F AB9  F AA9               889  MARTY  MVC   PRAR+16(116),PRAR    FILL THE PRINT AREA
01D94  45 50  F CEE                      890         BAL   R5,LOADIT            BR. TO LOAD UCS BUFFER
01D98  0010                              891         DC    X'0010'              TEST NUMBER
01D9A  41 70  0 00F                      892         LA    R7,15                SET UP FOR 15 LINES
01D9E  92 09  F ED0                      893         MVI   PRINT,X'09'          SET UP PRINT AND SPACE
01DA2  41 A0  F EC8                      894         LA    R10,DUAL             SET UP FOR DUALING MODE
01DA6  91 80  F 007                      895         TM    SNSW+3,X'80'         CHECK SENSE SWITCH 24 FOR DUALING
01DAA  47 10  F DB2                      896         BC    ALL,WRITE            BR. IF ON  - IN DUALING MODE
01DAE  41 A0  F ED0                      897         LA    R10,PRINT            LOAD PRINT AND SPACE CCW ADDRESS
01DB2  45 B0  F 0E6                      898  WRITE  BAL   R11,ISIO             BR. TO ISSUE START I-O
01DB6  3CC0                              899         DC    X'3CC0'              CONTROL SWITCHES
01DB8  0020                              900         DC    X'0020'              TEST NUMBER
01DBA  F000                              901         DC    X'F000'              EXP COND. CODE AND SENSE
01DBC  FED8                              902         DC    AL2(PRTCSW-SECNO+REG) EXP CSW ADDRESS
01DBE  D2 83  F AA8  F AA9               903         MVC   PRAR-1(132),PRAR     RIPPLE THE PRINT AREA
01DC4  D2 00  F B2C  F AA8               904         MVC   PRAR+131(1),PRAR-1
01DCA  91 10  F ED0                      905         TM    PRINT,X'10'          CHECK FOR SPACE 3 AFTER PRINT
01DCE  47 10  F DDE                      906         BC    ALL,UPGRUP           BR. IF IT WAS
01DD2  46 70  F DB2                      907         BCT   R7,WRITE             BR. UNTIL 15 LINES PRINTED
01DD6  92 19  F ED0                      908         MVI   PRINT,X'19'          SET UP FOR SPACE 3 AFTER PRINT
01DDA  47 F0  F DB2                      909         BC    UNC,WRITE
01DDE  41 44  0 010                      910  UPGRUP LA    R4,16(R4)            UPDATE TO NEXT GROUP CHARACTERS
01DE2  41 66  0 010                      911         LA    R6,16(R6)            UPDATE TO NEXT UCS ADDRESS
01DE6  46 20  F D58                      912         BCT   R2,KLEER             BR. UNTIL 15 GROUPS RIPPLED
01DEA  18 54                             913         LR    R5,R4
01DEC  41 70  0 010                      914         LA    R7,16
01DF0  42 57  F BFC                      915  STC2   STC   R5,LDAR-1(R7)        GENERATE LAST SET F0 TO FF
01DF4  46 50  F DF8                      916         BCT   R5,*+4
01DF8  46 70  F DF0                      917         BCT   R7,STC2
01DFC  D2 DF  F C0D  F BFD               918         MVC   LDAR+16(224),LDAR    FILL UCS LOAD AREA WITH 15 SETS
01E02  D2 83  F AA9  F BFD               919         MVC   PRAR(132),LDAR       FILL PRINT AREA
01E08  45 50  F CEE                      920         BAL   R5,LOADIT            BR. TO LOAD UCS BUFFER
01E0C  0030                              921         DC    X'0030'              TEST NUMBER
01E0E  41 70  0 00F                      922         LA    R7,15                SET UP FOR 15 LINES
01E12  92 09  F ED0                      923         MVI   PRINT,X'09'
01E16  41 A0  F EC8                      924         LA    R10,DUAL             SET UP FOR DUALING MODE
01E1A  91 80  F 007                      925         TM    SNSW+3,X'80'         CHECK SENSE SWITCH 24 FOR DUALING
01E1E  47 10  F E26                      926         BC    ALL,WRITE2           BR. IF ON  - IN DUALING MODE
01E22  41 A0  F ED0                      927         LA    R10,PRINT            SET UP FOR PRINT AND SPACE
01E26  45 B0  F 0E6                      928  WRITE2 BAL   R11,ISIO             BR. TO ISSUE SIO
01E2A  3CC0                              929         DC    X'3CC0'              CONTROL SWITCHES
01E2C  0040                              930         DC    X'0040'              TEST NUMBER
01E2E  F000                              931         DC    X'F000'              EXP COND. CODE AND SENSE
```



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01E30  FED8                              932         DC    AL2(PRTCSW-SECNO+REG) EXP CSW ADDRESS
01E32  D2 83  F AA8  F AA9               933         MVC   PRAR-1(132),PRAR     RIPPLE PRINT AREA
01E38  D2 00  F B2C  F AA8               934         MVC   PRAR+131(1),PRAR-1
01E3E  91 10  F ED0                      935         TM    PRINT,X'10'          CHECK FOR SPACE 3 AFTER PRINT
01E42  47 10  F E52                      936         BC    ALL,EXIT01           BR. IF IT WAS
01E46  46 70  F E26                      937         BCT   R7,WRITE2            BR. UNTIL 15 LINES PRINTED
01E4A  92 19  F ED0                      938         MVI   PRINT,X'19'          SET UP FOR SPACE 3 AFTER PRINT
01E4E  47 F0  F E26                      939         BC    UNC,WRITE2
01E52  95 F3  F D20                      940  EXIT01 CLI   LOAD,X'F3'           COMPARE FOR FOLDING MODE
01E56  47 80  F E94                      941         BC    EQ,EXIT1             BR. IF DONE
01E5A  92 F3  F D20                      942         MVI   LOAD,X'F3'           SET UP FOR FOLDING MODE
01E5E  47 F0  F D4C                      943         BC    UNC,AGAIN
01E62  95 00  F AA9                      944  ADJUST CLI   PRAR,X'00'           COMPARE FOR A NULL
01E66  47 80  F E8A                      945         BC    EQ,SWAT              BR. IF IT IS
01E6A  95 40  F AA9                      946         CLI   PRAR,X'40'           COMPARE FOR A BLANK
01E6E  47 80  F E8A                      947         BC    EQ,SWAT              BR. IF IT IS
01E72  95 F3  F D20                      948         CLI   LOAD,X'F3'           COMPARE FOR FOLDING
01E76  47 60  F D8E                      949         BC    UNEQ,MARTY           BR. IF NOT
01E7A  95 80  F AA9                      950         CLI   PRAR,X'80'           COMPARE FOR A VALID UNPRINTABLE
01E7E  47 80  F E8A                      951         BC    EQ,SWAT              BR. IF IT IS
01E82  95 C0  F AA9                      952         CLI   PRAR,X'C0'           COMPARE FOR A VALID UNPRINTABLE
01E86  47 60  F D8E                      953         BC    UNEQ,MARTY           BR. IF NOT
01E8A  D2 00  F AA9  F AAA               954  SWAT   MVC   PRAR(1),PRAR+1       WIPE OUT CHARACTER
01E90  47 F0  F D8E                      955         BC    UNC,MARTY
01E94  0A D0                             956  EXIT1  SVC   X'D0'                PRINT RESTORE MSG
01E96  04                                957         DC    X'04'
01E97  1B                                958         DC    X'1B'
01E98  FE9C                              959         DC    AL2(BASHED-SECNO+REG)
01E9A  0A D6                             960         SVC   X'D6'                EXIT FROM ROUTINE 01
01E9C  40D9C5E2E3D6D9C5                  961  BASHED DC    C' RESTORE UCS BUFR WITH F837'
01EA4  40E4C3E240C2E4C6
01EAC  D940E6C9E3C840C6
01EB4  F8F3F7
01EB7  40C9D540C6D6D3C4                  962  FOLDNG DC    C' IN FOLDING MODE'
01EBF  C9D5C740D4D6C4C5
01EC7  00
01EC8  E8001AA940000001                  963  DUAL   CCW   X'E8',PRAR,X'40',1
01ED0  09001AA900000084                  964  PRINT  CCW   X'09',PRAR,X'00',132
01ED8  00001ED8                          965  PRTCSW DC    A(PRTCSW)
01EDC  08000000                          966         DC    X'08000000'
01EE0  00000000                          967         DC    XL4'0'
01EE4  04000000                          968         DC    X'04000000'
01EE8  3132733475763738                  969  QUAD1  DC    X'3132733475763738'
01EF0  797A3B7C1C7A7F2A                  970         DC    X'797A3B7C1C7A7F2A'
01EF8  6162236425266768                  971         DC    X'6162236425266768'
01F00  292A6B2C7C6E2F10                  972         DC    X'292A6B2C7C6E2F10'
01F08  5152135415165758                  973         DC    X'5152135415165758'
01F10  191A5B1C5D5B1F4A                  974         DC    X'191A5B1C5D5B1F4A'
01F18  0102430445460708                  975         DC    X'0102430445460708'
01F20  494A0B4C4C0B4F70                  976         DC    X'494A0B4C4C0B4F70'
01F28  0B001AA900000084                  977  PRINT1 CCW   X'0B',PRAR,X'00',132
01F30  00000000                          978  PRT1   DC    XL4'0'
01F34  08000000                          979         DC    X'08000000'
01F38  00000000                          980         DC    XL4'0'
01F3C  04000000                          981         DC    X'04000000'
01F40  C0                                982  FOLD   DC    X'C0'
01F41  00
01F42  07 00                             983         CNOP  0,4
                                         984  ********************************************************************
                                         985  * ROUTINE 02 - THIS ROUTINE WILL RUN ON 1403 PRINTERS WITHOUT THE UCS
                                         986  *              FEATURE ONLY. ALL 256 POSSIBLE CHARACTERS WILL BE
                                         987  *              PRINTED IN EACH PRINT POSITION. THE 256 CHARACTER CODES
                                         988  *              WILL BE RIPPLED THROUGH THE PRINT AREA IN GROUPS OF 64
                                         989  *              CHARACTERS EACH. EACH GROUP OF 64 LINES WILL BE
                                         990  *              SEPARATED BY A TRIPLE SPACE.
```

1403 RIPPLE PRINT

```
                           ************************************************************************
01F44  02                  ROUT02 DC     X'02'                  ROUTINE NUMBER
01F45  00FFFF                     DC     X'00FFFF'              LAST ROUTINE
01F48  91 10  F 0E1               TM     UNIT1+1,X'10'          CHECK FOR UCS FEATURE
01F4C  47 10  F FE6               BC     ALL,EXIT02             BR. IF DEFINED
01F50  45 40  F 950               BAL    R4,INIT                BR. TO INITIALIZE
01F54  41 20  0 100               LA     R2,256                 SET UP FOR 256 CHARACTERS
01F58  41 40  0 004               LA     R4,4                   SET UP FOR 4 GROUPS
01F5C  41 30  0 040        FIL    LA     R3,64                  SET UP FOR 64 CHAR GROUP
01F60  42 40  F FE8               STC    R4,GLORY               SAVE QUADRANT NUMBER
01F64  42 23  F AA8        STC3   STC    R2,PRAR-1(R3)          GENERATE CHARACTERS
01F68  46 20  F F6C               BCT    R2,*+4
01F6C  46 30  F F64               BCT    R3,STC3
01F70  D2 43  F AE9  F AA9        MVC    PRAR+64(68),PRAR       FILL PRINT AREA
01F76  D2 3F  F BFD  F EE8        MVC    LDAR(64),QUAD1
01F7C  95 04  F FE8               CLI    GLORY,X'04'            COMPARE FOR QUADRANT 4
01F80  47 80  F F98               BC     EQ,MOVEIN              BR. IF IT IS
01F84  95 01  F FE8               CLI    GLORY,X'01'            COMPARE FOR QUADRANT 1
01F88  47 80  F F90               BC     EQ,OTHER2              BR. IF IT IS
01F8C  92 1A  F C3C               MVI    LDAR+63,X'1A'
01F90  92 1A  F C0C        OTHER2 MVI    LDAR+15,X'1A'
01F94  92 2A  F C1C        OTHER3 MVI    LDAR+31,X'2A'
01F98  D2 43  F C3D  F BFD MOVEIN MVC    LDAR+64(68),LDAR
01F9E  41 30  0 03F               LA     R3,63                  SET UP FOR 63 LINES
01FA2  92 09  F ED0               MVI    PRINT,X'09'            SET UP PRINT AND SPACE
01FA6  41 A0  F ED0               LA     R10,PRINT
01FAA  45 B0  F 0E6        WRITE3 BAL    R11,ISIO               BR. TO ISSUE START I-O
01FAE  3CC0                       DC     X'3CC0'                CONTROL SWITCHES
01FB0  0050                       DC     X'0050'                TEST NUMBER
01FB2  F000                       DC     X'F000'                EXP COND. CODE AND SENSE
01FB4  FED8                       DC     AL2(PRTCSW-SECNO+REG)  EXP CSW ADDRESS
01FB6  D2 83  F AA8  F AA9        MVC    PRAR-1(132),PRAR       RIPPLE THE PRINT AREA
01FBC  D2 00  F B2C  F AA8        MVC    PRAR+131(1),PRAR-1
01FC2  D2 83  F BFC  F BFD        MVC    LDAR-1(132),LDAR       RIPPLE COMPARE AREA
01FC8  D2 00  F C80  F BFC        MVC    LDAR+131(1),LDAR-1
01FCE  91 10  F ED0               TM     PRINT,X'10'            CHECK FOR SPACE 3 AFTER PRINT
01FD2  47 10  F FE2               BC     ALL,UPGP2              BR. IF IT WAS
01FD6  46 30  F FAA               BCT    R3,WRITE3              BR. UNTIL 63 LINES
01FDA  92 19  F ED0               MVI    PRINT,X'19'            SET UP FOR SPACE 3 AFTER PRINT
01FDE  47 F0  F FAA               BC     UNC,WRITE3
01FE2  46 40  F F5C        UPGP2  BCT    R4,FIL                 BR. UNTIL 4 GROUPS PRINTED
01FE6  0A D6               EXIT02 SVC    X'D6'                  ROUTINE EXIT
01FE8  00                  GLORY  DC     X'00'
                           ************************************************************************
                           *      EQUATES                                                         *
                           ************************************************************************
00000                      NEVER  EQU    0
00007                      NCCO   EQU    7
0000F                      UNC    EQU    15
00008                      NONE   EQU    8
00004                      SOME   EQU    4
00001                      ALL    EQU    1
00005                      ANY    EQU    5
00008                      CCO    EQU    8
00004                      CC1    EQU    4
00002                      CC2    EQU    2
00001                      CC3    EQU    1
00008                      EQ     EQU    8
00004                      LO     EQU    4
00002                      HI     EQU    2
00006                      UNEQ   EQU    6
0000C                      EQLO   EQU    12
0000A                      EQHI   EQU    10
00080                      LOGOUT EQU    X'80'
00181                      SYSMOD EQU    X'181'
```


1403 RIPPLE PRINT

```
0F000                      REG    EQU    X'F000'
0005A                      WHAT   EQU    90
00000                      R0     EQU    0
00001                      R1     EQU    1
00002                      R2     EQU    2
00003                      R3     EQU    3
00004                      R4     EQU    4
00005                      R5     EQU    5
00006                      R6     EQU    6
00007                      R7     EQU    7
00008                      R8     EQU    8
00009                      R9     EQU    9
0000A                      R10    EQU    10
0000B                      R11    EQU    11
0000C                      R12    EQU    12
0000D                      R13    EQU    13
0000E                      R14    EQU    14
0000F                      R15    EQU    15
00198                      WT     EQU    408
0005A                      WAHT   EQU    90
00040                      HCSW   EQU    64
00048                      HCAW   EQU    72
0000B                      NCC1   EQU    11
                                  END
```

1403 RIPPLE PRINT

POST ASSEMBLY DATA

RELOCATION DICTIONARY

LOCATION	LENGTH
01015	3
0107C	4
017F9	3
01800	3
01809	3
01810	4
01949	3
01D11	3
01D19	3
01D21	3
01D28	4
01EC9	3
01ED1	3
01ED8	4
01F29	3

1403 RIPPLE PRINT

LABEL CROSS-REFERENCE BY STATEMENT NUMBERS

LABEL	LEN	VALUE	DEFN	REFERENCES
ADJUST	4	001E62	0944	0888
AGAIN	4	001D4C	0873	0943
ALL	1	000001	1042	0231 0268 0295 0304 0310 0316 0374 0377 0412 0439 0562 0575 0591 0753 0769 0888 0896 0906 0926 0936 0995 1027
ANY	1	000005	1043	0549 0560
BASHED	27	001E9C	0961	0959
BLOOP	4	0019BC	0768	0745 0748 0790
CAW	4	001048	0058	
CC0	1	000008	1044	0248 0254
CC1	1	000004	1045	0255 0366
CC2	1	000002	1046	0256
CC3	1	000001	1047	
CHIRP	2	001670	0634	0593 0600 0629
CKAR	1	00183C	0732	0579 0726
CLUIN	16	001A13	0794	0785
CRDCSW	4	001810	0727	0727
CRUDE	4	0015E0	0587	0679
CSW	8	001040	0057	
DARIO	2	0019A4	0757	0753
DCKRD	8	001808	0726	0345
DMSSW	1	0001A0	0809	
DRAR	1	0018C0	0733	0580 0734
DUABLE	4	001BF5	0827	0686
DUAL	8	001EC8	0963	0894 0924
DUALED	4	001BF9	0828	0691
EQ	1	000008	1048	0332 0407 0629 0688 0745 0941 0945 0947 0951 1007 1009
EQHI	1	00000A	1053	
EQLO	1	00000C	1052	
EXIT01	4	001E52	0940	0936
EXIT02	2	001FE6	1032	0870 0995
EXIT1	2	001E94	0956	0941
EXNPSW	5	001058	0060	
EXOPSW	8	001018	0052	
FERRO	16	001A2C	0796	0749 0750 0751 0754 0755 0756 0756 0760
FIL	4	001F5C	0999	1031
FLAG1	1	00100E	0048	
FLAG2	1	00100F	0049	
FOLD	1	001F40	0982	0884
FOLDNG	16	001EB7	0962	0633
GLORY	1	001FE8	1033	1000 1006 1008
GREG	4	001144	0247	0249
HANGUP	6	0019DC	0775	0769
HARDER	4	00160E	0601	0595
HCAW	1	000048	1077	0224 0237 0362 0558
HCSW	1	000040	1076	0225 0225 0262 0281 0296 0299 0369
HED1	16	001BA8	0821	0637
HED2	16	001BC2	0823	0641
HI	1	000002	1050	
HOKAY	4	0015D8	0585	0694
HONK	4	0015EC	0590	0586 0681 0683 0690 0693
HOPE	4	0012A4	0341	0342
HUNG	16	001A8E	0805	0782
IACSNS	11	00179C	0713	0328 0331 0334 0527 0528 0532 0722
IACT	3	00178B	0710	0502 0512
IACTCC	10	001734	0696	0252 0257 0259 0261 0265 0277 0379 0488
IBACK	2	001310	0368	0364 0372
IBLAH	16	001771	0708	0459 0472 0473 0477 0489 0493 0502 0507 0512
IBSN	6	00133A	0379	0312 0314 0318 0320 0352 0356 0359
ICAW	12	00175F	0705	0450 0453 0454 0458
ICCOUT	6	00147C	0479	0449 0465
ICCSW1	6	00135C	0387	0386

1403 RIPPLE PRINT

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ICCSW2       6 0013AA 0406    0394  0404
ICCW         3 00176E 0707    0459
ICHNG1       6 0014BA 0498    0495
ICHNG2       6 0014EA 0508    0497
ICLEAR       4 001304 0365    0367
ICLRDT       4 001386 0397    0396
ICM          2 00100A 0045
ICNT         1 00147T 0476    0460  0490
ICOUT        2 001460 0468    0463  0499  0504  0509  0514
ICSW         3 00176B 0706    0489
ICSW1        8 0017E6 0720    0262  0296  0315  0387  0387  0503
ICSW2        8 0017EE 0721    0299  0319  0403  0406  0406  0513
ICWOUT       6 001446 0462    0467
IDECI        4 00123C 0313    0310
IDID         4 0014F4 0510    0506
IDIDI        4 0014C4 0500    0492
IDOSNS       4 00125C 0321    0316  0786
IDUNCK       4 0013B8 0409    0375  0378  0407
IEXP         3 00178E 0711    0493  0507
IEXPCC      10 00172A 0695    0479  0484
IEXSNS      11 001791 0712    0223  0327  0330  0331  0400  0519  0520  0524
IFIX12       4 0013A6 0405    0399
IFIX9        4 00139A 0402    0398
IFLAG1       1 0013E8 0423    0409  0415
IFLAG2       1 00156E 0551    0410  0416
IFUR         4 0012AC 0343    0324  0332  0335
IHANG        4 00112C 0240
IHI          4 00113C 0245    0239
ILEAVE       4 00158A 0563    0414
ILINK       16 00174F 0701    0428  0431  0432  0436  0557
ILKSEN       6 001286 0331    0329
ILOKE        4 001312 0369    0366
IMORST       4 0014DC 0505    0501
INDER        4 0013B4 0408    0374  0377  0380  0384  0388  0392
INFO        16 001BDC 0825    0582  0585  0643  0644  0645  0648  0649  0652  0653  0656  0657  0659  0660
                               0661  0662  0663  0665  0666  0667  0669  0670  0672  0674  0678
INIT         2 001950 0738    0871  0996
INOEX1       4 001322 0373    0382
INOEX2       4 00132E 0376    0390
INOW         4 001194 0266    0231  0258  0260  0264
INPSW        5 001010 0050
INT3         4 00120C 0301    0298
IOADDR      15 00173E 0697    0443  0447
IOADR        3 001800 0723    0442
IOCSW        6 001492 0489    0439
IOEXRA       4 0012F0 0360    0322  0346  0354
IOLOG       16 0017A7 0714    0540  0541  0542  0543  0547
IONE         4 00117E 0261    0255
IONPSW       4 001078 0065
IOOPSW       8 001038 0056
IOPOUT       4 001564 0548    0534
IOPT1       16 0017CC 0717    0553  0749  0755
IOUT         4 0015A0 0569    0549
IOUTIT       6 0013D8 0417    0412
IPAS         4 00150C 0515    0511
IPASS        4 001530 0533    0516
IPRLOP       2 00156C 0550    0589
IRETRN       4 0011E8 0293    0066
ISAVE       12 001830 0731    0222  0567
ISEA         4 0012CC 0351    0344  0348
ISEN         4 001224 0307    0268  0302  0304
ISENSE       8 0017F8 0722    0321
ISIO         6 0010E6 0221    0763  0836  0898  0928  1017
ISLAVE       8 001B9C 0819    0226  0480  0778
ISPED        4 00122C 0309    0278  0280  0282
```


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```
ISSUE        4 00115E 0253    0448  0723
ISV2         6 001202 0299    0295
ISW          2 0010E4 0217    0250  0250  0251  0263  0266  0269  0272  0276  0287  0293  0294  0297  0300
                               0303  0305  0307  0313  0317  0323  0325  0326  0333  0347  0349  0350  0355
                               0355  0357  0358  0371  0373  0376  0383  0391  0408  0411  0500  0510  0515
                               0515  0548  0561  0590  0642  0768  0776  0777  0787  0788
IS12         4 00139E 0403    0401
ITICK        4 00130C 0367    0370
ITRY1        4 001120 0237    0241  0243  0560
ITSTNO       9 0017C3 0716    0221  0417  0420  0421  0425
ITWO         4 001176 0259    0256
IUP          4 001596 0566    0564
IWAIT        4 0011A4 0270    0306
IZERO        4 001190 0265    0254
JOHN         6 001150 0250    0233  0248
KLEER        4 001D58 0876    0912
LARGE        1 001B80 0817    0569  0588  0601
LDAR         1 001BFD 0829    0576  0594  0602  0605  0614  0771  0772  0772  0773  0844  0875  0876  0877
                               0877  0915  0918  0918  0919  1005  1010  1011  1012  1013  1013  1024  1024
                               1024  1025  1025
LDCSW        4 001D28 0845    0840  0845
LO           1 000004 1049
LOAD         8 001D20 0844    0628  0872  0882  0940  0942  0948
LOADIT       6 001CEE 0833    0890  0920
LOGOUT       1 000080 1054    0229  0229  0535
LSTGRP      16 001B2D 0810    0599
MARTY        6 001D8E 0889    0949  0953  0955
MCNPSW       8 001070 0064
MCOPSW       8 001030 0055
MOD44        4 001110 0230    0228
MOD50        4 001BA4 0820    0743
MOVEIN       6 001F98 1013    1007
MSK1         1 001803 0724    0273
MSK2         1 001804 0725    0275
MUMB         2 001D02 0838    0833
NCC0         1 000007 1038    0241  0342  0364
NCC1         1 00000B 1078    0280
NEVER        1 000000 1037
NIOU         1 00100D 0047
NITWIT       4 00195C 0742    0740
NIXT         4 00158E 0578    0575  0587
NODEV       16 001A5D 0801    0286
NONE         1 000008 1040    0233  0239  0282  0302  0308  0312  0314  0318  0320  0324  0329  0335  0344
                               0348  0352  0356  0370  0382  0384  0390  0392  0401  0404  0414  0465  0492
                               0492  0501  0506  0511  0516  0564  0593  0664  0668  0671  0681  0683  0740
                               0740  0748  0870
NOT          3 001A5A 0800    0751
OBER1        4 0016C6 0666    0664
OBER2        4 0016D6 0670    0668
OBER3        4 0016E6 0674    0671
OBER4        2 0016EA 0675    0673
OFF          3 001A57 0799    0750  0754
OTHER2       4 001F90 1011    1009
OTHER3       4 001F94 1012
PGNPSW       8 001068 0063
PGOPSW       8 001028 0054
PRAR         1 001AA9 0808    0573  0578  0773  0842  0843  0881  0889  0889  0903  0903  0904  0904  0919
                               0933  0933  0934  0934  0944  0946  0950  0952  0954  0954  0963  0964  0977
                               0977  1001  1004  1004  1022  1022  1023  1023
PRELD        8 001D10 0842    0835
PRINT        8 001ED0 0964    0893  0897  0905  0908  0923  0927  0935  0938  1015  1016  1026  1029
PRINT1       8 001F28 0977    0762
PRTCSW       4 001ED8 0965    0902  0932  0965  1021
PRT1         4 001F30 0978    0767
QUAD1        8 001EE8 0969    1005
```

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```
RANK          4 0016F4 0680    0584
RDCCW         8 001948 0734    0353
READY        13 001A81 0804    0339
REG           1 00F000 1056    0286  0339  0425  0436  0447  0458  0477  0484  0488  0524  0532  0547  0553
                               0557  0599  0627  0633  0637  0641  0678  0760  0767  0782  0785  0840  0902
                               0902  0932  0959  1021
ROUT01        1 001D38 0867    0051
ROUT02        1 001F44 0992    0868
RTSAV         1 001A12 0793    0770  0775
R0            1 000000 1058
R1            1 000001 1059    0245  0246  0249
R10           1 00000A 1068    0224  0226  0237  0450  0461  0462  0464  0466  0466  0480  0558  0762  0778
                               0835  0894  0897  0924  0927  1016
R11           1 00000B 1069    0221  0226  0230  0267  0301  0309  0311  0327  0343  0351  0379  0381  0385
                               0389  0417  0427  0428  0437  0437  0438  0479  0491  0494  0505  0563  0565
                               0565  0565  0566  0566  0568  0763  0778  0836  0898  0928  1017
R12           1 00000C 1070    0240  0242  0247  0253  0279  0341  0363  0365  0742  0743  0744  0746
R13           1 00000D 1071    0224  0225  0225  0237  0262  0281  0362  0369  0558  0738  0738  0741
R14           1 00000E 1072    0227  0270  0360  0533  0739
R15           1 00000F 1073    0296  0299  0741
R2            1 000002 1060    0569  0572  0578  0579  0580  0581  0587  0588  0608  0658  0873  0912  0997
                               1001  1002
R3            1 000003 1061    0571  0571  0578  0643  0687  0999  1001  1003  1014  1028
R4            1 000004 1062    0579  0582  0661  0685  0686  0689  0691  0774  0871  0874  0878  0910  0910
                               0913  0996  0998  1000  1031
R5            1 000005 1063    0562  0577  0577  0580  0583  0644  0692  0786  0833  0834  0834  0841  0878
                               0880  0881  0885  0890  0913  0915  0916  0920
R6            1 000006 1064    0573  0576  0581  0875  0880  0884  0911  0911
R7            1 000007 1065    0222  0322  0346  0354  0368  0567  0569  0570  0570  0581  0583  0588  0645
                               0691  0692  0879  0880  0881  0884  0886  0892  0907  0914  0915  0917  0922
                               0922  0937
R8            1 000008 1066    0321  0345  0353  0362  0385  0386  0393  0393  0394  0395  0395  0396  0398
                               0399  0426  0427  0494  0495  0496  0496  0497  0602  0604  0605  0606  0614
                               0614  0615  0684  0684  0686  0687
R9            1 000009 1067    0222  0270  0271  0274  0360  0361  0367  0463  0478  0499  0504  0509  0514
                               0567  0601  0603  0603  0604  0605  0607  0610  0610  0611  0614
SAVDEV        2 001A10 0792    0744  0746
SAV10         4 001B98 0818    0461
SDMF          1 00100C 0046
SECNO         4 001000 0042    0286  0339  0420  0421  0425  0431  0432  0436  0442  0443  0447  0453  0454
                               0458  0470  0471  0477  0484  0488  0519  0520  0524  0527  0528  0532  0538
                               0538  0539  0547  0553  0557  0599  0618  0619  0622  0623  0627  0633  0637
                               0637  0641  0648  0649  0652  0653  0656  0657  0678  0760  0767  0770  0775
                               0775  0782  0785  0789  0840  0868  0902  0932  0959  1021
SNSW          4 001004 0043    0232  0238  0413  0559  0682  0752  0887  0895  0925
SOME          1 000004 1041
SRET          3 00105D 0061
STAY          2 0019AA 0761
STC           4 001D68 0880    0886
STC2          4 001DF0 0915    0917
STC3          4 001F64 1001    1003
SVNPSW        8 001060 0062
SVOPSW        8 001020 0053
SWAT          6 001E8A 0954    0945  0947  0951
SWING         4 00170A 0686    0689
SWUNG         4 00171C 0691    0688
SYSMOD        1 000181 1055    0227  0533
SZABO         4 001680 0643    0591
TRUBL         4 0011C0 0277    0289  0308
TUFF         16 001B4C 0812    0606  0608  0609  0612  0613  0615  0618  0619  0622  0623  0627
UNC           1 00000F 1039    0243  0258  0260  0264  0289  0298  0306  0359  0368  0372  0375  0378  0467
                               0478  0568  0589  0600  0673  0679  0690  0694  0774  0790  0841  0909  0939
                               0939  0943  0955  1030
UNEQ          1 000006 1051    0228  0278  0380  0388  0449  0534  0584  0586  0595  0693  0883  0949  0953
UNIT1         1 0010E0 0068    0574  0592  0680  0742  0747  0869  0994
```


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```
UPGP2         4 001FE2 1031    1027
UPGRUP        4 001DDE 0910    0906
U1ADDR        2 0010E2 0070
U1OP          1 0010E1 0069
WAHT          1 00005A 1075
WHAT          1 00005A 1057
WORK          1 001818 0730    0397  0402  0405  0462  0470  0471  0472  0473  0498  0498  0503  0508  0508
                               0513  0535  0538  0539  0540  0541  0542  0543  0607  0608  0611  0612  0658
                               0658  0659
WRITE         4 001DB2 0898    0896  0907  0909
WRITE2        4 001E26 0928    0926  0937  0939
WRITE3        4 001FAA 1017    1028  1030
WT            1 000198 1074    0245  0270  0360
XF8364        1 001000 0003
```

NO STATEMENTS FLAGGED IN THIS ASSEMBLY

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OBJECT DECK LIST. PERIODS CORRESPOND TO BLANK COLUMNS.

COLS. 1 THROUGH 20	COLS. 21 THROUGH 40	COLS. 41 THROUGH 60	COLS. 61 THROUGH 80
BESD.....AA..AAXF83 9 YQ Y9 99 9	64..AAAA.AGZ..... YYQY Y8 9999 99	840	211.131812..83640001
BTXT.AAA..A8..AA86.A 9 YQY Y9 Y9 9 Y 999 9 9 9	AAAAAAAAAA&AADAAAAN8 YYYYYYYYY9-Y99YYYY89 999999999 9 99999	AAAAAAAAAAAAAAAAAAA YYYYYYYYYYYYYYYYYYY 999999999999999999	AAAAAAAAAAA83640002 YYYYYYYYYYY 999999999999
BTXT.AA8..A8..AAAAAA 9 YQ9 Y9 Y9YYYY 99 9 9 9999	AAAAAAAAAAAAAAAAAAA YYYYYYYYYYYYYYYYYYY 99999999999999999999	AAAAAAAAADAAAAAAAAA YYYYYYYY9YYYYYYYYYY 999999999 9999999999	AAAAAAAAAAA83640003 YYYYYYYYYYY 999999999999
BTXT.AA&..AA..AAAAAA 9 YQ- YQ Y9YYYY 990 99 9 9999	AAAAADAAAAJY..... YYYY99YYYY9 9999 9999	.....	83640004
BTXT.AAS..A8..AACAAA 9 YQ8 Y9 Y9OYYY 99 9 9 9 9	AAKA7HABA18ABA7F&NAH YY 9 Q9Q8 Q-Y - YYZ 99 0 Z 9 9	PG-.-.ALCDEAJAG-1APC 90 0 CYQQ-QZOZ Q 8 Z Z 9 9	AAAAAAAAGA1D83640005 YYYY-YQYZQ - 9 9 09 9
BTXT.AJQ..A8..AAAAOD 9 Y99 Y9 Y9-Y 9 9 9 9	GA1&&NAHAAODGA14EA&A ZY YYZ-Y 9ZY 8QY-Y 9 9 9 9	G&1JDA&AG01JHOAHHAAC Z- YQY-YZ YR89-OQY9 0 9 9 9 9 9 99	EA&AGA1&FA1D83640006 QY-YZY ZQ Z 9 9 9
BTXT.AJ&..A8..AAPAOU 9 Y9 Y9 Y9 9 9 9 9	OUFAOUBX71DA&AGA1AG. -Y - 8QY-YZY QZ 9 9 9	16GJ1FB371G01DB271GO 8ZY R- 8Z -- 8Z 9 0 9 9	1DB171KG7W-.83640007 -- 8 9 0 9
BTXT.AJH..A8..AAF.OU 9 Y90 Y9 Y9- 9 9 9	G01DBO71D7OUA.AAGA2U Z -- 8-8 - QYZQ 9 9 09 9	FAOUHFAHHAACFAOUAA8C -Q RQ9-OQY9-Y YY 9 9 9 9	FA1DAA8DD7OU83640008 ZQ -YY 9-8 0 9
BTXT.AJ&..A8..AAEO71 9 Y9- Y9 Y9- 8 9 9 9 9	G-2UEA&AGA2UAA-DGA2U Z 8QY-YZQ 8-QOZZY 8 9 9 9 0 9 9 9	B-MUBNFAOUBBG01&D7OU 8OZ9Q8-Y 8QZ --8 9 Z 99	A.OUGA2BKG7W83640009 - ZQ 9 9 9
BTXT.AJ8..A8..AAO.F. 9 Y9 Y9 Y9 - 9 9 9	OUGO2DKG7OO.FJOUAAAA Z 8 9 Y -Y -QQY 9 9 9 909	GA2UAHOUGA2UFHOUGO1M ZY 9-9 ZQ 9-9 Z 0 9	AJOUGA1&AJAA83640010 -Y ZY --YQY 9 909
BTXT.AKA..A8..AAGA24 9 Y9Q Y9 Y9ZQ 8 9 Z 9 9 9 9	A&AAGA32A.OUGA32AB7K --Q9ZY 8- ZY 8-9 Y 0 9 9 9	GA2MAJOUGA32AB72GA32 ZQ 8-Y ZY 8-9 ZY 8 9 9 9 9	AA78E&2OAAOV83640011 ZY Z- -Y 0
BTXT.AKQ..A8..AAGA2M 9 Y9Z Y9 Y9ZY Y 9 9 9	FDOUD7OVKA7FAEAA7JGA -9 -8 Y -Q9-9 OZY 9 0	2FFA7FNA7J7FGA2MFAOU 0-9 - Y O -ZY Y-9 9	A.7JGA2MB-ME83640012 - OZY Y8OZ8 9 9
BTXT.AKJ..A8..AABABB 9 Y9Y Y9 Y9Q08Q 9 9 9 Z 99	EA&AG&2MA.AAGA2DAA8H QY-YZ- O- Q9ZY YZY 9 9 9 0 0 9	E&2OAAOVGA2DF.OVD7OV Z- -Y ZY Y- -8 0 9	AAAAGA32AA9H83640013 -YQ9ZY 8ZY Z 0 9
BTXT.AKQ..A8..AAE&2O 9 Y9 Y9 Y9Z- 9 9 9 0	AAOVGA32FJOVD7OVG032 -Y ZY 8-Y -8 Z 8 9 9 9	HFAHHAAD&EAHDA&AG&3A RQ9-OQY9 YYZQY-YZ- Q 9 9 9 9 0 9	EA&AG.3KFA3D83640014 QY-YZ 9ZQ 9 9 9

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BTXT.ALA..A8..AAG7AD 9 Y9Q Y9 Y99 -9 9 9 9 9	-DGA3DFAOVGO3AA.OUGA OZZY 8-Y Z Q- ZQ 9 9 9	3DGO3HAJOUGA3DGO3HNA -Z --Y ZQ -Z - Y 0 0 9 9 0 0 9	71ADG-3DAHAA83640015 8Q9Z --9QY 90 0 09
BTXT.ALH..A8..AAGA3S 9 Y9Z Y9 Y9ZY 9 9 9 9	A.OUGA3DHCAF.A3-NG7W - ZY -ZYY9 Y 9 0 9	7WG-3DADAAGA3WAJOUGA Z --9QYZY 8-Y ZY 0 09 9 9	3DAHAH.A3OAH83640016 -ZOY9 Y YZO 0 9
BTXT.ALA..A8..AAAD.A 9 Y9Y Y9 Y9Y9 Y 9 9 9 9	3HDD8Q.A3D.A3QAA7FGA 0-Q 9 Y Q Y 0-9 -ZY Z	3FFB8QAA72GA3KFA8QNG Q-9 9-9 ZY Y-9 9 9	7O7OGA3HFAOU83640017 Y YZY --9 9 9 0
BTXT.ALH..A8..AABM3Y 9 Y9- Y9 Y9-Z 9 0 9 9	B&5WAAOUGA3QAAODGA5B -- 8-9 ZQ -9 9ZY Y 9	BU3YBA5WKA7HABBEABGH -9 -Y 8 9 Q98QY99 0 999	GHB-MA7CAAAD83640018 9 8OZ8 ZYY9 9 9 9
BTXT.ALO..A8..AALH&A 9 Y9 Y9 Y98- Q 9 9 9 90 0	7DBEACGEGDB-SA7GACAD R8QY99R9R808Q 8ZQY9 999 9 9 09	AAAAGA4BBEACHAGCB-SG -YQYZQ -8QY99Y9Z8088 09 9 999 9 9 9	76ED1OG-44&J83640019 8-Q 8Z 8 Y 9
BTXT.AMY..A8..AA7MBE 9 Y99 Y9 Y9 Z8Q 9 9 9 99	ACGNGMB-SC7PKB7B7WBO Y99Z9Z8088 8 9 R 8-9 9 9 9 0	4G&JCHKG8QJAEA4-A&JD R YQ- 9 9YYZQ --Y9 0 Z 9	GA44AKAHG04F83640020 ZY 8ZYY9Z Z 9
BTXT.AM-..A8..AABEAH 9 Y9 Y9 Y98QY9 9 9 9 999	HQHQKG7F8QKG778JB-SK 9999 9 R 9 9 8 Y8088 0 99 9	7AG9KA7XADHJCDB-SB7S R9 Y 8Q9RYQQ8088 8 0 9 90 Z 9 9 9	B-SB74KB7B7T83640021 8088 9 9 R 8 9 9 0
BTXT.AMH..A8..AABK4G 9 Y9- Y9 Y98 R 9 9 9 9 0	AHAAGA4DKB7H7FHCAF.A -9QYZY 9 0 YZYY9 Y 09 9	4FAHAH.A4OKG8Q8QEA4- QZOY9 Y Y 9 9 9ZQ 0 9 9	A.OUGA4DKB7H83640022 - ZY Q 9 0 9
BTXT.AM-..A8..AA7CKG 9 Y9O Y9 Y9 Y 9 9 9 9	8Q7WEA4-ADAAGA44KB7H 9 ZQ -9QYZY 9 0 09	7FKG8Q8QEA4-AJOUGA5D Y 9 9 9ZQ -Y ZY 8 9 9	KB7H7CKG8Q7083640023 9 0 Y 9 9 Y 9
BTXT.ANH..A8..AAEA4- 9 Y99 Y9 Y9ZQ 9 9 9	ADOUGA5ABEAAGFGFB-SC -9 ZY Q8QY99-9-8088 Z999 9 9	7ABEAAGJGJB-SC7DEAJA -8QY990908088 Q-QZO 999 9 9 Z	G-5MKC8QAABE83640024 Z Z 8 9YY8Q 9 9 99
BTXT.AN...A8..AAADHQ 9 Y9 Y9 Y9Y899 9 9 9 99	HQKA7M8QKE7P8KKE7F8S 99 9 Y 9 9 Y 8 9 - 9 9 0	KE7E8SB-SM7PA-OVG&5J 9 Q 88088 O- Z Y O 99 9	B-&Q7DB-JA7G83640025 8O-9 Y8OY9 8 9 99
BTXT.ANH..A8..AA&NAH 9 Y9R Y9 Y9 YYZ 9 0 9 9 9	AAODG&1JAAOVGNAHAAGA -Y 9Z Y-9 99-9QYZY 9 09	5FACABACAFH18AGCAXCA -ZQY9ZQY9-8 Q9QQ9QY 09 09 Z Z Z	LGL3AJADA-BQ83640026 8R89ZYYOZ QO 909 99 Z
BTXT.ANA..A8..AAAAOJ 9 Y9Q Y9 Y9-Q Z 9 0 9 9 9	GA5DA-CDLEC2BQCB83CB ZQ QZ QQ8RZ9QOZZ 8ZR 9 0 ZZ9 Z 9	8GCFJA8.CMJGG-64EDCM QZRYYZ QY8RZ -9QY O 099 Z99 Z9	G-5MFJ5FHXCA83640027 Z YZY Q-9QY 9 9 0 Z
BTXT.ANY..A8..AAGO5U 9 Y9 Y9 Y9Z 8 9 9 9	AAOVGA6AAAOJGA6&EOCE -Q ZQ Y-Q ZZY -- QQ 9 9 9 0 ZZ	G-6FB-SPCVGO6&HACAAA Z 88088Q8Z -RQQQZY 99 9Z9 0 Z	CDAIAALHCICD83640028 QQZ-Y98-ZOQQ ZZ 9 9 ZZ
BTXT.AOJ..A8..AABAC/ 9 Y9Y Y9 Y9ZYQ8 9 9 9 9 Z	FA8Q3/CF8OFOCHAIAGFA 8Q 9 9QR 8- QRZ-Y88Q Z 9 Z 99	8Q3/CN8OFOCPCICDBACA 9 9Q8 8- Q8ZOQQZYQR Z 9 Z ZZ ZO	BEAAC/C/BEAA83640029 8QY988888QY9 999 9 9 999
BTXT.AOH..A8..AACACA 9 Y9R Y9 Y98R8R 9 9 9 9090	B-S3CDECEJGA6&B-SAFG 8089Q8-QQYZY -808QQ- 9 Z ZZ9 09 9ZO	B-SKCQ8-SKCBFAOVBACS 8088Q08088Q -Q ZQQ 9 9Z 9 9Z 9 ZZ	B&CYB&CVBEAA83640030 Z Q Z-Q 8QY9 Z OZ 999

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```
BTXT.AQA..AD..AAAAAA  AAAAAAAA.............  ......................  ............83640040
9    Y9Q  Y8  Y9YYYY  YYYYYYYY
     9 Z  99  9 9999  99999999

BTXT.AJD..A8..AAAAAA  BAQ&AAADLEA.JFGA9MQG  H&OSD&CMA&BAGA9D.&BA  AAOJGA9DKBB283640041
9    Y8Z  Y9  Y9YYYY  9Y9-YYY08Q- Z-ZY 89Q  R- 8R-Q08-QQZY Q -QQ  -Q ZZY Q 9Q8
     99   9   9 9999    9  999 99       9        Z   Z9   0  Z9     9     0  Z9

BTXT.AJ4..A8..AA7KKB  BEBGKBBDBKAAOGGA9MKB  B2BGKBBE7KKBBDBCB-DT  BUBBAJGYEAOW83640042
9    Y88  Y9  Y9   9  QZQR 9Q8Q8-Y 9ZQ 0 9  Q8QR 9QZ   9Q8Q88098  Q88QZYQ9ZQ
     99   9   9        Z Z   Z Z       9     Z9Z  Z     Z Z 9  9   Z999  Z  0

BTXT.AJD..A8..AAU&AE  1AGAAAOUGA9DKABKOCB.  CEKPCFCEKCBRCEG4KAOC  BKD7OUFAOVHL83640043
9    Y8-  Y9  Y98-Y9  YQQ-Y  ZQ Q YQ9 9-    QQ YQQQQ OQOQQ9  Y 9  Q9-8  -9  -Y
     990  9   9 9 9    9ZZ     9 9 9Z       ZZ 9ZZZZ  Z ZZ   9     Z

BTXT.AJM..A8..AACDB-  MKBFB-JJBLE&2MBAOUDF  OVBAOCGO9DGAGGA.SEE.  DESCRIPTION-83640044
9    Y8Y  Y9  Y9QQ8O  Z8QY8OY8Q9Z  8-Y  -Q    -9 9Z  Q9YQQY
     999  9   9 Z 9    9Z 9  9Z       9   Z          0 9ZZ9

BTXT.AKU..A8..AACOMM  ENTS.SEC.SS.24.IS.OF  F.SET.IT.OFF.IF.NOT.  DUALINGOFFNO83640045
9    Y89  Y9  Y9
     99   9   9

BTXT.AKM..A8..AAT.HU  NG.UP.BUSY-.SYS.RESE  T.PSW.RESTART.READY.  DEVICE.PREVI83640046
9    Y88  Y9  Y9
     99   9   9
```

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BTXT.AKD..AN..AAOUS.  HANG.UP.DETECTED....  ......................  ............83640047
9    Y8-  Y9  Y9
     99   9   9

BTXT.ALV..A8..AA.UCB  .HAS.16.CHAR.SET.FO.  THRU.FF.UCS.ADDR.XXX  .TO.XXX.CONT83640048
9    Y88  Y9  Y9
     999  9   9

BTXT.ALN..AL..AAAIN.  XX.THRU.XX.REST.BLAN  KSA...................  ............83640049
9    Y8Z  Y8  Y9                                Y
     99   99  9                                 9

BTXT.ALH..A8..AAAAAA  AAAAAAAAAA7G.PRINT..  SHD.........PRT.PAR..  POS.WR.RD.RD83640050
9    Y8-  Y9  Y9YYYY  YYYYYYYYYY8Q
     99   9   9 9999  999999999999Z

BTXT.AL-..AV..AA.PLC  .CHK.CHK.XXX..XX.XX.  XX..X...X...XEN65UD3  4............83640051
9    Y80  Y8  Y9                                        8888888  8
     99   99  9

BTXT.AMN..A8..AAAKAE  B&AAEABAJEAEAOW6AAAO  AEYG5AAAAAALAKR.AAA3  AKR.AAACALEA83640052
9    Y8Y  Y9  Y9Y 9Q  9 YZRY9ZYQQZQ  8YYY  YQ99 YYYYYYY80 YY98  Y80 YY9QY8QY
     999  9   9 9  Z    9  9   Z9 0  9999  9Z   999999999  99    99  99 Z99Z9

BTXT.ANV..A8..AAAAOA  ANYHAAAAAAADAAAAAGDA  AOJGAGWE.9&BCEJAJAGA  .AGA-CDB.CEK83640053
9    Y89  Y9  Y9YY Y  Y899YYYYYYY9YYY9Y8Z-  Q ZZYQ Z   -QQYZYY8Z   Y8Z QQ- QQ
     99   9   9 99 9  99  9999999 999 99    9    Z       ZZ9 999    99  ZZ  ZZ

BTXT.ANN..A8..AAOCFC  EQDA&AABF&ABGBQE3EJG  -E6OA&FG.F&EBF&EQAAO  GGAFKKCBIBRE83640054
9    Y88  Y9  Y9YQQQ  Q9RZ-YQZR-YZRQO- QYZ   Q8 Y-9Q Z QOZ-QZ-Y   9ZQQZ RQ-QOZ
     99   9   9 9ZZZ  Z   099  09  Z   Z9    Z  90 Z   Z  0Z       9Z  0ZOZ

BTXT.ANE..A8..AA&DOA  AA&AGBAF-AJFHAAOGGAE  BAJF-EAOW4&AJOAFQKCB  QBRKACUBQAAF83640055
9    Y8Y  Y9  Y9OZQQ  QZ-Y8-8QOZYQ -Y 9ZQQ  -ZYQOZQ  8-YY YQ  OQ  OQO YQ8QO-QQ
     999  9   9  9Z99  9 099 9Z   Z     9Z   0 Z  0  9 99 9Z   Z    Z 9Z9Z  9Z

BTXT.ANE..A8..AA-GAE  FF&EBBJF-GOEBADAAAOA  AFJEHQDA&AABGCDF&E8F  &EOKGDECEKCB83640056
9    Y8Y  Y9  Y9OZQQ  QZ-Q--8QOZ Q-ZZYQZZY  QZYQR9RZ-YQZRQQZ Q Z  -Q  QQ8QQ OQ
     999  9   9  9Z   9 OZO 9Z   ZO 99  9   9 9Z    099  ZZ  Z     OZ  9Z9ZZ  Z

BTXT.AOE..A8..AARCEE  &DOAAA&AGBAF-AJFHAAO  GGAFWAJF-EAOW4&A.OAF  QKCBQBRKACUB83640057
9    Y89  Y9  Y9OQQZ   QYYQZ-Y8-8QOZYQ -Y   9ZQQ9ZYQOZQ  8-Y  YQ    OQOQO YQ8Q
     99   9   9  ZZ    Z99Z 099 9Z   Z      9Z   Z  O  9 9  9Z     Z Z  9Z9Z

BTXT.AO5..A8..AAQAAF  -GAFBF&FWBJF-GOFWE3E  JGAFDB3EJGOEDEABRGAF  BE.BRGAFBE3E83640058
9    Y88  Y9  Y90-QQ  OZQQRZ-Q9-8QOZ Q9- Q  YZYQ-- QYZ Q8-YQOZYQ  Y- QOZYQY- Q
     999  9   9  9Z     9Z  OZ  9Z   Z  Z    9 Z   Z9  Z  9Z   Z     Z   Z   Z

BTXT.AOE..A8..AAJG-E  FEABRGAFBE&BRG-EFKAB  RBKGOEFB-DLFDBO.REST  ORE.UCS.BUFR83640059
9    Y8R  Y9  Y9YZ Q  Y-YQOZYQY--QOZ QY YQ  OQYZ QY8098QQ8
     990  9   9 9 Z     Z   Z   Z   Z  9Z    Z   Z 9  9Z 9

BTXT.AON..A8..AA.WIT  H.F837.IN.FOLDING.MO  DEALAKR.AAAAAKRAAADA  AOQHAAAAAAAD83640060
9    Y8Y  Y9  Y9                              YYY8O YY98YBOYYYOY  Y8 9YYYYYYY9
     99   9   9                               9999  99 999 999 9  99  9999999

BTXT.AOV..A8..AAAAA1  2C4EF781234M27S/KTMV  WPQ/STU4WXAABLDNOGHJ  KLMNLPBABCDE83640061
9    Y8   Y9  Y9YYY9  9R9RR9988888888 Z9Z9  9ZZ8888888QRR9R99RR8  888888899Z9Z
     99   9   9 999    Ó 00    9 9  9        99 9  99         9  9 9  9

BTXT.APN..A8..AAFGHA  BCDDCG&CAKRAAADAAAAH  AAAAAAADAAA&AGABAGGA  AOJGAGWE.9&A83640062
9    Y88  Y9  Y9Z998  888888-8Y8OYYYOYYYY9  YYYYYYY9YYY-Y9Y9YQQ-  Q ZZQQ Z   Z
     999  9   9        9  9 0999 999 9999    9999999 999 9 9 9ZZ   9  9Z
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BTXT.APE..A8..AAJAAA     .ADAAA.B.GYBTBQFJGUF     AGMKCBZBRK7CEFYEDGYG     AGHEAGYGAGAB83640063
9     Y8R  Y9  Y9Y9YZ      Y9ZQY Z Q Z9QOZYQ8Z     QQZ ZQ QO 8QQQ -9Q Z     YQ--9Q ZYQQ-
      99   9   9 9 9        9 Z9   Z   Z  9Z      ZZ   Z Z  9ZZZ   Z       Z   Z   Z

BTXT.APE..A8..AAKD4B     KDDBSDMKCD5CEAAA7BAF     -AJF-EAOW4&A&OAFQKCB     QBRKACUBQKCC83640064
9     Y8Y  Y9  Y98Q8-     8Q8-8Q8 ZQ8QQZQY8-8Q     OZYQOZQ  8-Y  YQ  OQ     OQO YQ8QO OQ
      99   9   9 9Z9      9Z9 9Z9  Z9ZZ Z99 9Z        Z  O  9 9  9Z   Z       Z  9Z9Z  Z

BTXT.APE..AU..AADCEK     ADACDAAF-GAGSFAGKBJF     -GOGKF.GMBOA.........     ............83640065
9     Y8   Y9  Y9QQQ      YQYQQ-QQOZQQ ZQQY-8Q     OZ QYZ Q88 Y
      99   9   9 ZZZ      9Z ZZ 9Z  9Z  ZZ  9Z        Z   Z 9 9

BRLD......A4....AAAA     AAANEAA4AAP9AAQAAAQA     EAQAAAJAAANJAANJAAN/     EANYHAOI....83640066
9          Y9    Y9Y9     8YQ98YQ88Y9 8Y9Y8Y98     8Y9Q8Y888Y898Y888Y89     8Y899Y8
           9     9 9      999 999 99  99 999 9     99 9999 999 9999999      999  99

BRLD......AA....AAAA     AAOJEAOQHAP/.........     ......................     ............83640067
9          YQ    Y9Y9     8Y8 8Y8 9Y88
           99    9 9      999 999  999

BEND..................    ......................    ......................    ............83640068
9

BLDT..................    ......................    ......................    ............83640069
9
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1403 BUFFER RESTORE TEST DESCRIPTION

TABLE OF CONTENTS

1. PURPOSE

1.1 THIS PROGRAM IS USED TO RESTORE UNIVERSAL CHARACTER BUFFERS ON 1403 PRINTERS WITH THE UCS FEATURE, TO A DESIRED CONFIGURATION. THE PROGRAM LOGICALLY FOLLOWS THE DIAGNOSTIC PROGRAMS WHICH ALTER THE UCB DURING THE 1403 TESTS.

2. REQUIREMENTS

2.1 PROGRAM REQUIREMENTS

A DIAGNOSTIC MONITOR MUST BE USED TO RUN THIS PROGRAM. THE PROGRAM NEEDS DEVICE DEFINITION AND DATA DEFINITION PRIOR TO EXECUTION. -SEE COMMENTS AREA FOR DEFINITION FORMATS- THE 1403 PRINTERS USED IN THIS PROGRAM MUST HAVE THEIR ADDRESSES DEFINED IN THE DM UNIT DEFINITION TABLE -UDT-.

THE UNIT DEFINITION TABLE-UDT-ENTRY MUST BE PUNCHED AS FOLLOWS.

* UNIT CODE	*	OPTIONAL FEATURE DIGIT 1				OPTIONAL FEATURE DIGIT 2			
* UNIT	*ZZ	*BIT 0	* BIT 1	* BIT 2	* BIT 3	* BIT 4	* BIT 5	* BIT 6	* BIT 7
*	*	*HEX 8	* HEX 4	* HEX 2	* HEX 1	* HEX 8	* HEX 4	* HEX 2	* HEX 1
* 1403 PRINTER	*83	*ASCII	*SEL	*	*UNIV.	* HI-	* 120	*	* 2821
* OR	*	*	*TAPE	*	*CHAR.	*SPEED	*PRINT	*	*2 CHNL
* 1404 PRINTER	*	*	*LISTER	*	*BUFF.	*PTR.	*POS.	*	*SWITCH
* CONTINUOUS	*	*	*	*	*	*	*	*	*
* FORMS	*	*	*	*	*	*	*	*	*

2.2 EQUIPMENT REQUIREMENTS

AN INPUT DEVICE FOR PROGRAM LOADING.
AN OUTPUT DEVICE FOR MESSAGE OUTPUT.
-OTHER THAN DEVICES BEING RESTORED BY THIS PROGRAM-
4K OF STORAGE FOR THIS PROGRAM.
CPU, CHANNEL, AND DEVICE IN WORKING ORDER.
A MINIMUM OF ONE 1403 UCS PRINTER
A MAXIMUM OF TEN 1403 UCS PRINTERS

3. OPERATING PROCEDURE

3.1 LOADING

STANDARD LOADING PROCEDURE, AS IS GIVEN IN THE USERS GUIDE, MUST BE USED TO LOAD THE PROGRAM.

3.2 OPERATION

********** WARNING **********
THIS PROGRAM IS RELEASED WITH CTRL CARDS AND DATA CARDS -BOTH DEFINED LATER IN THIS DESCRIPTION- WHICH DEFINE THE STANDARD 1403 ADDRESSES OF 000E, 000F, AND 0010, AND THE STANDARD AN CHAIN AND TRAIN CONFIGURATIONS USED AS DATA TO LOAD THE UNIVERSAL CHARACTER BUFFERS. IF A 1403 WITH THE UCS OPTION EXISTS ON A SYSTEM AND HAS ANY OF THE ABOVE ADDRESSES, AN ATTEMPT WILL BE MADE TO LOAD THE BUFFER WITH THIS AN DATA. IF THE DEVICE BEING RESTORED DOES NOT HAVE THE STANDARD CONFIGURATED CHAIN OR TRAIN, THE PROPER DATA FOR THE UCB LOAD INSTRUCTION MUST BE INSERTED INTO THIS DIAGNOSTIC PROGRAM. IF THE DIAGNOSTICS ARE ON TAPE OR DISK, THE DATA MUST BE PUT INTO THE PROGRAM WITH THE APPROPRIATE UTILITY PROGRAM. HN, PN, QN, AND RN CONFIGURATIONS ARE ALSO RELEASED WITH THIS PROGRAM TO ENABLE THE OPERATOR TO EASILY USE ANY OF THESE BY A CTRL CARD CHANGE.

SECTION SENSE SWITCHES

THE SENSE SWITCHES SHOWN BELOW ARE IN THE SENSE SWITCH BYTES OF THE SECTION PREFACE. THE CHARACTER X REPRESENTS THE RELOCATION FACTOR CONTAINED IN REGISTER 15 DURING RUN TIME. THE SWITCH BITS ARE ZERO WHEN OFF, AND ONE WHEN ON.

SENSE SW.	FUNCTION	SECTION	BYTE AND BIT
6	ON--- PRINT PROGRAM TITLE.	F837	X004
	OFF-- BYPASS PROGRAM TITLE.		6
29	ON--- BYPASS THIS PROGRAM.	F837	X007
	OFF-- EXECUTE THIS PROGRAM.		5
30	ON--- PRINT CTRL INFORMATION FOR ALTER AND HALT.	F837	X007 6
	OFF-- BYPASS ALTER PRINTOUT AND HALTING		
31	ON--- LOGOUT CTRL AND DATA CARDS WHILE LOADING UCB.	F837	X007 7
	OFF-- BYPASS LOGOUT		

3.3 PROGRAM HALTS

A HALT WILL OCCUR IF SECTION SENSE SWITCH 30 IS ON. THIS ALLOWS THE OPERATOR TO SCAN THE CONTROL INFORMATION BEING USED AND GIVES THE STORAGE ADDRESS OF THE DATA IN THE EVENT THE OPERATOR WANTS TO ALTER THIS INFORMATION. SEE COMMENTS AREA FOR CONTROL DEFINITION.

3.4 PROGRAM TERMINATION

THE PROGRAM IS TERMINATED IN 2 WAYS

1. AT NORMAL PROGRAM COMPLETION.
2. WHEN AN ABNORMAL TERMINATE IS INITIATED THROUGH THE EXTERNAL INTERRUPT KEY.

4. PRINTOUTS

THE FOLLOWING IS AN EXPLANATION OF THE DATA CARD REFERENCES MADE IN THE OUTPUT MESSAGES. ALL FORMATS ARE DEFINED IN THE COMMENTS SECTION OF THIS DESCRIPTION.

CARDS MENTIONED AS CTRL CARDS ARE CONTROL CARDS.
CARDS MENTIONED AS CUSTOMER CARDS ARE IN THE CUSTOMER UNIVERSAL CHARACTER UTILITY FORMAT.
CARDS MENTIONED AS HEX CARDS ARE IN THE HEX CARD FORMAT.
CARDS MENTIONED AS DATA CARDS CAN MEAN EITHER CUSTOMER OR HEX CARD FORMATS.

4.1 INSTRUCTIONS TO OPERATOR

-DEVICE XXXX ASSIGNED BY DM DOES NOT HAVE DATA FOR UCB RESTORE-
-IF DESIRED TO RESTORE ANY DEVICES THAT DO NOT HAVE THE DATA-
-CONSULT THE DESCRIPTION FOR THE PROCEDURE-

THIS MESSAGE IS GIVEN TO BRING TO THE OPERATORS ATTENTION THAT THIS PROGRAM IS POSSIBLY NOT BEING UTILIZED FOR HIS SYSTEM AND HE SHOULD TAKE STEPS ACCORDINGLY OR SIMPLY IGNORE THIS MESSAGE IF THE DEVICE IS NOT DESIRED TO BE RESTORED.

-NO BUFFERS RESTORED-

THIS MESSAGE IS GIVEN WHEN NO DEVICES WERE FOUND WITH THE UCB OPTION.

-MAKE DEVICE READY-

THIS MESSAGE IS GIVEN WHEN A TEST I-O TO A PRINTER FINDS IT NOT READY. THE DEVICE ADDRESS IS GIVEN IN THE SDO HEADING THAT PRECEDES THIS MESSAGE.

4.2 STATUS MESSAGES

-UCB RESTORED WITH NO BLOCK DATA CHK AND NO FOLDING USING CHAIN NN-

THIS MESSAGE IS GIVEN WHEN A UCB IS SUCCESSFULLY RESTORED. THE WORDS NO IN THE MESSAGE ARE INSERTED OR DELETED DEPENDING ON THE CTRL CARD REQUEST FOR THESE OPTIONS. THE CHAIN NUMBER -NN- IS THE DATA CARD SET USED ON THE DEVICE. THE ADDRESS OF THE DEVICE APPEARS IN THE SDO HEADER PRECEDING THIS MESSAGE.

-CTRL DATA AT ADDR XXXXXX FOR ALTER-

THIS MESSAGE IS GIVEN FOLLOWING THE ASSOCIATED CTRL CARD LOGOUT WHEN SECTION SENSE SWITCH 30 IS ON TO INDICATE WHERE THE CONTROL INFORMATION IS STORED. THE ADDRESS IN THE MESSAGE POINTS TO THE PP INFORMATION AS GIVEN IN THE COMMENTS AREA OF THIS DESCRIPTION. THE CHAIN INFORMATION IS LOCATED AT THE NEXT HIGHER STORAGE ADDRESS. THE DEVICE ADDRESS ASSOCIATED WITH THIS DATA IS LOCATED IN THE 2 BYTES BEFORE THE ADDRESS GIVEN IN THE MESSAGE.

4.3 ERROR MESSAGES

-CTRL CDS MISSING OR MIXED WITH DATA CDS-

THIS MESSAGE IS OUTPUT WHEN CONTROL OR DATA CARDS HAVE BEEN MISPOSITIONED IN THE DECK OR WHEN THE CONTROL CARDS ARE MISSING. A LOG OUT OF CTRL AND DATA CARDS VIA SENSE SWITCH 31 WILL INDICATE

ONLY THE ABOVE MESSAGE IF THE CTRL CARDS ARE MISSING. IF A CTRL CARD IS MIXED, THE DATA CARDS WILL BE LOGGED OUT UNTIL THE MISPLACED CTRL CARD IS DETECTED.

-MISSING CTRL AND DATA CDS-

THIS MESSAGE IS GIVEN WHEN ALL CONTROL AND DATA CARDS ARE MISSING BUT THE DAT CARDS ARE IN THE DECK. SEE THE COMMENTS AREA FOR PROPER SETUP OF CARDS.

-ALL DATA CDS MISSING-

THIS MESSAGE IS GIVEN WHEN THE CTRL CARDS ARE IN THE DECK BUT THE DATA CARDS ARE ALL MISSING.

-DATA CARDS MISSING-

THIS MESSAGE IS GIVEN WHEN SOME OF THE DATA CARDS OF A SET ARE MISSING.

-ANY RESTORED BUFFERS MAY BE IN ERROR-

THIS MESSAGE IS GIVEN IN ADDITION TO SOME OF THE OTHER MESSAGES TO INDICATE THAT BECAUSE A DATA CARD HAS BEEN FOUND MISSING, THE POSSIBILITY EXISTS THAT IT MAY BE ONE FROM A DIFFERENT SET DUE TO THE DATA CARDS OF DIFFERENT SETS FOLLOWING EACH OTHER. TO BE SURE OF PROPER LOADING, THE CARDS MUST BE VISUALLY CHECKED TO MAKE SURE OF THE PROPER SEQUENCE FOR THE BUFFER LOAD.

-EITHER CUSTOMER OR HEX CDS MIXED OR ONE TYPE IS INADEQUATE IN NUMBER-

THIS MESSAGE IS GIVEN WHEN THE TWO DATA CARD TYPES -DESCRIBED IN THE COMMENTS SECTION- HAVE BEEN DETECTED TO BE MIXED OR ONE TYPE HAS TOO FEW CARDS.
A LOG OUT VIA SENSE SWITCH 31 IS RECOMMENDED HERE TO OBSERVE SEQUENCE OF DATA CARDS. THE DATA CARDS FOLLOWING DETECTION OF THE ERROR WILL NOT BE LOGGED OUT. THE ERRONEOUS DATA MAY NOT BE LOCATED AT THE LAST LINE OF DATA. THEREFORE, THE SEQUENCE OF ALL THE DATA SHOULD BE CHECKED THOROUGHLY.

-TIO LOOP RECEIVES SOLID CHANNEL BUSY FROM THIS DEVICE-

THIS MESSAGE IS GIVEN WHEN THE TEST I-O BEFORE THE LOAD BUFFER START I-O RECEIVES A SOLID CHANNEL BUSY CONDITION.

-DEVICE XXXX UCB NOT RESTORED DUE TO INSUFFICIENT DATA CDS-
-OR WRONG CTRL DEFINITION-

THIS MESSAGE IS GIVEN AT THE END OF THE PROGRAM WHEN A CHECK OF THE CONTROL TABLE SHOWS NOT ALL BUFFERS HAVE BEEN RESTORED. MOST PROBABLE CAUSE IS A DEVICE HAS BEEN DEFINED TO BE LOADED WITH A DATA CARD SET THAT DOES NOT EXIST. FOR EXAMPLE, DEVICE 00E DEFINED FOR CHAIN 04 AND ONLY DATA CARDS DEFINING 3 CHAINS EXIST.

-DEVICE NOT OPERATIONAL-

THIS MESSAGE IS GIVEN IF CONDITION CODE 3 IS RETURNED AFTER A TEST I-O HAS BEEN ISSUED. USUALLY MEANS DM HAS BEEN DEFINED WITH A NON-EXISTANT DEVICE ADDRESS AND A CONTROL CARD MADE OUT FOR IT ALSO.

-ERROR ON UCB LOAD SIO-

THIS MESSAGE IS GIVEN WHEN THE LOAD UCB START I-O DOES NOT GET AN AVAILABLE CONDITION CODE RETURNED. THE CSW INDICATES THE STATUS FOR THE OPERATION. THE PROGRAM GOES ON TO THE NEXT DEVICE IF ANY.

-SNS SIO AFTER UCB LOAD ATTEMPT- NOT ACCEPTED-

THIS MESSAGE IS GIVEN WHEN SOMETHING GOES WRONG WITH THE UCB LOAD EXECUTION AND A SENSE START I-O IS TRIED TO FIND OUT WHAT SENSE LATCHES ARE ON IN THE DEVICE. THE SENSE START I-O ALSO IS REJECTED AND RESULTS IN THIS MESSAGE. THE DEVICE IS OBVIOUSLY FAULTY AND THE 1403 DIAGNOSTICS SHOULD HAVE INDICATED TROUBLE WHEN WERE EXECUTED.

-SNS SIO AFTER UCB LOAD ATTEMPT DID NOT RECEIVE AVAILABLE FROM DEVICE-

THIS MESSAGE IS GIVEN IF THE TIO AFTER THE SENSE START I-O NEVER RECEIVES AVAILABLE. A TIME OUT FROM THIS CONDITION ALLOWS THIS MESSAGE.

4.4 MESSAGE ABBREVIATIONS

ABBREVIATIONS	FULL MEANING
ADDR	ADDRESS
CDS	CARDS
CSW	CHANNEL STATUS WORD
CTRL	CONTROL
DM	DIAGNOSTIC MONITOR
RDY	READY
RTN	ROUTINE
SIO	START I-O
TIO	TEST I-O
UCB	UNIVERSAL CHARACTER BUFFER

5. COMMENTS

THIS PROGRAM WAS WRITTEN TO ENABLE RESTORATION OF THE UNIVERSAL CHARACTER BUFFERS OF ALL 1403 UCB PRINTERS TESTED WITH THE 1403 AND 2821 DIAGNOSTICS. IT HAS THE CAPABILITY TO HANDLE TEN PRINTERS AT ONE TIME IF NEEDED.

*** NOTE *** CAUTION SHOULD BE OBSERVED TO KEEP FROM REPEATING ANY CHARACTER WITHIN 16 POSITIONS IN THE BUFFER TO PREVENT ANY DAMAGE TO THE PRINT CHAIN OR PRINT TRAIN.

THE PROGRAM OPERATES AS FOLLOWS-

AFTER BEING LOADED IN, THE PROGRAM READS CTRL AND DATA CARDS WHICH HAVE BEEN PREPARED FOR THE SYSTEM BY THE OPERATOR AND PLACED IN THE DECK. -THE FORMAT AND SEQUENCE OF THIS INFORMATION IS GIVEN IN OTHER PARAGRAPHS OF THIS COMMENT AREA-

THE PROGRAM EXPECTS ALL THE CTRL CARDS TO BE READ IN BEFORE ANY OF THE DATA CARDS DEFINING THE BUFFER IN ORDER TO ESTABLISH THE TABLE OF DEVICES TO BE USED IN THIS PROGRAM.
THE PROGRAM CHECKS TO SEE IF THE DEVICES INDICATED IN THE CTRL INFORMATION ARE ASSIGNED BY DM. IF THEY ARE NOT, THIS CTRL INFORMATION IS THROWN AWAY.

THE DEFINITION OF SETS OF DATA CARDS AS DISCUSSED IN THE NEXT FEW ITEMS IS EITHER 4 CUSTOMER UCS UTILITY CARDS OR 15 HEX CARDS. EACH OF THESE CARD TYPES ARE DEFINED IN LATER PARAGRAPHS OF THIS COMMENT SECTION.

THE PROGRAM THEN READS ONE FULL SET OF DATA CARDS HEREBY BEING CALLED CHAIN 01 BY THE PROGRAM BECAUSE IT IS THE FIRST SET READ, OTHER SETS READ THEREAFTER BEING CALLED CHAIN 02, 03, ETC. UP TO CHAIN FF IF THAT MANY SETS OF CARDS EXIST. THESE CHAIN SETS ARE NUMBERED IN HEX BY THE PROGRAM AND SHOULD BE PUNCHED IN HEX BY THE OPERATOR ON THE CTRL CDS. -CTRL CARDS DEFINED IN LATER PARAGRAPHS OF THIS AREA-

AFTER CHAIN 01 IS READ INTO STORAGE, A CHECK OF THE DEVICE TABLE IS MADE TO DETERMINE IF ANY DEVICES ARE TO USE THIS DATA. ALL DEVICES DEFINED TO USE THE DATA WILL HAVE THEIR BUFFERS RESTORED AT THIS TIME. IF ANY MORE CHAIN DEFINITION CARDS ARE IN THE DECK, THE PROGRAM GOES THROUGH THE SAME PROCEDURE AS JUST DESCRIBED. IF NO MORE EXIST, THE PROGRAM READS AN LDT CARD WHICH SIGNALS FOR AN ENDING PROCEDURE AND INSTITUTES SOME FINAL CHECKING IN THE PROGRAM BEFORE TERMINATION.

ANY NUMBER OF SETS OF CHAIN DEFINITION CARDS MAY BE PUT INTO THE PROGRAM, WHETHER THEY ARE USED TO RESTORE BUFFERS SOLELY DEPENDS ON THEIR BEING DEFINED IN THE CTRL CARDS.

CONTROL AND DATA CARD FORMATS.

THREE CTRL CARDS WITH STANDARD ADDRESSES ARE RELEASED WITH THIS PROGRAM AND ARE LISTED IN THE APPENDIX OF THIS DESCRIPTION.

CONTROL CARD LAYOUT

```
CARD  0        1   1
COLS  12345678901234   COLUMNS 15-80 NOT USED.
      CTRL DDDD PPCC
```

WHERE- CTRL IS THE CARD IDENTIFICATION.

DDDD IS TWO HEX BYTES INDICATING THE DEVICE ADDRESS.
E.G. 000E IS MULTIPLEX CHANNEL DEVICE E.
010E IS SELECTOR CHANNEL 1 DEVICE E.

PP IS A HEX BYTE DENOTING OPTIONS TO BE USED WHEN LOADING THE UCB AND IS DEFINED AS FOLLOWS-
00 MEANS LOAD UCB WITHOUT SETTING THE BLOCK DATA CHECK LATCH OR ALLOWING FOLDING.
80 MEANS SET BLOCK DATA CHECK WHEN LOADING UCB.
40 MEANS ALLOW FOLDING WHEN LOADING UCB.
C0 MEANS SET BLOCK DATA CHECK AND ALLOW FOLDING WHEN LOADING THE UCB.

CC IS A HEX BYTE DENOTING WHICH SET OF DATA CARDS THAT FOLLOW THE CTRL CARDS SHOULD BE USED TO LOAD THE BUFFER ON THE DEVICE DEFINED ON THIS CARD. THE BYTE IS A HEX NUMBER THAT CAN RANGE FROM 01 TO FF, WHERE AN 01 WOULD MEAN THE FIRST SET OF DATA CARDS READ, 02 THE SECOND, ...0A THE TENTH, ETC.

IF SEVERAL CTRL CARDS ARE USED FOR THE SAME DEVICE ONLY THE LAST CARD FOR THAT DEVICE WILL BE USED.

DATA CARD LAYOUTS

FIVE SETS OF CHAIN CONFIGURATIONS ARE RELEASED WITH THIS PROGRAM AND ARE LISTED IN THE UNIVERSAL CHARACTER SET UTILITY PROGRAM SRL. A CARD IMAGE OF THE DATA RELEASED WITH THIS PROGRAM IS GIVEN FOLLOWING THE PROGRAM LISTING. THE CHAIN CONFIGURATIONS ARE AN, HN, PN, QN, AND RN.

THIS PROGRAM USES 2 TYPES OF DATA CARDS-

1. CUSTOMER CARD IMAGE CARDS FROM THE UNIVERSAL CHARACTER SET UTILITY PROGRAM.
2. HEX CARD FORMAT TYPE DATA CARDS.

IF CUSTOMER CARD IMAGE CARDS ARE USED, ONLY 4 ARE NEEDED TO DEFINE THE 240 POSITION BUFFER. IF THE HEX CARD FORMAT TYPE IS USED, THEN 15 CARDS ARE NEEDED TO DEFINE ONE FULL BUFFER CONFIGURATION.

THE DATA CARDS ARE FORMATTED AS FOLLOWS-

CUSTOMER UCS UTILITY CARD FORMAT-

```
CARD  0         1         2   8
COLS  123456789012345678901--0
      // CI XXXX SS        DDDD
```

WHERE- // ARE 2 SLASHES.

CI IS AN ABBREVIATION FOR CARD IMAGE.

XXXX IS THE CHAIN OR TRAIN IDENTIFICATION- E.G. AN, HN, PCHN, ETC. -THIS AREA CAN CONSIST OF BLANKS OR ANY DESIRED COMBINATION OF 4 CHARACTERS-

SS IS THE SEQUENCE NUMBER OF THE CARD, RANGING FROM S1 TO S4.
DDDD IS 60 COLUMNS OF THE DATA TO BE LOADED INTO THE UCB. THIS DATA IS PUNCHED IN THE EBCDIC CODE FOR EACH DESIRED CHARACTER. THE DATA WILL BE PLACED IN THE BUFFER IN THE ORDER IT IS FOUND ON THE CARDS. I.E. THE 60 CHARACTERS ON THE FIRST CARD GO INTO THE FIRST 60 BUFFER POSITIONS, THE 60 CHARACTERS ON THE SECOND CARD INTO THE NEXT 60 BUFFER POSITIONS, ETC.

HEX CARD FORMAT

THE FOLLOWING IS AN EXAMPLE OF THE HN CHAIN FORMAT RELEASED WITH THIS PROGRAM-
THE DATA IS PUNCHED IN THE CARDS IN THE HEXADECIMAL CODE DESIRED TO BE IN THE UCB. E.G. 2 CARD COLUMNS EQUAL ONE BUFFER BYTE.

```
CARD  0    1         2         3         4    4
COLS  6789012345678901234567890123456789012345678901234

      F1F2 F3F4 F5F6 F7F8 F9F0 7E7D 61E2 E3E4
      E5E6 E7E8 E950 6B4D D1D2 D3D4 D5D6 D7D8
      D960 5B5C C1C2 C3C4 C5C6 C7C8 C94E 4B5D
      F1F2 F3F4 F5F6 F7F8 F9F0 7E7D 61E2 E3E4
      E5E6 E7E8 E950 6B4D D1D2 D3D4 D5D6 D7D8
      D960 5B5C C1C2 C3C4 C5C6 C7C8 C94E 4B5D
      F1F2 F3F4 F5F6 F7F8 F9F0 7E7D 61E2 E3E4
      E5E6 E7E8 E950 6B4D D1D2 D3D4 D5D6 D7D8
      D960 5B5C C1C2 C3C4 C5C6 C7C8 C94E 4B5D
      F1F2 F3F4 F5F6 F7F8 F9F0 7E7D 61E2 E3E4
      E5E6 E7E8 E950 6B4D D1D2 D3D4 D5D6 D7D8
      D960 5B5C C1C2 C3C4 C5C6 C7C8 C94E 4B5D
      F1F2 F3F4 F5F6 F7F8 F9F0 7E7D 61E2 E3E4
      E5E6 E7E8 E950 6B4D D1D2 D3D4 D5D6 D7D8
      D960 5B5C C1C2 C3C4 C5C6 C7C8 C94E 4B5D
```

SEQUENCE NUMBERS OR COMMENTS ARE ALLOWED IN COLUMNS 1-4 AND 51-80. COLUMNS 5, 10, 15, 20, 25, 30, 35, AND 40 ARE IGNORED. COLUMNS 45-50 MUST BE BLANK.

THE PROGRAM ASSUMES THE OPERATOR HAS PLACED EACH SET OF DATA CARDS IN ORDER. I.E. THE FIRST SET OF CUSTOMER OR HEX CARDS IS USED AS

CHAIN 01 DATA, IF ANY MORE SETS FOLLOW, THE NEXT SET IS CHAIN 02, ETC.

APPENDIX

THE FOLLOWING IS A SEQUENCE LIST OF THE DECK STRUCTURE FOR PROPER LOADING AND OPERATION OF THE PROGRAM.

1. PROGRAM F837 OBJECT DECK
2. DAT CARD
3. CTRL CARDS-
   THE AMOUNT OF CTRL CARDS IS VARIABLE AND DEPENDENT ON HOW MANY THE OPERATOR WISHES TO PUT IN.
4. DATA CARDS DEFINING BUFFER CONFIGURATION
   THE AMOUNT OF SETS OF THESE CARDS CAN BE ANYWHERE IN THE LIMITS OF 1 TO 255 SETS. A SET BEING EITHER 4 CUSTOMER UCS UTILITY CARDS OR 15 HEX LOADER CARDS. A PROGRAM CAN USE BOTH SET TYPES AS LONG AS ONE TYPE IS NOT FOUND WITHIN ANOTHER. THE FIRST SET READ IS CONSIDERED AS CHAIN SET 01, AND ALL SETS THEREAFTER SHALL BE PUT IN HEXADECIMAL NUMERIC SEQUENCE BY THE PROGRAM. PARTIAL OR INCOMPLETE SETS PLACED IN THE DECK WILL CAUSE AN ERROR TO BE DETECTED BY THE PROGRAM.
5. LDT CARD

THE FOLLOWING IS A LIST OF THE RELEASED PROGRAM DECK CONTENTS AND INFORMATION ABOUT ANY ADDITIONS MADE BY OPERATORS.

1. PROGRAM F837 OBJECT DECK
2. DAT CARD
3. CTRL 000E 0001
4. CTRL 000F 0001
5. CTRL 0010 0001
6. 15 HEX DATA CARDS IN THE AN CONFIGURATION.
7. 15 HEX DATA CARDS IN THE HN CONFIGURATION.
8. 15 HEX DATA CARDS IN THE PN CONFIGURATION.
9. 15 HEX DATA CARDS IN THE QN CONFIGURATION.
10. 15 HEX DATA CARDS IN THE RN CONFIGURATION.
11. LDT CARD.

ADDITIONS TO THE PROGRAM SHOULD BE MADE AS FOLLOWS-

A CTRL CARD OR CARDS SHOULD BE PLACED BETWEEN ITEMS 5 AND 6 ABOVE, DEFINING THE PARTICULAR DEVICE . FOR EXAMPLE, IF IT WAS DESIRED TO HAVE DEVICE 000E BLOCK DATA CHECK AND USE ANOTHER SET OF DATA NOT RELEASED WITH THIS PROGRAM, THE CTRL CARD WOULD BE-
CTRL 000E 8006
THE DATA DEFINED AS CHAIN 06 SHOULD BE PUNCHED IN ONE OF THE FORMAT TYPES EXPLAINED IN THE COMMENTS SECTION OF THIS DESCRIPTION, AND PLACED BETWEEN ITEMS 10 AND 11 OF THE ABOVE LIST.

-- LAST PAGE --

UCB RESTORE PROGRAM

```
                            XF8370 START 4096
          001000                   USING *,15
                            ***********************************************************************
                            ***********************************************************************
                            * MODIFICATIONS
                            * REVISION LEVEL 0.  THIS IS THE INITIAL RELEASE OF THE PROGRAM.
                            * E.C. PREREQUISITES
                            *      MACHINE . . . 2821 MUST BE AT E.C. 125655
                            *      PROGRAM . . . NONE
                            * USE DESCRIPTION F837* AT EC 125655, DATED NOV 15, 1966 OR LATER.
                            ***********************************************************************
                            ***********************************************************************
                            *                          SECTION PREFACE                            *
                            ***********************************************************************
001000   F8370000           SECNO  DC    XL4'F8370000'          PROGRAM IDENTIFICATION
001004   00000000           SNSW   DC    X'00000000'            SECTION SENSE SWITCHES
001008   0000                      DC    XL2'00'
00100A   0000               ICM    DC    XL2'00'                INTERRUPTION CONDITION MASK
00100C   00                        DC    XL1'00'
00100D   0A                 NUTE   DC    XL1'0A'                NUMBER OF UNIT TABLE ENTRIES
00100E   80                 FLAG1  DC    XL1'80'                FLAG BITS SET BY SEC--EXCLUSIVE CPU
00100F   00                 FLAG2  DC    XL1'00'                INTRP FLAGS
001010   0104000000         INPSW  DC    XL5'0104000000'        INITIAL PSW.
001015   001108                    DC    AL3(ROUT01)
001018   0000000000000000   EXOPSW DC    XL8'00'                EXTERNAL OLD PSW
001020   0000000000000000   SVOPSW DC    XL8'00'                SUPERVISOR CALL OLD PSW
001028   0000000000000000   PGOPSW DC    XL8'00'                PROGRAM OLD PSW
001030   0000000000000000   MCOPSW DC    XL8'00'                MACHINE CHECK OLD PSW
001038   0000000000000000   IOOPSW DC    XL8'00'                I/O OLD PSW
001040   0000000000000000   CSW    DC    XL8'00'                CHANNEL STATUS WORD
001048   00000000           CAW    DC    XL4'00'                COMMAND ADDRESS WORD
00104C   000000000000000000        DC    XL12'00'               RESERVED FOR DM USE
001055   000000
001058   0000000000000000   EXNPSW DC    XL8'00'                EXTERNAL NEW PSW.
001060   0104000000         SVNPSW DC    XL5'0104000000'        SUPERVISOR CALL NEW PSW.
001065   001616                    DC    AL3(DATINT)
001068   0000000000000000   PGNPSW DC    XL8'00'                PROGRAM NEW PSW
001070   0000000000000000   MCNPSW DC    XL8'00'                MACHINE CHECK NEW PSW
001078   0000000000000000   IONPSW DC    XL8'00'                I-O NEW PSW.
001080                      REGDMP DS    24CL4                  SECTION REGISTER SAVE AREA - DM USE
                            ***********************************************************************
                            *                     SECTION PREFACE UNIT TABLE                      *
                            ***********************************************************************
0010E0   83                 UNIT1  DC    X'83'                  UNIT TYPE -1403 PRINTER-
0010E1   00                 U1OP   DC    X'00'                  OPTIONAL FEATURE BYTE
0010E2   8000               U1ADDR DC    X'8000'                FLAGS AND CHAN/UNIT ADDRESS
                            *
0010E4   83                 UNIT2  DC    X'83'                  UNIT TYPE -1403 PRINTER-
0010E5   00                 U2OP   DC    X'00'                  OPTIONAL FEATURE BYTE
0010E6   0000               U2ADDR DC    X'0000'                FLAGS AND CHAN/UNIT ADDRESS
                            *
0010E8   83                 UNIT3  DC    X'83'                  UNIT TYPE -1403 PRINTER-
0010E9   00                 U3OP   DC    X'00'                  OPTIONAL FEATURE BYTE
0010EA   0000               U3ADDR DC    X'0000'                FLAGS AND CHAN/UNIT ADDRESS
                            *
0010EC   83                 UNIT4  DC    X'83'                  UNIT TYPE -1403 PRINTER-
0010ED   00                 U4OP   DC    X'00'                  OPTIONAL FEATURE BYTE
0010EE   0000               U4ADDR DC    X'0000'                FLAGS AND CHAN/UNIT ADDRESS
                            *
0010F0   83                 UNIT5  DC    X'83'                  UNIT TYPE -1403 PRINTER-
0010F1   00                 U5OP   DC    X'00'                  OPTIONAL FEATURE BYTE
0010F2   0000               U5ADDR DC    X'0000'                FLAGS AND CHAN/UNIT ADDRESS
                            *
0010F4   83                 UNIT6  DC    X'83'                  UNIT TYPE -1403 PRINTER-
0010F5   00                 U6OP   DC    X'00'                  OPTIONAL FEATURE BYTE
0010F6   0000               U6ADDR DC    X'0000'                FLAGS AND CHAN/UNIT ADDRESS
```


UCB RESTORE PROGRAM

```
                   *
0010F8   83        UNIT7  DC    X'83'          UNIT TYPE -1403 PRINTER-
0010F9   00        U7OP   DC    X'00'          OPTIONAL FEATURE BYTE
0010FA   0000      U7ADDR DC    X'0000'        FLAGS AND CHAN/UNIT ADDRESS
                   *
0010FC   83        UNIT8  DC    X'83'          UNIT TYPE -1403 PRINTER-
0010FD   00        U8OP   DC    X'00'          OPTIONAL FEATURE BYTE
0010FE   0000      U8ADDR DC    X'0000'        FLAGS AND CHAN/UNIT ADDRESS
                   *
001100   83        UNIT9  DC    X'83'          UNIT TYPE -1403 PRINTER-
001101   00        U9OP   DC    X'00'          OPTIONAL FEATURE BYTE
001102   0000      U9ADDR DC    X'0000'        FLAGS AND CHAN/UNIT ADDRESS
                   *
001104   83        UNITA  DC    X'83'          UNIT TYPE -1403 PRINTER-
001105   00        UAOP   DC    X'00'          OPTIONAL FEATURE BYTE
001106   0000      UAADDR DC    X'0000'        FLAGS AND CHAN/UNIT ADDRESS
                   *****************************************************************
                   *      CONTROL CARD LAYOUT FOR BUFFER RESTORE PROGRAM
                   *****************************************************************
                   *
                   *    -CARD COLUMNS-   -PUNCHES-           -EXPLANATION-
                   *
                   *         1-4          CTRL                IDENTIFICATION
                   *         5            BLANK
                   *         6-9          DEVICE ADDRESS      -EXAMPLES-
                   *                                          000E   MULTIPLEX DEVICE E.
                   *                                          010E   SELECTOR DEVICE E.
                   *         10           BLANK
                   *         11-12        PRINT OPTIONS       -80 MEANS BLOCK DATA CHECK
                   *                                          -40 MEANS USE FOLDING
                   *                                          -CO MEANS DO BOTH
                   *                                          -00 MEANS NORMAL UCB LOAD
                   *
                   *         13-14        CHAIN NUMBER        -01 THROUGH FF
                   *                                          THIS REFERS TO THE GROUP
                   *                                          OF 15 BUFFER CARDS IT IS
                   *                                          DESIRED TO LOAD THE UCB
                   *                                          WITH. AN 01 MEANS THE 1ST
                   *                                          GROUP FOLLOWING THE CTRL
                   *                                          CDS, 02 THE 2ND, ETC.
                   *
                   *         15-80        BLANKS
                   *****************************************************************
                   *      HEX DATA CARD LAYOUT FOR BUFFER RESTORE PROGRAM
                   *****************************************************************
                   *
                   *    -CARD COLUMNS-   -PUNCHES-           -EXPLANATION-
                   *
                   *         1-5          ANYTHING            CAN BE USED FOR SEQUENCE
                   *                                           NUMBER IF DESIRED.
                   *
                   *         6-44         BUFFER DATA         PUNCHED IN SERIES OF 4
                   *                                          HEX CHARACTERS -2 BYTES-
                   *                                           SEPARATED BY 1 COLUMN.
                   *                                           E.G.  F1F2 F3F4 F5F6 ETC.
                   *
                   *         45-50        BLANKS              USED BY PROGRAM TO
                   *                                           DETERMINE END OF DATA.
                   *
                   *         51-74        ANYTHING            CAN BE USED FOR SEQUENCE
                   *                                           OR OPERATOR COMMENT.
                   *
                   *         75-80        NOT USED
                   *
                   *****************************************************************
                   *      PROGRAM SWITCH DEFINITION
                   *****************************************************************
                   *
```

```
                                *       BIT 0 -- BYPASS ALTER ROUTINE AFTER ALTER MADE.
                                *
                                *       BIT 1 -- INDICATES UCS OPTION ON DEVICES THAT ARE NOT DEFINED
                                *
                                *       BIT 2 -- INDICATES CTRL CARD WAS READ BEFORE DATA CONFIGURATION
                                *                CARD.
                                *       BIT 3 -- INDICATE STARTING TO READ NEW SET OF DATA CARDS
                                *
                                *       BIT 4 -- INDICATES IN PROCESS OF READING HEX OR CUSTOMER
                                *                CONFIGURATION CARDS.
                                *       BIT 5 -- INDICATES READING DATA CARDS.
                                *
                                *       BIT 6 -- INDICATES CHAIN HEADING PRINTED
                                *
                                *       BIT 7 -- INDICATES READING CUSTOMER CARDS.
                                *
001108                                  CNOP  0,4                       FULL WORD ALIGNMENT
                                ********************************************************************************
001108  0100                    ROUTO1  DC    X'0100'                   ROUTINE 1 -NO OPERANDS-
00110A  FFFF                            DC    X'FFFF'                   LAST ROUTINE IN THIS SECTION.
                                ********************************************************************************
                                *       START LOAD UCB
                                ********************************************************************************
00110C  18 DD                           SR    R13,R13                   ZERO REG 13.
00110E  91 40 E 196                     TM    406(R14),X'40'            SEE IF IN PROB PROG STATE.
001112  47 80 F 118                     BC    NONE,UCB1                 BR IF NOT.
001116  18 DF                           LR    R13,R15                   LOAD REG 13 WITH CONTENTS OF REG 15.
001118  91 04 F 007             UCB1    TM    SNSW+3,X'04'              TEST SSW 29.
00111C  47 10 F 12E                     BC    ALL,UCB2                  BYPASS TEST IF ON.
001120  91 02 F 004                     TM    SNSW,X'02'                TEST SSW 6.
001124  47 80 F 12E                     BC    NONE,UCB2                 BYPASS TITLE IF OFF.
001128  0A D0                           SVC   X'D0'                     PRINT TITLE
00112A  80                              DC    X'80'                     NORMAL MSG
00112B  14                              DC    X'14'                     20 CHARACTERS
00112C  F81A                            DC    AL2(TITLE-BASE+REG)       ADDRESS OF MSG.
00112E  94 00 F 798             UCB2    NI    PGSW,X'00'                ZERO ALL PROG SWITCHES
001132  94 00 F 799                     NI    CCSW,X'00'                ZERO THE CUSTOMER CD ENTRY SW.
001136  94 00 F 79A                     NI    PRSW,X'00'                ZERO 2ND SET OF SWS.
00113A  92 00 F 79B                     MVI   RESW,X'00'                ZERO BUFFER PROG SW.
00113E  D7 27 F C84 F C84               XC    CTLSV(40),CTLSV           ZERO CTRL DATA SAVE AREA.
001144  58 70 F 76C                     L     R7,ONE                    PUT 1 IN CHN CONFG CARD COUNTER.
001148  41 90 F B8A                     LA    R9,PAREA                  PUT PRINT AREA ADDR INTO REG 9.
                                ********************************************************************************
                                *       READ CONTROL AND CHAIN CONFIGURATION CARDS
                                ********************************************************************************
00114C  0A DB                   UCB3    SVC   X'DB'                     READ A CARD
00114E  0B3A                            DC    AL2(RDAR-SECNO)           READ IN AREA
001150  91 04 F 007                     TM    SNSW+3,X'04'              TEST SSW 29.
001154  47 10 F 14C                     BC    ALL,UCB3                  BR IF YES.
001158  94 EF F 798                     NI    PGSW,X'EF'                TURN OFF START RD NEW CHN CD SW.
00115C  D5 03 F B3A F 788               CLC   RDAR(4),CTRL              SEE IF CNTRL CARD
001162  47 60 F 20C                     BC    UNEQ,UCBCH                BR IF NOT
001166  91 09 F 798                     TM    PGSW,X'09'                SEE IF READING DATA CDS.
00116A  47 50 F 5FC                     BC    ANY,UCBER1                BR IF YES.
00116E  96 20 F 798                     OI    PGSW,X'20'                TURN ON CNTRL 1ST CARD SWITCH
001172  D2 03 F 774 F B3F               MVC   WORK(4),RDAR+5            MOVE DEV ADDR TO CONV AREA.
001178  D2 03 F 778 F B44               MVC   WORK+4(4),RDAR+10         MOVE CTRL DATA TO CONV AREA.
00117E  0A DC                           SVC   X'DC'                     CONV BINARY TO HEX.
001180  0008                           DC    AL2(8)                    EIGHT BYTES
001182  0774                           DC    AL2(WORK-SECNO)           FROM HERE
001184  0774                           DC    AL2(WORK-SECNO)           TO HERE
                                ********************************************************************************
                                *       CHECK DM ASSIGNMENT AND STORE CTRL DATA HERE
                                ********************************************************************************
001186  41 30 0 00A             PRC     LA    R3,10                     PUT 10 IN REG 3.
00118A  1B BB                           SR    R11,R11                   ZERO REG 11.
00118C  41 B8 F 0E0             CTAB    LA    R8,UNIT1(R11)             PICK UP START ADDR OF UNIT TABLE.
```



```
001190  D2 01 F C80 8 002               MVC   AD1(2),2(R8)              MOVE UNIT TABLE ADDR TO WORK AREA.
001196  94 07 F C80                     NI    AD1,X'07'                 AND OUT ALL BUT ADDR.
00119A  D5 01 F C80 F 774               CLC   AD1(2),WORK               SEE IF DEVICE ASSIGNED.
0011A0  47 80 F 1B0                     BC    EQ,STDT                   BR IF IT IS.
0011A4  41 BB 0 004                     LA    R11,4(R11)                ADD 4 TO UNIT TABLE ADDR.
0011A8  46 30 F 18C                     BCT   R3,CTAB                   BR TO SEE IF NEXT DEV IN TABLE.
0011AC  47 F0 F 1CE                     BC    UNC,CSU                   BR IF NOT IN TABLE.
0011B0  91 10 8 001             STDT    TM    1(R8),X'10'               CHECK FOR UCS FEATURE.
0011B4  47 80 F 1CE                     BC    NONE,CSU                  BR IF UCB NOT ON DEVICE.
0011B8  96 80 F 79A                     OI    PRSW,X'80'                TURN ON UCS DEVICE SW.
0011BC  41 BB F C84                     LA    R11,CTLSV(R11)            PICK UP ADDR OF CTRL TABLE.
0011C0  D2 03 8 000 F 774               MVC   0(4,R11),WORK             MOVE CTRL DATA TO CTRL TABLE.
0011C6  41 BB 0 002                     LA    R11,2(R11)                ADD 2 TO POINT TO CTRL DATA.
0011CA  50 B0 F C80                     ST    R11,AD1                   SAVE THE ADDR FOR ALTER MSG.
                                ********************************************************************************
                                *       SET UP CTRL DATA FOR PRINTOUT
                                ********************************************************************************
0011CE  91 01 F 007             CSU     TM    SNSW+3,X'01'              TEST SSW 31.
0011D2  47 10 F 1DE                     BC    ALL,PCTC                  BR IF ON.
0011D6  91 02 F 007                     TM    SNSW+3,X'02'              TEST SSW 30.
0011DA  47 80 F 14C                     BC    NONE,UCB3                 BR IF OFF.
0011DE  0A D0                   PCTC    SVC   X'D0'                     PRINT CTRL CD
0011E0  800F                            DC    X'800F'
0011E2  FB3A                            DC    AL2(RDAR-BASE+REG)
0011E4  91 02 F 007                     TM    SNSW+3,X'02'              TEST SSW 30.
0011E8  47 80 F 14C                     BC    NONE,UCB3                 BR IF OFF.
0011EC  91 10 8 001                     TM    1(R8),X'10'               SEE IF UCB ON PRINTER.
0011F0  47 80 F 202                     BC    NONE,PBK                  BR IF NOT.
0011F4  0A DD                           SVC   X'DD'                     CONVERT ADDRESS FOR MSG.
0011F6  0003                            DC    AL2(3)                    3 BYTES
0011F8  0C81                            DC    AL2(AD2-SECNO)            FROM HERE
0011FA  0840                            DC    AL2(ADDR-SECNO)           TO HERE
0011FC  0A D0                           SVC   X'D0'                     PRINT ALTER ADDRESS
0011FE  8022                            DC    X'8022'
001200  F82E                            DC    AL2(MSG1-BASE+REG)
001202  0A D0                   PBK     SVC   X'D0'                     PRINT A BLANK.
001204  8001                            DC    X'8001'
001206  F784                            DC    AL2(BLNK-BASE+REG)
001208  47 F0 F 14C                     BC    UNC,UCB3                  BR TO RD NXT CD.
                                ********************************************************************************
                                *       POST CONTROL CARD HANDLER
                                ********************************************************************************
00120C  91 20 F 798             UCBCH   TM    PGSW,X'20'                WAS 1ST CARD READ A CTRL CD.
001210  47 80 F 5FC                     BC    NONE,UCBER1               BR IF NOT.
001214  91 08 F 799                     TM    CCSW,X'08'                TEST PASS CD SW.
001218  47 10 F 14C                     BC    ALL,UCB3                  BR IF ON.
00121C  91 80 F 798                     TM    PGSW,X'80'                TEST PASS ALTER HALT SW.
001220  47 80 F 30E                     BC    NONE,THLT                 BR IF NOT ON.
001224  95 61 F B3A             TCCS    CLI   RDAR,C'/'                 SEE IF CUSTOMER CD.
001228  47 80 F 55E                     BC    EQ,LCC                    BR IF YES.
00122C  96 04 F 798                     OI    PGSW,X'04'                TURN ON CHAIN CD SW.
001230  91 01 F 798                     TM    PGSW,X'01'                SEE IF SHLD BE READING CUST CDS.
001234  47 10 F 598                     BC    ALL,CDMIX                 BR IF YES.
001238  91 08 F 798             UCB4    TM    PGSW,X'08'                SEE IF DATA CDS READ.
00123C  47 80 F 248                     BC    NONE,INITE                BR. IF NOT ON
001240  41 77 0 001                     LA    R7,1(R7)                  ADD 1 TO CHAIN CD COUNTER.
001244  47 F0 F 252                     BC    UNC,LCT                   BR TO TEST CHN CARD COUNT
001248  96 08 F 798             INITE   OI    PGSW,X'08'                SET CHN CARDS READ SWITCH
00124C  D2 03 F C7C F 76C               MVC   CHNO(4),ONE               PUT CHAIN NO. 1 IN COUNTER.
                                ********************************************************************************
                                *       SET UP CHAIN CONFIGURATION PRINTING HERE
                                ********************************************************************************
001252  0A DD                   LCT     SVC   X'DD'                     CONV CHAIN NO. FOR MSG.
001254  0001                            DC    AL2(1)                    1 BYTE
001256  0C7F                            DC    AL2(CHINO-SECNO)          FROM HERE
001258  0892                            DC    AL2(CHN1-SECNO)           TO HERE
00125A  91 01 F 007                     TM    SNSW+3,X'01'              TEST SSW 31.
00125E  47 80 F 28E                     BC    NONE,PCP                  BR IF NOT ON.
```

```
001262   91 02 F 798            TM    PGSW,X'02'          TEST CHN HEADING SW.
001266   47 10 F 280            BC    ALL,BHD             BR IF ON.
00126A   0A D0                  SVC   X'D0'               PRINT A BLANK
00126C   8001                  DC    X'8001'
00126E   F784                  DC    AL2(BLNK-BASE+REG)
001270   0A D0                  SVC   X'D0'               PRINT CHAIN NO.
001272   8008                  DC    X'8008'             NORMAL MSG -8 BYTES-
001274   F88C                  DC    AL2(MSG2-BASE+REG)  MSG ADDR.
001276   96 02 F 798            OI    PGSW,X'02'          TURN ON CHN HD SW.
00127A   0A D0                  SVC   X'D0'               PRINT A BLANK
00127C   8001                  DC    X'8001'
00127E   F784                  DC    AL2(BLNK-BASE+REG)
001280   95 61 F B3A    BHD     CLI   RDAR,C'/'           SEE IF CUSTOMER CARD.
001284   47 80 F 5AA            BC    EQ,PCCD             BR IF YES.
001288   0A D0                  SVC   X'D0'               PRINT CHAIN CARD.
00128A   804A                  DC    X'804A'             -72 BYTES-
00128C   FB3A                  DC    AL2(RDAR-BASE+REG)  FROM HERE
                        ************************************************************
                        *       SET UP LOAD UCB HERE
                        ************************************************************
00128E   95 61 F B3A    PCP     CLI   RDAR,C'/'           SEE IF READING CUSTOMER CDS.
001292   47 80 F 2D2            BC    EQ,CAD              BR IF YES.
001296   41 20 F B3A            LA    R2,RDAR             PICK UP ADDR OF READ AREA.
00129A   41 10 F B3F            LA    R1,RDAR+5           PICK UP ADDR OF DATA READ IN.
00129E   D2 03 2 000 1 000 MDA  MVC   0(4,R2),0(R1)       MOVE DATA TO CONTINUOUS LOCATIONS
0012A4   41 22 0 004            LA    R2,4(R2)            ADD 4 TO REG 2
0012A8   41 11 0 005            LA    R1,5(R1)            ADD 5 TO REG 1.
0012AC   D5 03 1 000 F 784      CLC   0(4,R1),BLNK        SEE IF ANY MORE DATA
0012B2   47 60 F 29E            BC    UNEQ,MDA            BR IF YES.
0012B6   40 90 F 2C4            STH   R9,CVD              PUT PRINT BUFFER ADDR IN CONV INSTRS
0012BA   94 0F F 2C4            NI    CVD,X'0F'           AND OUT THE 4K BLOCK.
0012BE   0A DC                  SVC   X'DC'               CONV BINARY TO HEX
0012C0   0020                  DC    AL2(32)             -32 BYTES-
0012C2   0B3A                  DC    AL2(RDAR-SECNO)     FROM HERE
0012C4   02C4           CVD    DC    AL2(CVD-SECNO)      TO HERE
0012C6   41 99 0 010            LA    R9,16(R9)           ADD 16 TO PRINT AREA ADDRESS.
0012CA   55 70 F 768            CL    R7,ONE5             SEE IF 15 CARDS READ.
0012CE   47 60 F 14C            BC    UNEQ,UCB3           BR IF NOT
0012D2   94 FD F 798    CAD     NI    PGSW,X'FD'          TURN OFF CHAIN HEAD SW.
0012D6   41 30 0 00A            LA    R3,10               PUT 10 IN REG 3.
0012DA   41 80 F C84            LA    R8,CTLSV            PUT ADDR OF CTRL SAVE AREA IN REG 8.
0012DE   D5 00 8 003 F C7F CHKD CLC   3(1,R8),CHNO+3      SEE IF ANY DEVICES WANT THIS CHAIN.
0012E4   47 80 F 320            BC    EQ,BYCP             BR IF YES.
0012E8   41 88 0 004    INCR    LA    R8,4(R8)            ADD 4 TO REG 8.
0012EC   46 30 F 2DE            BCT   R3,CHKD             BR TO CHK NEXT DEV FOR THIS CHAIN.
                        ************************************************************
                        *       SET UP NEXT CHAIN HERE
                        ************************************************************
0012F0   58 10 F C7C    SUNC    L     R1,CHNO             PICK UP CHAIN NO.
0012F4   41 11 0 001            LA    R1,1(R1)            ADD 1 TO IT.
0012F8   50 10 F C7C            ST    R1,CHNO             SAVE IT
0012FC   1B 77                  SR    R7,R7               ZERO CONFG CARD COUNTER.
0012FE   41 90 F B8A            LA    R9,PAREA            RESTORE REG 9 TO PRINT AREA ADDR.
001302   94 BA F 798            NI    PGSW,X'BA'          RESET FORMAT AND DEV FOUND SWS.
001306   96 10 F 798            OI    PGSW,X'10'          TURN ON RD NEW SET OF CHN CDS SW.
00130A   47 F0 F 14C            BC    UNC,UCB3            BR TO READ NEXT SET OF CDS.
00130E   91 02 F 007    THLT    TM    SNSW+3,X'02'        TEST SSW 30.
001312   47 80 F 224            BC    NONE,TCCS           BR IF OFF.
001316   0A DA                  SVC   X'DA'               -HALT-
001318   96 80 F 798            OI    PGSW,X'80'          TURN ON 1ST PASS SW.
00131C   47 F0 F 224            BC    UNC,TCCS            BR TO NXT INSTR.
                        ************************************************************
                        *       LOAD  UCB BUFFER HERE
                        ************************************************************
001320   48 C0 0 000    BYCP    LH    R12,0(R8)           PUT DEV ADDR IN REG 12.
001324   92 7B F 748            MVI   DCCCW,X'7B'         MOVE RESET BLOCK DATA CHK CMD TO CCW
001328   91 80 8 002            TM    2(R8),X'80'         SEE IF BLOCK DATA CHK DESIRED.
00132C   47 80 F 334            BC    NONE,CF             BR IF NO.
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001330   92 73 F 748            MVI   DCCCW,X'73'         MOVE BLOCK DATA CHK CMD TO CCW.
001334   92 FB F 750    CF      MVI   DCCCW+8,X'FB'       MOVE LOAD UCB NO FOLD CMD TO CCW.
001338   91 40 8 002            TM    2(R8),X'40'         SEE IF FOLDING DESIRED.
00133C   47 80 F 344            BC    NONE,LS             BR IF NO.
001340   92 F3 F 750            MVI   DCCCW+8,X'F3'       MOVE F3 TO UCB CCW
001344   41 A0 F 740    LS      LA    R10,LUBCCW          LOAD CCW ADDRESS
001348   50 AD 0 048            ST    R10,HCAW(R13)       STORE IT IN CAW.
00134C   50 A0 F 78C            ST    R10,CAWSV           SAVE THE CAW FOR MSG.
001350   45 B0 F 38A            BAL   R11,SIO             BR TO START I-O ROUTINE.
001354   96 01 8 002            OI    2(R8),X'01'         TURN ON BUFFER RESTORE SW.
001358   D2 01 F 865 F 850       MVC   BDM(2),NO           MOVE WORD NO TO MSG.
00135E   95 73 F 748            CLI   DCCCW,X'73'         SEE IF BLOCK DATA CHK USED.
001362   47 60 F 36C            BC    UNEQ,CFL            BR IF NO.
001366   D2 01 F 865 F 784       MVC   BDM(2),BLNK         BLANK OUT WORD NO IN MSG.
00136C   D2 01 F 87B F 850 CFL   MVC   FOLD(2),NO          MOVE WORD NO TO MSG.
001372   95 F3 F 750            CLI   DCCCW+8,X'F3'       SEE IF FOLDING USED.
001376   47 60 F 380            BC    UNEQ,POK            BR IF NO.
00137A   D2 01 F 87B F 784       MVC   FOLD(2),BLNK        BLANK OUT WORD NO IN MSG.
001380   0A D0          POK     SVC   X'D0'               PRINT SUCCESSFUL LOAD MSG.
001382   0442                  DC    X'0442'
001384   F852                  DC    AL2(CORLD-BASE+REG) MSG ADDR.
001386   47 F0 F 2E8            BC    UNC,INCR            BR TO SEE IF ANY MORE DEVICES
                        ************************************************************************
                        *       COMMON START I-O ROUTINE
                        ************************************************************************
00138A   58 AE 0 198    SIO     L     R10,WAIT(R14)       PICK UP TEN SEC WAIT FACTOR
00138E   88 A0 0 002            SRL   R10,2               DECREASE IT BY A FACTOR OF 4.
001392   9D 00 C 000    TIO     TIO   0(12)               -TEST I-O-
001396   47 80 F 384            BC    CC0,SIO1            BR IF AVAILABLE
00139A   47 40 F 3D8            BC    CC1,TFER            BR IF CC 1.
00139E   47 10 F 3F0            BC    CC3,NTOP            BR IF NOT OPERATIONAL.
0013A2   46 A0 F 392            BCT   R10,TIO             BR TO TEST I-O.
0013A6   0A D0                  SVC   X'D0'               INDICATE CANT CLEAR DEVICE.
0013A8   4436                  DC    X'4436'
0013AA   F951                  DC    AL2(TIOTO-BASE+REG)
0013AC   96 02 8 002            OI    2(R8),X'02'         TURN ON SIO ERR SW.
0013B0   47 F0 F 2E8            BC    UNC,INCR            BR TO SEE IF ANY OTHER DEVICES.
0013B4   D7 07 D 040 D 040 SIO1 XC    HCSW(8,R13),HCSW(R13) ZERO THE CSW AREA.
0013BA   94 F1 F 79A            NI    PRSW,X'F1'          RESET SNS PRINT SW AND SNS ERR SWS.
0013BE   9C 00 C 000            SIO   0(R12)              -START I-O-
0013C2   47 20 F 38A            BC    CC2,SIO             BR IF COND CODE 2.
0013C6   47 70 F 40E            BC    NCC0,SIOERR         BR IF NOT CC 0.
0013CA   9D 00 C 000    TIO1    TIO   0(12)               -TEST I-O-
0013CE   47 40 F 3FE            BC    CC1,COND1           BR IF COND CODE 1
0013D2   47 70 F 3CA            BC    NCC0,TIO1           BR IF NOT CC 0.
0013D6   07 FB                  BCR   UNC,R11             RETURN TO MAIN ROUTINE.
                        ************************************************************************
                        *       COME  HERE IF CC 1 ON ENTRY TEST I-O
                        ************************************************************************
0013D8   95 02 D 044    TFER    CLI   HCSW+4(R13),X'02'   SEE IF UNIT CHK.ALONE.
0013DC   47 80 F 3E4            BC    EQ,SUS              BR IF YES.
0013E0   47 F0 F 392            BC    UNC,TIO             BR TO TEST I-O
0013E4   0A D0          SUS     SVC   X'D0'               TELL OPERATOR TO MAKE DEV RDY
0013E6   040F                  DC    X'040F'
0013E8   FA79                  DC    AL2(IR-BASE+REG)
0013EA   0A DA                  SVC   X'DA'               -HALT-
0013EC   47 F0 F 344            BC    UNC,LS              BR TO TRY AGAIN.
                        ************************************************************************
                        *       COME HERE IF DEVICE NOT OPERATIONAL
                        ************************************************************************
0013F0   0A D0          NTOP    SVC   X'D0'               PRINT DEV NOT OPERATIONAL
0013F2   4416                  DC    X'4416'
0013F4   FA88                  DC    AL2(DNT-BASE+REG)
0013F6   96 02 8 002            OI    2(R8),X'02'         TURN ON SIO ERROR SW.
0013FA   47 F0 F 2E8            BC    UNC,INCR            BR TO GET NEXT DEVICE.
                        ************************************************************************
                        *       COME HERE IF COND CODE 1 ON TIO AFTER SIO
                        ************************************************************************
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0013FE   91 02 D 044          COND1  TM    HCSW+4(R13),X'02'     TEST FOR UNIT CHECK.
001402   47 10 F 40E                 BC    ALL,SIOERR           BR IF YES.
001406   91 FF D 045                 TM    HCSW+5(R13),X'FF'    SEE IF ANY CHANNEL STATUS.
00140A   47 80 F 3CA                 BC    NONE,TIO1            BR IF NONE.
                              ********************************************************************
                              *       COME HERE SIO NOT ACCEPTED
                              ********************************************************************
00140E   D6 07 F 77C D 040    SIOERR OC    CSWSV(8),HCSW(R13)   SAVE THE CSW.
001414   9D 00 C 000          TIO2   TIO   0(R12)                -TEST I-O-
001418   47 40 F 40E                 BC    CC1,SIOERR           BR TO SAVE CSW IF CC 1.
00141C   47 70 F 414                 BC    NCC0,TIO2            BR IF NOT CC 0.
001420   91 01 F 780                 TM    CSWSV+4,X'01'        TEST FOR UNIT EXCEPTION.
001424   47 10 F 38A                 BC    ALL,SIO              RETURN TO EXECUTE SIO AGAIN.
001428   91 02 F 780                 TM    CSWSV+4,X'02'        SEE IF UNIT CHECK.
00142C   47 10 F 4FA                 BC    ALL,CF12             BR IF YES.
001430   0A DD                CNVRST SVC   X'DD'                CONVERT THE CSW FOR PRINTING.
001432   0008                        DC    AL2(8)               EIGHT BYTES.
001434   077C                        DC    AL2(CSWSV-SECNO)
001436   07E4                        DC    AL2(CSWAD-SECNO)     TO HERE
001438   D2 07 F 790 F 7EC           MVC   BIS(8),CSWAD+8       MOVE ACTUAL DATA TO WORK AREA.
00143E   D2 07 F 7ED F 790           MVC   CSWAD+9(8),BIS       RETURN THE DATA SHIFTED OVER 1 POS.
001444   92 40 F 7EC                 MVI   CSWAD+8,X'40'        INSERT A BLANK
001448   0A DD                       SVC   X'DD'                CONV EXP CSW FOR MSG.
00144A   0008                        DC    AL2(8)
00144C   0760                        DC    AL2(CSWEX-SECNO)
00144E   07C5                        DC    AL2(CSWED-SECNO)
001450   D2 07 F 790 F 7CD           MVC   BIS(8),CSWED+8       MOVE EXP CSW TO WORK AREA
001456   D2 07 F 7CE F 790           MVC   CSWED+9(8),BIS       MOVE IT BACK SHIFTED OVER ONE.
00145C   92 40 F 7CD                 MVI   CSWED+8,X'40'        INSERT A BLNK.
001460   0A DD                       SVC   X'DD'                CONV THE CAW FOR MSG.
001462   0004                        DC    AL2(4)
001464   078C                        DC    AL2(CAWSV-SECNO)
001466   07A2                        DC    AL2(CAWD-SECNO)
001468   0A D0                       SVC   X'D0'                PRINT A BLANK.
00146A   8001                        DC    X'8001'
00146C   F784                        DC    AL2(BLNK-BASE+REG)
00146E   0A D0                       SVC   X'D0'                PRINT CAW
001470   640D                        DC    X'640D'
001472   F79D                        DC    AL2(CAWP-BASE+REG)
001474   45 50 F 4B6                 BAL   R5,PCCWS             BR TO PRINT CCWS.
001478   0A D0                       SVC   X'D0'                PRINT CSW EXP.
00147A   A01F                        DC    X'A01F'
00147C   F7C0                        DC    AL2(CSWEP-BASE+REG)
00147E   0A D0                       SVC   X'D0'                PRINT CSW ACT.
001480   A01D                        DC    X'A01D'
001482   F7DF                        DC    AL2(CSWAP-BASE+REG)
001484   96 02 8 002                 OI    2(R8),X'02'          TURN ON SIO ERROR SW.
001488   91 08 F 79A                 TM    PRSW,X'08'           TEST SENSE PRINT SW.
00148C   47 80 F 49C                 BC    NONE,PUCER           BR IF NOT ON.
001490   0A D0                       SVC   X'D0'                PRINT SENSE DATA EXP.
001492   A010                        DC    X'A010'
001494   F7FC                        DC    AL2(SNSEP-BASE+REG)
001496   0A D0                       SVC   X'D0'                PRINT SENS DATA ACT.
001498   A00E                        DC    X'A00E'
00149A   F80C                        DC    AL2(SNSAP-BASE+REG)
00149C   0A D0               PUCER   SVC   X'D0'                PRINT SIO TROUBLE
00149E   8016                        DC    X'8016'
0014A0   FA9E                        DC    AL2(TBL-BASE+REG)
0014A2   91 02 F 79A                 TM    PRSW,X'02'           TEST SIO ERR SW.
0014A6   47 10 F 54A                 BC    ALL,SER              BR IF ON.
0014AA   91 04 F 79A                 TM    PRSW,X'04'           TEST SNS TIME OUT SW.
0014AE   47 10 F 554                 BC    ALL,TOM              BR IF ON.
0014B2   47 F0 F 2E8                 BC    UNC,INCR             BR TO GET NEXT DEVICE IF ANY.
0014B6   50 10 F 774          PCCWS  ST    R1,WORK              SAVE REG 1.
0014BA   58 10 F 78C                 L     R1,CAWSV             PICK UP CCW ADDR.
0014BE   40 10 F 4CA          AGAIN  STH   R1,CNV2              PUT ADDR OF CCW INTO CONV INSTR.
0014C2   94 0F F 4CA                 NI    CNV2,X'0F'           AND OUT THE BASE REGISTER.
0014C6   0A DD                       SVC   X'DD'                CONV CCW FOR MSG
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0014C8   0008                        DC    AL2(8)
0014CA   04CA                CNV2    DC    AL2(CNV2-SECNO)
0014CC   07AF                        DC    AL2(CCWD-SECNO)
0014CE   D2 07 F 790 F 7B7           MVC   BIS(8),CCWD+8        MOVE CCW TO WORK AREA.
0014D4   D2 07 F 788 F 790           MVC   CCWD+9(8),BIS        MOVE IT BACK SHIFTED OVER 1.
0014DA   92 40 F 7B7                 MVI   CCWD+8,X'40'         INSERT A BLANK.
0014DE   0A D0                       SVC   X'D0'                PRINT CCW
0014E0   A016                        DC    X'A016'
0014E2   F7AA                        DC    AL2(CCWP-BASE+REG)
0014E4   91 C0 1 004                 TM    4(R1),X'C0'          SEE IF CHAINING
0014E8   47 80 F 4F4                 BC    NONE,RRGS            BR IF NOT.
0014EC   41 11 0 008                 LA    R1,8(R1)             ADD 8 TO CCW ADDR.
0014F0   47 F0 F 4BE                 BC    UNC,AGAIN            BR TO PRINT NEXT CCW.
0014F4   58 10 F 774          RRGS   L     R1,WORK              RESTORE REG 1.
0014F8   07 F5                       BCR   UNC,R5               RETURN TO REST OF MSGS.
                              ********************************************************************
                              *       SENSE SIO
                              ********************************************************************
0014FA   41 A0 F 758          CF12   LA    R10,SNS              PICK UP ADDR OF SENSE CMD.
0014FE   50 AD 0 048                 ST    R10,HCAW(R13)        PUT IT IN THE CAW.
001502   58 5E 0 198                 L     R5,WAIT(R14)         PUT WAIT FACTOR IN REG 5.
001506   88 50 0 002                 SRL   R5,2                 DIVIDE IT BY 4.
00150A   92 00 F 79C                 MVI   SNSDAT,X'00'         ZERO THE SENSE BYTE AREA.
00150E   9C 00 C 000          SIO2   SIO   0(R12)                -START I-O-
001512   47 70 F 52A                 BC    NCC0,TIO3            BR IF SIO NOT ACCEPTED.
001516   9D 00 C 000          TIO4   TIO   0(R12)                TEST I-O
00151A   47 80 F 532                 BC    CC0,CHKSNS           BR IF AVAILABLE.
00151E   46 50 F 516                 BCT   R5,TIO4              BR UNTIL AVAILABLE OR TIMEOUT.
001522   96 04 F 79A                 OI    PRSW,X'04'           SET TIME OUT SW.
001526   47 F0 F 430                 BC    UNC,CNVRST           BR TO MSG.
00152A   96 02 F 79A          TIO3   OI    PRSW,X'02'           TURN ON SNS SIO ERR SW.
00152E   47 F0 F 430                 BC    UNC,CNVRST           BR TO MSG.
001532   91 01 F 79C          CHKSNS TM    SNSDAT,X'01'         SEE IF CHANNEL 9 ON CARRIAGE.
001536   47 10 F 344                 BC    ALL,LS               BR TO TRY SIO AGAIN.
00153A   96 08 F 79A                 OI    PRSW,X'08'           TURN ON THE PRINT SW.
00153E   0A DD                       SVC   X'DD'                CONV SNS DATA FOR PRINTOUT.
001540   0001                        DC    AL2(1)
001542   079C                        DC    AL2(SNSDAT-SECNO)
001544   0811                        DC    AL2(SNSAD-SECNO)
001546   47 F0 F 430                 BC    UNC,CNVRST           RETURN FOR REST OF DATA.
00154A   0A D0                SER    SVC   X'D0'                PRINT SNS SIO ERR.
00154C   802D                        DC    X'802D'
00154E   FAB4                        DC    AL2(SNER-BASE+REG)
001550   47 F0 F 2E8                 BC    UNC,INCR             BR TO GET NEXT DEV.
001554   0A D0                TOM    SVC   X'D0'                PRINT SNS SIO TIME OUT.
001556   8045                        DC    X'8045'
001558   FAE1                        DC    AL2(STO-BASE+REG)
00155A   47 F0 F 2E8                 BC    UNC,INCR             BR TO GET NEXT DEV.
                              ********************************************************************
                              *       COME HERE IF CUSTOMER CHAIN CARDS USED
                              ********************************************************************
00155E   91 20 F 798          LCC    TM    PGSW,X'20'           SEE IF CTRL CDS READ BEFORE
001562   47 80 F 5FC                 BC    NONE,UCBER1          BR IF NOT.
001566   91 04 F 798                 TM    PGSW,X'04'           SEE IF SHLD BE READING CHAIN CDS.
00156A   47 10 F 598                 BC    ALL,CDMIX            BR IF YES.
00156E   91 80 F 799                 TM    CCSW,X'80'           SEE IF BYPASS SW ON.
001572   47 10 F 57E                 BC    ALL,G4               BR IF ON.
001576   96 80 F 799                 OI    CCSW,X'80'           TURN ON BYPASS SW.
00157A   41 20 0 004                 LA    R2,4                 PUT 4 IN REG 2.
00157E   96 01 F 798          G4     OI    PGSW,X'01'           TURN ON CUST CD SW.
001582   D2 3B 9 000 F B4E           MVC   0(60,R9),RDAR+20     MOVE DATA TO BUFFER ADDR.
001588   41 99 0 03C                 LA    R9,60(R9)            ADD 60 TO BUFFER ADDR.
00158C   46 20 F 14C                 BCT   R2,UCB3              BR TO READ 4 CUSTOMER CARDS
001590   94 7F F 799                 NI    CCSW,X'7F'           TURN OFF BYPASS SW.
001594   47 F0 F 238                 BC    UNC,UCB4             BR TO CONTINUE
                              ********************************************************************
                              *       COME HERE IF CUSTOMER CARDS AND HEX CARDS MIXED
                              ********************************************************************
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UCB RESTORE PROGRAM

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001598   91 08 F 799          CDMIX  TM    CCSW,X'08'          SEE IF PASS SW ON.
00159C   47 10 F 14C                 BC    ALL,UCB3            BR IF YES.
0015A0   0A D0                      SVC   X'D0'               INDICATE MIXED CDS.
0015A2   6045                       DC    X'6045'
0015A4   F90C                       DC    AL2(CAC-BASE+REG)   MSG ADDRESS.
0015A6   47 F0 F 60A                BC    UNC,SPC             BR TO PASS CARDS.
                              ************************************************************
                              *      SET UP CUSTOMER CARD DATA HERE
                              ************************************************************
0015AA   41 90 F B8A          PCCD   LA    R9,PAREA            PICK UP ADDR OF CUST DATA.
0015AE   41 40 0 00F                 LA    R4,15               PUT 15 IN REG 4.
0015B2   D2 03 F B3A F B40           MVC   RDAR(4),RDAR+6      PUT CHAIN TYPE IN START OF PRNT LINE
0015B8   92 40 F B3E                 MVI   RDAR+4,C' '         MOVE A BLANK TO PRINT AREA.
0015BC   D2 2C F B3F F B3E           MVC   RDAR+5(45),RDAR+4   BLANK REST OF AREA.
0015C2   41 30 0 008          SU3    LA    R3,8                PUT 8 IN REG 3.
0015C6   41 10 F B3F                 LA    R1,RDAR+5           PICK UP ADDR OF CUST CD PRINT AREA.
0015CA   40 90 F 5DE          STIT   STH   R9,B1               PUT IT IN CONV INSTR.
0015CE   40 10 F 5E0                 STH   R1,B2               PUT IT IN CONV INSTR.
0015D2   94 0F F 5DE                 NI    B1,X'0F'            AND OUT THE 4K BLOCK
0015D6   94 0F F 5E0                 NI    B2,X'0F'            AND OUT THE 4K BLOCK
0015DA   0A DD                       SVC   X'DD'               CONV HEX TO BINARY
0015DC   0002                        DC    AL2(2)              2 BYTES TO 4 BYTES.
0015DE   05DE                 B1     DC    AL2(B1-SECNO)       FROM HERE
0015E0   05E0                 B2     DC    AL2(B2-SECNO)       TO HERE
0015E2   41 11 0 005                 LA    R1,5(R1)            ADD 5 TO REG 1.
0015E6   41 99 0 002                 LA    R9,2(R9)            ADD 2 TO REG 9.
0015EA   46 30 F 5CA                 BCT   R3,STIT             BR TO SET UP 16 BYTE LOGOUT.
0015EE   0A D0                       SVC   X'D0'               PRINT CUST CARD IN OUR FORMAT.
0015F0   802C                        DC    X'802C'             44 BYTES
0015F2   FB3A                        DC    AL2(RDAR-BASE+REG)  FROM HERE
0015F4   46 40 F 5C2                 BCT   R4,SU3              BR TO REINITIALIZE FOR NXT LOG LINE.
0015F8   47 F0 F 2D2                 BC    UNC,CAD             BR TO CHK LOAD BUFFER
                              ************************************************************************
                              *      CONTROL CARDS MIXED WITH DATA CARDS
                              ************************************************************************
0015FC   91 08 F 799          UCBER1 TM    CCSW,X'08'          SEE IF PASS SW ON.
001600   47 10 F 14C                 BC    ALL,UCB3            BR IF YES.
001604   0A D0                       SVC   X'D0'               PRINT CTRL CD ERROR.
001606   4027                        DC    X'4027'
001608   F894                        DC    AL2(MIX-BASE+REG)   MSG ADDR.
00160A   96 08 F 799          SPC    OI    CCSW,X'08'          TURN ON PASS CD SW.
00160E   96 20 F 798                 OI    PGSW,X'20'          TURN ON CTRL 1ST CD SW.
001612   47 F0 F 14C                 BC    UNC,UCB3            RETURN FOR NEXT CD.
                              ************************************************************
                              *      SUPERVISOR CALL INTERRUPT HANDLER
                              ************************************************************
001616   91 04 F 007          DATINT TM    SNSW+3,X'04'        TEST SSW 29.
00161A   47 10 F 66A                 BC    ALL,FFEX            BR IF ON.
00161E   91 08 F 799                 TM    CCSW,X'08'          TEST PASS CD SW.
001622   47 10 F 66A                 BC    ALL,FFEX            BR IF ON.
001626   91 20 F 798                 TM    PGSW,X'20'          TEST CTRL 1ST CD SW.
00162A   47 10 F 636                 BC    ALL,CCHN            BR IF ON.
00162E   0A D0                       SVC   X'D0'               PRINT NO CTRL OR CHN CDS
001630   4019                        DC    X'4019'             ERROR -25 BYTES
001632   F88B                        DC    AL2(MCC-BASE+REG)   MSG. ADDRESS
001634   0A D6                       SVC   X'D6'               -ROUTINE EXIT-
001636   91 80 F 79A          CCHN   TM    PRSW,X'80'          SEE IF ANY DEVICES HAVE UCS.
00163A   47 80 F 66C                 BC    NONE,TBS            BR IF NOT.
00163E   91 08 F 798                 TM    PGSW,X'08'          SEE IF DATA CARDS WERE READ.
001642   47 10 F 64E                 BC    ALL,TRCC            BR IF YES.
001646   0A D0                       SVC   X'D0'               PRINT CHAIN CDS MISSING
001648   4014                        DC    X'4014'             ERROR MSG -20 BYTES-
00164A   F8D4                        DC    AL2(MAC-BASE+REG)   MSG. ADDRESS
00164C   0A D6                       SVC   X'D6'               -ROUTINE EXIT-
00164E   91 10 F 798          TRCC   TM    PGSW,X'10'          SEE IF START SW ON.
001652   47 80 F 65E                 BC    NONE,PCM            BR IF NOT ON.
001656   91 05 F 798                 TM    PGSW,X'05'          TEST CUSTOMER AND HEX CD SWS.
00165A   47 80 F 66C                 BC    NONE,TBS            BR IF NONE ON.
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00165E   0A D0                PCM    SVC   X'D0'               PRINT CHAIN CDS MISSING
001660   6010                        DC    X'6010'             ERROR MSG -16 BYTES-
001662   F8D8                        DC    AL2(CCM-BASE+REG)   MSG ADDR.
001664   0A D0                       SVC   X'D0'               PRINT ANY RESTORED BUFFERS
001666   A024                        DC    X'A024'             MAY BE IN ERROR DUE TO
001668   F8E8                        DC    AL2(RME-BASE+REG)   MISSING CARDS.
00166A   0A D6                FFEX   SVC   X'D6'               EXIT
                              ************************************************************************
                              *      SEE IF BUFFERS RESTORED
                              ************************************************************************
00166C   41 80 F C84          TBS    LA    R8,CTLSV            PICK UP CTRL TABLE ADDRESS.
001670   41 30 0 00A                 LA    R3,10               PUT 10 IN REG 3.
001674   D5 03 8 000 F 770    TBRS   CLC   0(4,R8),ZERO        SEE IF ANY ENTRY IN TABLE.
00167A   47 80 F 692                 BC    EQ,TUCS             BR IF NO.
00167E   91 01 8 002                 TM    2(R8),X'01'         SEE IF BUFFER RESTORED.
001682   47 80 F 710                 BC    NONE,NRES           BR IF NOT.
001686   96 80 F 79B                 OI    RESW,X'80'          TURN ON BUFFER RESTORED PROG SW.
00168A   41 88 0 004          CABU   LA    R8,4(R8)            ADD 4 TO CTRL TABLE ADDR.
00168E   46 30 F 674                 BCT   R3,TBRS             BR TO CHECK WHOLE TABLE.
                              ************************************************************************
                              *      SEE IF ANY UCS DEVICES THAT SHOULD BE CONSIDERED FOR RESTORATION
                              ************************************************************************
001692   41 30 0 00A          TUCS   LA    R3,10               PUT 10 IN REG 3.
001696   41 80 F 0E0                 LA    R8,UNIT1            PICK UP UNIT TABLE ADDRESS.
00169A   91 10 8 001          TFU    TM    1(R8),X'10'         SEE IF UCS OPTION ON PRINTER.
00169E   47 10 F 6BC                 BC    ALL,CHKTB           BR IF YES.
0016A2   41 88 0 004          BMP    LA    R8,4(R8)            ADD 4 TO UNIT TABLE ADDRESS.
0016A6   46 30 F 69A                 BCT   R3,TFU              CHECK REST OF UNIT TABLE.
0016AA   91 40 F 798                 TM    PGSW,X'40'          SEE IF ANY UNITS MENTIONED.
0016AE   47 10 F 6FC                 BC    ALL,WATE            BR IF YES.
0016B2   91 80 F 79B                 TM    RESW,X'80'          SEE IF ANY BUFFERS RESTORED.
0016B6   47 80 F 738                 BC    NONE,NBRM           BR IF NOT.
0016BA   0A D6                       SVC   X'D6'               ROUTINE EXIT
0016BC   41 40 0 00A          CHKTB  LA    R4,10               PUT 10 IN REG 4.
0016C0   41 60 F C84                 LA    R6,CTLSV            PICK UP ADDRESS OF CTRL TABLE.
0016C4   D2 01 F C80 8 002           MVC   AD1(2),2(R8)        MOVE DEVICE ADDRESS TO WORK AREA.
0016CA   94 07 F C80                 NI    AD1,X'07'           ZERO ASSIGNED AND REQ BITS.
0016CE   D5 01 F C80 6 000    CTB    CLC   AD1(2),0(R6)        SEE IF DEVICE ALREADY IN TABLE.
0016D4   47 80 F 6A2                 BC    EQ,BMP              BR IF IT IS.
0016D8   41 66 0 004                 LA    R6,4(R6)            ADD 4 TO CTRL ADDR.
0016DC   46 40 F 6CE                 BCT   R4,CTB              BR TO COMPARE WHOLE TABLE.
0016E0   0A DD                       SVC   X'DD'               CONVERT HEX TO BINARY.
0016E2   0002                        DC    AL2(2)              2 BYTES
0016E4   0C80                        DC    AL2(AD1-SECNO)      FROM HERE
0016E6   098E                        DC    AL2(MES-SECNO)      TO HERE
0016E8   0A D0                       SVC   X'D0'               PRINT A BLANK
0016EA   8001                        DC    X'8001'
0016EC   F784                        DC    AL2(BLNK-BASE+REG)
0016EE   0A D0                       SVC   X'D0'               PRINT UNUSED DEVICE FOUND
0016F0   203D                        DC    X'203D'
0016F2   F987                        DC    AL2(FND-BASE+REG)
0016F4   96 40 F 798                 OI    PGSW,X'40'          TURN ON DEV FOUND SW.
0016F8   47 F0 F 6A2                 BC    UNC,BMP             BR TO CHK FULL TABLE.
0016FC   0A D0                WATE   SVC   X'D0'               PRINT A BLANK
0016FE   8001                        DC    X'8001'
001700   F784                        DC    AL2(BLNK-BASE+REG)
001702   0A D0                       SVC   X'D0'               PRINT INSTRUCTIONS FOR UCB LOADING.
001704   A03B                        DC    X'A03B'
001706   F9C4                        DC    AL2(IF-BASE+REG)
001708   0A D0                       SVC   X'D0'               CONTINUE INSTRUCTIONS.
00170A   8029                        DC    X'8029'
00170C   F9FF                        DC    AL2(IF1-BASE+REG)
00170E   0A D6                       SVC   X'D6'               -ROUTINE EXIT-
001710   91 02 8 002          NRES   TM    2(R8),X'02'         TEST SIO ERROR SW.
001714   47 10 F 68A                 BC    ALL,CABU            BR IF ON.
001718   40 80 F 724                 STH   R8,CV1              PUT ADDR IN CONV INSTRUCTION.
00171C   94 0F F 724                 NI    CV1,X'0F'           AND OUT YHE 4K BLOCK.
001720   0A DD                       SVC   X'DD'               CONV HEX TO BINARY.
```

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001722    0002                             DC    AL2(2)                2 BYTES.
001724    0724                     CV1     DC    AL2(CV1-SECNO)        FROM HERE.
001726    0A2F                             DC    AL2(DEV1-SECNO)       TO HERE.
001728    0A D0                            SVC   X'D0'                 INDICATE BUFFER NOT RESTORED.
00172A    A039                             DC    X'A039'
00172C    FA28                             DC    AL2(BNR-BASE+REG)
00172E    0A D0                            SVC   X'D0'                 CONTINUE MSG.
001730    8018                             DC    X'8018'
001732    FA61                             DC    AL2(BNR2-BASE+REG)
001734    47 F0 F 68A                      BC    UNC,CABU              BR BACK TO CHK WHOLE TABLE.
001738    0A D0                    NBRM    SVC   X'D0'                 INDICATE NO BUFFERS RESTORED.
00173A    8014                             DC    X'8014'
00173C    FB26                             DC    AL2(NORE-BASE+REG)
00173E    0A D6                            SVC   X'D6'                 ROUTINE EXIT.
                                   **********************************************************************
                                   *       CCWS USED
                                   **********************************************************************
001740    EB 001B8A 6000 0001      LUBCCW CCW    X'EB',PAREA,X'60',1   -GATE LOAD CCW.
001748    7B 001B8A 6000 0001      DCCCW  CCW    X'7B',PAREA,X'60',1   -DATA CHK CCW
001750    FB 001B8A 0000 00F0             CCW    X'FB',PAREA,X'00',240 -LOAD UCS BUFFER.
001758    04                       SNS     DC    X'04'                 SENSE CCW.
001759    00179C                           DC    AL3(SNSDAT)
00175C    20000001                         DC    X'20000001'
                                   **********************************************************************
                                   *       EXPECTED CSW
                                   **********************************************************************
001760    00                       CSWEX   DC    X'00'                 EXPECTED CSW.
001761    001758                           DC    AL3(DCCCW+16)
001764    0C000000                         DC    X'0C000000'
                                   **********************************************************************
                                   *       CONSTANTS
                                   **********************************************************************
001768    0000000F                 ONE5    DC    F'15'
00176C    00000001                 ONE     DC    F'1'
001770    00000000                 ZERO    DC    F'0'
001774    00000000                 WORK    DC    2F'0'
001778    00000000
00177C    00000000                 CSWSV   DC    2F'0'
001780    00000000
001784    40404040                 BLNK    DC    X'40404040'
001788    C3E3D9D3                 CTRL    DC    X'C3E3D9D3'
00178C    00000000                 CAWSV   DC    F'0'
001790    00000000                 BIS     DC    2F'0'
001794    00000000

                                   **********************************************************************
                                   *       PROGRAM SWITCHES
                                   **********************************************************************
001798    00                       PGSW    DC    X'00'                 PROGRAM SWITCHES.
001799    00                       CCSW    DC    X'00'                 BYPASS SW.
00179A    00                       PRSW    DC    X'00'
00179B    00                       RESW    DC    X'00'                 PROGRAM SWITCHES
00179C    00                       SNSDAT  DC    X'00'
                                   **********************************************************************
                                   *       LOAD UCB START I-O ERROR MSG AREA.
                                   **********************************************************************
00179D    40C3C1E640               CAWP    DC    C' CAW '
0017A2    E7E7E7E7E7E7E7E7         CAWD    DC    C'XXXXXXXX'
0017AA    40C3C3E640               CCWP    DC    C' CCW '
0017AF    E7E7E7E7E7E7E7E740       CCWD    DC    C'XXXXXXXX '
0017B8    E7E7E7E7E7E7E7E7                 DC    C'XXXXXXXX'
0017C0    40C3E2E640               CSWEP   DC    C' CSW '
0017C5    E7E7E7E7E7E7E7E740       CSWED   DC    C'XXXXXXXX '
0017CE    E7E7E7E7E7E7E7E740               DC    C'XXXXXXXX EXPECTE'
0017D7    C5E7D7C5C3E3C5
0017DE    C4                               DC    C'D'
0017DF    40C3E2E640               CSWAP   DC    C' CSW '
0017E4    E7E7E7E7E7E7E7E740       CSWAD   DC    C'XXXXXXXX '
0017ED    E7E7E7E7E7E7E7E740               DC    C'XXXXXXXX ACTUAL'
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0017F6    C1C3E3E4C1D3
0017FC    40E2D5E240               SNSEP   DC    C' SNS '
001801    F0F040C5E7D7C5C3E3       SNSED   DC    C'00 EXPECTED'
00180A    C5C4
00180C    40E2D5E240               SNSAP   DC    C' SNS '
001811    E7E740C1C3E3E4C1D3       SNSAD   DC    C'XX ACTUAL'
                                   **********************************************************************
                                   *       MESSAGES
                                   **********************************************************************
00181A    F2F8F2F140E4C3C240       TITLE   DC    C'2821 UCB RESTORE'
001823    D9C5E2E3D6D9C5
00182A    40D9E3D5                         DC    C' RTN'
00182E    C3E3D9D340C4C1E3C1       MSG1    DC    C'CTRL DATA AT '
001837    40C1E340
00183B    C1C4C4D940                       DC    C'ADDR '
001840    E7E7E7E7E7E740C6D6       ADDR    DC    C'XXXXXX FOR ALTER'
001849    D940C1D3E3C5D9
001850    D5D6                     NO      DC    C'NO'
001852    40E4C3C240D9C5E2E3       CORLD   DC    C' UCB RESTORED WI'
00185B    D6D9C5C440E6C9
001862    E3C840                           DC    C'TH '
001865    D5D640C2D3D6C3D240       BDM     DC    C'NO BLOCK DATA CH'
00186E    C4C1E3C140C3C8
001875    D240C1D5C440                     DC    C'K AND '
00187B    D5D640C6D6D3C4C9D5       FOLD    DC    C'NO FOLDING '
001884    C740
001886    E4E2C9D5C740                     DC    C'USING '
00188C    C3C8C1C9D540             MSG2    DC    C'CHAIN '
001892    E7E7                     CHN1    DC    C'XX'
001894    C3E3D9D340C3C4E240       MIX     DC    C'CTRL CDS MISSING'
00189D    D4C9E2E2C9D5C7
0018A4    40D6D940D4C9E7C5C4               DC    C' OR MIXED'
0018AD    40E6C9E3C840C4C1E3               DC    C' WITH DATA CDS'
0018B6    C140C3C4E2
0018BB    D4C9E2E2C9D5C740C3       MCC     DC    C'MISSING CTRL AND'
0018C4    E3D9D340C1D5C4
0018CB    40C4C1E3C140C3C4E2               DC    C' DATA CDS'
0018D4    C1D3D340                 MAC     DC    C'ALL '
0018D8    C4C1E3C140C3C4E240       CCM     DC    C'DATA CDS MISS'
0018E1    D4C9E2E2
0018E5    C9D5C7                           DC    C'ING'
0018E8    C1D5E840D9C5E2E3D6       RME     DC    C'ANY RESTORED BUF'
0018F1    D9C5C440C2E4C6
0018F8    C6C5D9E240D4C1E840               DC    C'FERS MAY BE IN E'
001901    C2C540C9D540C5
001908    D9D9D6D9                         DC    C'RROR'
00190C    C5C9E3C8C5D940C3E4       CAC     DC    C'EITHER CUSTOMER '
001915    E2E3D6D4C5D940
00191C    C1D5C440C8C5E740C3               DC    C'AND HEX CDS MI'
001925    C4E240D4C9
00192A    E7C5C440D6D940D6D5               DC    C'XED OR ONE TYPE '
001933    C540E3E8D7C540
00193A    C9E240C9D5C1C4C5D8               DC    C'IS INADEQUATE IN'
001943    E4C1E3C540C9D5
00194A    40D5E4D4C2C5D9                   DC    C' NUMBER'
001951    40E3C9D640D3D6D6D7       TIOTO   DC    C' TIO LOOP RECEIV'
00195A    40D9C5C3C5C9E5
001961    C5E240E2D6D3C9C440               DC    C'ES SOLID CHANNEL'
00196A    C3C8C1D5D5C5D3
001971    40C2E4E2E840C6D9D6               DC    C' BUSY FROM THIS '
00197A    D440E3C8C9E240
001981    C4C5E5C9C3C5                     DC    C'DEVICE'
001987    C4C5E5C9C3C540           FND     DC    C'DEVICE '
00198E    E7E7E7E740               MES     DC    C'XXXX '
001993    C1E2E2C9C7D5C5C440               DC    C'ASSIGNED BY DM D'
00199C    C2E840C4D440C4
0019A3    D6C5E240D5D6E340C8               DC    C'OES NOT HAVE DAT'
0019AC    C1E5C540C4C1E3
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0019B3    C140C6D6D940E4C3C2          DC    C'A FOR UCB RESTOR'
0019BC    40D9C5E2E3D6D9
0019C3    C5                          DC    C'E'
0019C4    C9C640C4C5E2C9D9C5    IF    DC    C'IF DESIRED TO RE'
0019CD    C440E3D640D9C5
0019D4    E2E3D6D9C540C1D5E8          DC    C'STORE ANY DEVICE'
0019DD    40C4C5E5C9C3C5
0019E4    E240E3C8C1E340C4D6          DC    C'S THAT DO NOT HA'
0019ED    40D5D6E340C8C1
0019F4    E5C540E3C8C540C4C1          DC    C'VE THE DATA'
0019FD    E3C1
0019FF    C3D6D5E2E4D3E340E3    IF1   DC    C'CONSULT THE DESC'
001A08    C8C540C4C5E2C3
001A0F    D9C9D7E3C9D6D540C6          DC    C'RIPTION FOR THE '
001A18    D6D940E3C8C540
001A1F    D7D9D6C3C5C4E4D9C5          DC    C'PROCEDURE'
001A28    C4C5E5C9C3C540        BNR   DC    C'DEVICE '
001A2F    E7E7E7E740E4C3C240    DEV1  DC    C'XXXX UCB NOT RES'
001A38    D5D6E340D9C5E2
001A3F    E3D6D9C5C440C4E4C5          DC    C'TORED DUE TO INS'
001A48    40E3D640C9D5E2
001A4F    E4C6C6C9C3C9C5D5E3          DC    C'UFFICIENT DATA C'
001A58    40C4C1E3C140C3
001A5F    C4E2                        DC    C'DS'
001A61    D6D940E6D9D6D5C740    BNR2  DC    C'OR WRONG CTRL DE'
001A6A    C3E3D9D340C4C5
001A71    C6C9D5C9E3C9D6D5            DC    C'FINITION'
001A79    D4C1D2C540C4C5E5C9    IR    DC    C'MAKE DEVICE RDY'
001A82    C3C540D9C4E8
001A88    C4C5E5C9C3C540D5D6    DNT   DC    C'DEVICE NOT OPERA'
001A91    E340D6D7C5D9C1
001A98    E3C9D6D5C1D3                DC    C'TIONAL'
001A9E    40C5D9D9D6D940D6D5    TBL   DC    C' ERROR ON UCB LO'
001AA7    40E4C3C240D3D6
001AAE    C1C440E2C9D6                DC    C'AD SIO'
001AB4    40E2D5E240E2C9D640    SNER  DC    C' SNS SIO AFTER U'
001ABD    C1C6E3C5D940E4
001AC4    C3C240D3D6C1C440C1          DC    C'CB LOAD ATTEMPT-'
001ACD    E3E3C5D4D7E360
001AD4    40D5D6E340C1C3C5            DC    C' NOT ACCEPTED'
001ADD    D7E3C5C4
001AE1    40E2D5E240E2C9D640    STO   DC    C' SNS SIO AFTER U'
001AEA    C1C6E3C5D940E4
001AF1    C3C240D3D6C1C440C1          DC    C'CB LOAD ATTEMPT '
001AFA    E3E3C5D4D7E340
001B01    C4C9C440D5D6E340D9          DC    C'DID NOT RECEIVE '
001B0A    C5C3C5C9E5C540
001B11    C1E5C1C9D3C1C2D3C5          DC    C'AVAILABLE FROM D'
001B1A    40C6D9D6D440C4
001B21    C5E5C9C3C5                  DC    C'EVICE'
001B26    40D5D640C2E4C6C6C5    NORE  DC    C' NO BUFFERS REST'
001B2F    D9E240D9C5E2E3
001B36    D6D9C5C4                    DC    C'ORED'
                                ********************************************************************************
                                *     VARIABLE AREA
                                ********************************************************************************
001B3A    000000000000000000    RDAR  DC    8XL10'00'             READ IN AREA
001B43    00
001B44    000000000000000000
001B4D    00
001B4E    000000000000000000
001B57    00
001B58    000000000000000000
001B61    00
001B62    000000000000000000
001B6B    00
001B6C    000000000000000000
001B75    00
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001B76    000000000000000000
001B7F    00
001B80    000000000000000000
001B89    00
001B8A                        PAREA  DS    240C
001C7C    00000001            CHNO   DC    F'1'
001C80    00000000            AD1    DC    F'0'
001C84    00000000            CTLSV  DC    10F'0'              CTRL TABLE
001C88    00000000
001C8C    00000000
001C90    00000000
001C94    00000000
001C98    00000000
001C9C    00000000
001CA0    00000000
001CA4    00000000
001CA8    00000000
001CAC                        BUFEND DS    C
                              ********************************************************************************
                              *     EQUATES                                                                  *
                              ********************************************************************************
                              *
                              *     GENERAL REGISTER EQUATES
                              *
                    000000    R0     EQU   0
                    000001    R1     EQU   1
                    000002    R2     EQU   2
                    000003    R3     EQU   3
                    000004    R4     EQU   4
                    000005    R5     EQU   5
                    000006    R6     EQU   6
                    000007    R7     EQU   7
                    000008    R8     EQU   8
                    000009    R9     EQU   9
                    00000A    R10    EQU   10
                    00000B    R11    EQU   11
                    00000C    R12    EQU   12
                    00000D    R13    EQU   13
                    00000E    R14    EQU   14
                    00000F    R15    EQU   15
                              *
                              *     CONDITION CODE EQUATES
                              *
                    000008    NONE   EQU   8                    ALL OFF        0
                    000005    ANY    EQU   5                    ANY ON           1   3
                    000001    ALL    EQU   1                    ALL ON               3
                    000004    SOME   EQU   4                    MIXED            1
                    000009    NMIXED EQU   9                    NOT MIXED      0     3
                    000008    EQ     EQU   8                    EQUAL          0
                    000006    UNEQ   EQU   6                    NOT EQUAL        1 2
                    000004    LO     EQU   4                    LOW              1
                    000002    HI     EQU   2                    HIGH               2
                    000008    Z      EQU   8                    ZERO           0
                    000002    POS    EQU   2                    GREATER ZERO       2
                    000008    CC0    EQU   8                    AVAILABLE      0
                    000004    CC1    EQU   4                    CSW STORED       1
                    000002    CC2    EQU   2                    BUSY               2
                    000001    CC3    EQU   1
                    00000F    UNC    EQU   15                   UNCONDITIONAL  0 1 2 3
                    000007    NCC0   EQU   7                    NOT CC 0         1 2 3
                    00000B    NCC1   EQU   11                   CSW NOT STORED 0   2 3
                    00000D    NCC2   EQU   13                   NOT BUSY       0 1   3
                    000004    NOTZRO EQU   4                    NOT ZERO - AND -   1
                    00000C    MIXNON EQU   12                   MIXED OR NONE  0 1
                              *
                              *     GENERAL EQUATES
                              *
                    000040    HCSW   EQU   64                   HARDWARE CSW LOCATION
```

UCB RESTORE PROGRAM

```
000048      HCAW    EQU   72              HARDWARE CAW LOCATION
001C7F      CHINO   EQU   CHNO+3
001C81      AD2     EQU   AD1+1
00000C      EQLO    EQU   12
00000A      EQHI    EQU   10
000198      WAIT    EQU   408
00F000      REG     EQU   X'F000'
001000      BASE    EQU   SECNO
            END
```


UCB RESTORE PROGRAM

POST ASSEMBLY DATA.

REFERENCES TO DEFINED SYMBOLS.

```
 1     8     Z
 2   15DE    B1   15CA, 15D2, 15DE
 2   15E0    B2   15CE, 15D6, 15E0
 4   1334    CF   132C
 1     8     EQ   11A0, 1228, 1284, 1292, 12E4, 13DC, 167A
                  16D4
 4   157E    G4   1572
 1     2     HI
16   19C4    IF   1706
15   1A79    IR   13E8
 1     4     LO
 4   1344    LS   133C, 13EC, 1536
 2   1850    NO   1358, 136C
 1     0     RO
 1     1     R1   129A, 129E, 12A8, 12A8, 12AC, 12F0, 12F4
                  12F4, 12F8, 14B6, 14BA, 14BE, 14E4, 14EC
                  14EC, 14F4, 15C6, 15CE, 15E2, 15E2
 1     2     R2   1296, 129E, 12A4, 12A4, 157A, 158C
 1     3     R3   1186, 11A8, 12D6, 12EC, 15C2, 15EA, 1670
                  168E, 1692, 16A6
 1     4     R4   15AE, 15F4, 16BC, 16DC
 1     5     R5   1474, 14F8, 1502, 1506, 151E
 1     6     R6   16C0, 16CE, 16D8, 16D8
 1     7     R7   1144, 1240, 1240, 12CA, 12FC, 12FC
 1     8     R8   118C, 1190, 11B0, 11EC, 12DA, 12DE, 12E8
                  12E8, 1320, 1328, 1338, 1354, 13AC, 13F6
                  1484, 166C, 1674, 167E, 168A, 168A, 1696
                  169A, 16A2, 16A2, 16C4, 1710, 1718
 1     9     R9   1148, 1286, 12C6, 12C6, 12FE, 1582, 1588
                  1588, 15AA, 15CA, 15E6, 15E6
 4   1C80    AD1  1190, 1196, 119A, 11CA, 16C4, 16CA, 16CE
                  16E4, 1CAD
 4   1C81    AD2  11F8
 1     1     ALL  111C, 1154, 11D2, 1218, 1234, 1266, 1402
                  1424, 142C, 14A6, 14AE, 1536, 156A, 1572
                  159C, 1600, 161A, 1622, 162A, 1642, 169E
                  16AE, 1714
 1     5     ANY  116A
16   1865    BDM  1358, 1366
 4   1280    BHD  1266
 4   1790    BIS  1438, 143E, 1450, 1456, 14CE, 14D4
 4   16A2    BMP  16D4, 16F8
 7   1A28    BNR  172C
16   190C    CAC  15A4
 4   12D2    CAD  1292, 15F8
 4   1048    CAW
 1     8     CC0  1396, 151A
 1     4     CC1  139A, 13CE, 1418
 1     2     CC2  13C2
 1     1     CC3  139E
13   18D8    CCM  1662
 6   136C    CFL  1362
 4   11CE    CSU  11AC, 11B4
 8   1040    CSW
 6   16CE    CTB  16DC
 2   1724    CV1  1718, 171C, 1724
 2   12C4    CVD  12B6, 12BA, 12C4
16   1A88    DNT  13F4
 7   1987    FND  16F2
 2   100A    ICM
16   19FF    IF1  170C
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UCB RESTORE PROGRAM

4	155E	LCC	1228
2	1252	LCT	1244
4	18D4	MAC	164A
16	188B	MCC	1632
6	129E	MDA	12B2
5	198E	MES	16E6
16	1894	MIX	1608
4	176C	ONE	1144, 124C
2	1202	PBK	11F0
2	165E	PCM	1652
4	128E	PCP	125E
2	1380	POK	1376
1	2	POS	
4	1186	PRC	
1	A	R10	1344, 1348, 134C, 138A, 138E, 13A2, 14FA 14FE
1	B	R11	118A, 118A, 118C, 11A4, 11A4, 11BC, 11BC 11C0, 11C6, 11C6, 11CA, 1350, 13D6
1	C	R12	1320, 13BE, 1414, 150E, 1516
1	D	R13	110C, 110C, 1116, 1348, 13B4, 13B4, 13D8 13FE, 1406, 140E, 14FE
1	E	R14	110E, 138A, 1502
1	F	R15	1116
1	F000	REG	112C, 11E2, 1200, 1206, 126E, 1274, 127E 128C, 1384, 13AA, 13E8, 13F4, 146C, 1472 147C, 1482, 1494, 149A, 14A0, 14E2, 154E 1558, 15A4, 15F2, 1608, 1632, 164A, 1662 1668, 16EC, 16F2, 1700, 1706, 170C, 172C 1732, 173C
16	18E8	RME	1668
2	154A	SER	14A6
4	138A	SIO	1350, 13C2, 1424
1	1758	SNS	14FA
4	160A	SPC	15A6
16	1AE1	STO	1558
4	15C2	SU3	15F4
2	13E4	SUS	13DC
16	1A9E	TBL	14A0
4	166C	TBS	163A, 165A
4	169A	TFU	16A6
4	1392	TIO	13A2, 13E0
2	1554	TOM	14AE
1	F	UNC	11AC, 1208, 1244, 130A, 131C, 1386, 13B0 13D6, 13E0, 13EC, 13FA, 14B2, 14F0, 14F8 1526, 152E, 1546, 1550, 155A, 1594, 15A6 15F8, 1612, 16F8, 1734
16	1840	ADDR	11FA
4	1000	BASE	112C, 11E2, 1200, 1206, 126E, 1274, 127E 128C, 1384, 13AA, 13E8, 13F4, 146C, 1472 147C, 1482, 1494, 149A, 14A0, 14E2, 154E 1558, 15A4, 15F2, 1608, 1632, 164A, 1662 1668, 16EC, 16F2, 1700, 1706, 170C, 172C 1732, 173C
4	1784	BLNK	1206, 126E, 127E, 12AC, 1366, 137A, 146C 16EC, 1700
16	1A61	BNR2	1732
4	1320	BYCP	12E4
4	168A	CABU	1714, 1734
8	17A2	CAWD	1466
5	179D	CAWP	1472
4	1636	CCHN	162A
1	1799	CCSW	1132, 1214, 156E, 1576, 1590, 1598, 15FC 160A, 161E
9	17AF	CCWD	14CC, 14CE, 14D4, 14DA
5	17AA	CCWP	14E2
4	14FA	CF12	142C
6	12DE	CHKD	12EC
2	1892	CHN1	1258

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4	1C7C	CHNO	124C, 12DE, 12F0, 12F8, 1CAD
2	14CA	CNV2	14BE, 14C2, 14CA
4	118C	CTAB	11A8
4	1788	CTRL	115C
16	1A2F	DEV1	1726
1	A	EQHI	
1	C	EQLO	
2	166A	FFEX	161A, 1622
11	187B	FOLD	136C, 137A
1	48	HCAW	1348, 14FE
1	40	HCSW	13B4, 13B4, 13D8, 13FE, 1406, 140E
4	12E8	INCR	1386, 13B0, 13FA, 14B2, 1550, 155A
13	182E	MSG1	1200
6	188C	MSG2	1274
2	1738	NBRM	16B6
1	7	NCC0	13C6, 13D2, 141C, 1512
1	B	NCC1	
1	D	NCC2	
1	8	NONE	1112, 1124, 11B4, 11DA, 11E8, 11F0, 1210 1220, 123C, 125E, 1312, 132C, 133C, 140A 148C, 14E8, 1562, 163A, 1652, 165A, 1682 16B6
16	1B26	NORE	173C
4	1710	NRES	1682
2	13F0	NTOP	139E
1	100D	NUTE	
4	1768	ONE5	12CA
4	15AA	PCCD	1284
2	11DE	PCTC	11D2
1	1798	PGSW	112E, 1158, 1166, 116E, 120C, 121C, 122C 1230, 1238, 1248, 1262, 1276, 12D2, 1302 1306, 1318, 155E, 1566, 157E, 160E, 1626 163E, 164E, 1656, 16AA, 16F4
1	179A	PRSW	1136, 11B8, 13BA, 1488, 14A2, 14AA, 1522 152A, 153A, 1636
10	183A	RDAR	114E, 115C, 1172, 1178, 11E2, 1224, 1280 128C, 128E, 1296, 129A, 12C2, 1582, 1582 15B2, 15B8, 15BC, 15BC, 15C6, 15F2
1	179B	RESW	113A, 1686, 16B2
4	14F4	RRGS	14E8
6	1384	SIO1	1396
4	150E	SIO2	
16	1AB4	SNER	154E
4	1004	SNSW	1118, 1120, 1150, 11CE, 11D6, 11E4, 125A 130E, 1616
1	4	SOME	
4	11B0	STDT	11A0
4	15CA	STIT	15EA
4	12F0	SUNC	
6	1674	TBRS	168E
4	1224	TCCS	1312, 131C
4	13D8	TFER	139A
4	130E	THLT	1220
4	13CA	TIO1	13D2, 140A
4	1414	TIO2	141C
4	152A	TIO3	1512
4	1516	TIO4	151E
4	164E	TRCC	1642
4	1692	TUCS	167A
1	10E1	U10P	
1	10E5	U20P	
1	10E9	U30P	
1	10ED	U40P	
1	10F1	U50P	
1	10F5	U60P	
1	10F9	U70P	
1	10FD	U80P	
1	1101	U90P	

UCB RESTORE PROGRAM

1	1105	UAOP	
4	1118	UCB1	1112
4	112E	UCB2	111C, 1124
2	114C	UCB3	1154, 11DA, 11E8, 1208, 1218, 12CE, 130A
			158C, 159C, 1600, 1612
4	1238	UCB4	1594
1	6	UNEQ	1162, 12B2, 12CE, 1362, 1376
1	198	WAIT	138A, 1502
2	16FC	WATE	16AE
4	1774	WORK	1172, 1178, 1182, 1184, 119A, 11C0, 14B6
			14F4
4	1770	ZERO	1674
4	14BE	AGAIN	14F0
4	178C	CAWSV	134C, 1464, 14BA
4	1598	CDMIX	1234, 156A
4	1C7F	CHINO	1256
4	16BC	CHKTB	169E
4	13FE	COND1	13CE
16	1852	CORLD	1384
9	17E4	CSWAD	1436, 1438, 143E, 1444
5	17DF	CSWAP	1482
9	17C5	CSWED	144E, 1450, 1456, 145C
5	17C0	CSWEP	147C
1	1760	CSWEX	144C
4	177C	CSWSV	140E, 1420, 1428, 1434
4	1C84	CTLSV	113E, 113E, 11BC, 12DA, 166C, 16C0
8	1748	DCCCW	1324, 1330, 1334, 1340, 135E, 1372, 1761
1	100E	FLAG1	
1	100F	FLAG2	
4	1248	INITE	123C
5	1010	INPSW	
1	1B8A	PAREA	1148, 12FE, 15AA, 1740, 1748, 1750
4	14B6	PCCWS	1474
2	149C	PUCER	148C
4	1000	SECND	114E, 1182, 1184, 11F8, 11FA, 1256, 1258
			12C2, 12C4, 1434, 1436, 144C, 144E, 1464
			1466, 14CA, 14CC, 1542, 1544, 15DE, 15E0
			16E4, 16E6, 1724, 1726, 1CAD
9	1811	SNSAD	1544
5	180C	SNSAP	149A
11	1801	SNSED	
5	17FC	SNSEP	1494
16	1951	TIOTO	13AA
16	181A	TITLE	112C
4	120C	UCBCH	1162
1	10E0	UNIT1	118C, 1696
1	10E4	UNIT2	
1	10E8	UNIT3	
1	10EC	UNIT4	
1	10F0	UNIT5	
1	10F4	UNIT6	
1	10F8	UNIT7	
1	10FC	UNITB	
1	1100	UNIT9	
1	1104	UNITA	
1	1CAC	BUFEND	
4	1532	CHKSNS	151A
2	1430	CNVRST	1526, 152E, 1546
4	1616	DATINT	1065
8	1058	EXNPSW	
8	1018	EXOPSW	
8	1078	IONPSW	
8	1038	IOOPSW	
8	1740	LUBCCW	1344
8	1070	MCNPSW	
8	1030	MCOPSW	
1	C	MIXNON	
1	9	MMIXED	

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1	4	NOTZRO	
8	1068	PGNPSW	
8	1028	PGOPSW	
4	1080	REGDMP	
2	1108	ROUTO1	1015
6	140E	SIOERR	13C6, 1402, 1418
1	179C	SNSDAT	150A, 1532, 1542, 1759
5	1060	SVNPSW	
8	1020	SVOPSW	
2	10E2	U1ADDR	
2	10E6	U2ADDR	
2	10EA	U3ADDR	
2	10EE	U4ADDR	
2	10F2	U5ADDR	
2	10F6	U6ADDR	
2	10FA	U7ADDR	
2	10FE	U8ADDR	
2	1102	U9ADDR	
2	1106	UAADDR	
4	15FC	UCBER1	116A, 1210, 1562
1	1000	XF8370	

NO ERROR DETECTED IN ABOVE ASSEMBLY

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PERIODS CORRESPOND TO BLANK COLUMNS.

COLS. 1 THROUGH 20	COLS. 21 THROUGH 40	COLS. 41 THROUGH 60	COLS. 61 THROUGH 80
BESD.....AA..AAXF83 9 YQ Y9 99 9	7O..AAAA.ADN..... YYQY Y8Y 9999 99	840	542.125655..83700001
BTXT.AAA..A8..AA87AA 9 YQY Y9 Y9 9YY 999 9 9 99	AAAAAAAABAAADAAAAJH YYYYYYYYY8YY99YYYYY99 9999999999 9 9999	AAAAAAAAAAAAAAAAAAA YYYYYYYYYYYYYYYYYYY 99999999999999999999	AAAAAAAAAAAA83700002 YYYYYYYYYYY 9999999999
BTXT.AA8..A8..AAAAAA 9 YQ9 Y9 Y9YYYY 99 9 9 9999	AAAAAAAAAAAAAAAAAAA YYYYYYYYYYYYYYYYYYY 99999999999999999	AAAAAAAAAAAAAAAADAA YYYYYYYYYYYYYYYY99YY 9999999999999999 99	AADDAAAAAAAA83700003 YY99YYYYYYYY 99 99999999
BTXT.AAO..AA..AAAAAA 9 YQ+ YQ Y9YYYY 99- 99 9 9999	AAAAAAAAAAAA..... YYYYYYYYYYY 999999999999	....	83700004
BTXT.AAS..A8..AACAAA 9 YQ8 Y9 Y9OYYY 99 9 9 9 9	CAAACAAACAAACAAACAAA OYYYOYYYOYYYOYYYOYYY 999 999 999 999 999	CAAACAAACAAACAAAAAGG OYYYOYYYOYYYOYYY9YQQ 999 999 999 999 9ZZ	LEA.JFGA1QQG83700005 8Q- Z-ZY 99Q 99 9
BTXT.AJQ..A8..AAADOG 9 Y99 Y9 Y9-9 9 9 9 9	GA1WABODGA1WBOAM8KDA ZQ 8-9 9ZY 88-Y9 8-Y 9 9 99 9 9	7HDA7IDA7BBA7CPXDDDD --Y --Y Q-Y Q 9QOQO 9 9 9 Z Z	HO7UAAC8BCC283700006 R+ 8ZQQY8Q88 - Z 9999
BTXT.AJ+..A8..AAADOG 9 Y9 Y9 Y9-9 9 9 9 9	GA1DDP7HNCC27HG-2DAA ZQ 8-Y - 9Q8 OZ 8-8 9 9 Z9 9 9	7HG+5DFJ7HKC7DC7KC7H -Z Q-Y - 9 RQ8 9 R Z 9 OZ9 O	CDBDAHGDGDAA83700007 QZ8QY99R9RZQ Z 999 O O Z
BTXT.AJH..A8..AAABLC 9 Y9O Y9 Y9Y88Q 9 9 9 999O	ACOSKADAABDGDANADA7D ZY 8 9QYY9-9QY 9QY R Z Z Z O	GA1AACADFA1DGO1FAAAA ZY QZQY9ZQ YZ Y-QY9 O O9 Z 9 9	GA1FFA7BACDD83700008 ZY Y-Y QZQQO 9 OZ
BTXT.AJO..A8..AAKCAA 9 Y9+ Y9 Y9 9QY 9 9 9 O9	7DACAB+ADAAAOGGA1FAB RZQY9 QQY-9 9ZQ Q-9 O O9 OZ 9 9	OGGA1DBOAGC2ABOGGA1D 9ZY 88-Y8Q8-9 9ZY 8 9 9Z9	AAAAGA2BBEAC83700009 -QY9ZY 98QY9 9 999
BTXT.AJ8..A8..AADAH. 9 Y9 Y9 Y9809 9 9 9 9	BOAS8WBOAA7DGO1DAJ7H 8-Y9 88-Y9 OZ 8-Y - 9 99 9	GA5DAH7IGA1DAA7HGA3F ZY Q-9 -ZQ 8-Y -ZY 8 Z 9 9	E/C2GA5OFD7H83700010 - Q8ZY 8-9 - Z9
BTXT.AKA..A8..AAAA7H 9 Y9Q Y9 Y9-9 - 9 Z 9 9	GA5HAH7HGA2HAGAAGO2B ZQ --9 -ZY ZZRY9Z R 9 O9	FH7HKCD47UBEAAD7HBAA -9 - 9Q8 88QY9889--9 Z 999 9	OGGA2FAB7HGA83700011 9ZY Y-9 -ZQ 9
BTXT.AKQ..A8..AA2ABO 9 Y9Z Y9 Y9 Y8- 9 9 9 9	AA7DBOAH8DFB7HBOAA7D Y9 O8-Y9 Y-9 -8-Y9 O 9 9	E/C2GA5KBOABC2E/C2GA - Q8ZY Y8-Y8Q8- Q8ZY Z9 9 Z9 Z9	2KAJC2AAC7KC83700012 ZYQ8ZQQ8 9 9Z9 9Z9
BTXT.AKJ..A8..AAJAAA 9 Y9Y Y9 Y9YYQY 9 9 9 9999	ASADAJAENCAA7DG-2F.A Z9Y9Z9Y9 9QY OZ Q Q 9 9 99	2DDG2DBDAJC2BDAIAAEO -8 8QYY889 Z-YQR+ 9 999999 99 -	7QG-1DDE7HAA83700013 ZZ 8-Q -ZQ Z Z
BTXT.AKQ..A8..AAABAA 9 Y9 Y9 Y9Y8ZY 9 9 9 99	DDNAACD7GA3JAHADFA2F QO YY9Q8ZY YZOY9ZQ Q Z 9 Z 9 9 Z 9	HAD4AJAA+AD4LGAACBDB RQQ8Z9Y9 QQ88RZQQY-Q 9Z 9 9Z 9O Z O	7HFA7HGO1DAB83700014 --Q -Z 8-9 9
BTXT.ALA..A8..AAOGGA 9 Y9Q Y9 Y9 9ZY 9 9 9 9	2UB8FA7HGO2UHHAAB37H 98Q-Y -Z 9Z YY-8 Z 99 99	AAABGA34BC7HBC7+A.AB -YY9ZY 9-R Z-Q - Y9 O Z	GA3DB37+AJ7.83700015 ZY Z- ZY
BTXT.ALH..A8..AA+NAH 9 Y9Z Y9 Y9 YYZ 9 9 9 9	+J7DEA3BFAABKA8N8+EC Y YZQ Y-9Y9 9 Z -R O O	7HG-3UKA8N7DKA838+E3 ZZ 8 9 Z O 9 8 -	7+G-3AKA837D83700016 Z Y 9 8 O

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BTXT.ALA..A8..AABODB 9 Y9Y Y9 Y98-9Z 9 9 9 9	8BGO2YHOAHHJABEAOAGA RZ RY9-OYY9QY+YZY 9 9 9	3DG.3QGA3OFJ3BBOD69A OZ ZQ ZY -8-Z9 R - 9 9	FBABGO2YPGO.83700017 -9Y9Z 9-
BTXT.ALH..A8..AAO.D1 9 Y9O Y9 Y9- - 9 - 9 9	7BDAOAGJ3BGO4FEAOAG. QQY+YZY YZ+ 8QY+YZ 9 9 9 - 9 9 9	3FGO3BGCEBODGA3UGO3B QZ+ Y9Q-9-ZZY Z - Z - 9 Z	BODGB1BBGO3D83700018 8-98Q88QZ Z 9 9Z 99
BTXT.ALO..A8..AABODO 9 Y9 Y9 Y98-Z9 9 9 9 9	BHFBABGO2YABODGA4FAG QO-9Y9Z -9-ZZQ 8-Q Z 9 9 Z	OEGA3BOG74O.EAOAG.4F -ZZY Y 9 8- QY+YZ 8 9 9 9 9	GO4MAA7AGA3B83700019 Z+ 9-9 YZQ Y - 9
BTXT.AMY..A8..AAAB7A 9 Y99 Y9 Y9-9 Y 9 9 9	GA4BBEAHG4GUKG7A7MKG ZQ Q8QY9989 9 Q Y 9 9 Z999 9	7N7AB.7MBEAHG-GEKG7A Y Q- Y8QY99 9 9 Q 9 9999	7EKG7F7AB.7E83700020 Y 9 Y Q- Y 9 9 9
BTXT.AM-..A8..AABEAD 9 Y9 Y9 Y98QY9 9 9 9 999	GDGKBOAA7DBOME7EE+4F 9Y9O8-Y9 O8-Z8 QZ O 9 9 9 -	BOJP7OBOJN7GFBABAH7B 8-Y8 +8-Y8 Q-9Y9-9 Q 9 9 9 9 9	GA4DBOJA7DBO83700021 ZY Q8-YQ Q8- 9 9 Z9
BTXT.AMH..A8..AAJF8D 9 Y9- Y9 Y9Y8 8 9 9 9 9 9	BOAOBFAB7BGA5BAD7BGA 8-Y9QQ-9 QZQ 8-9 QZQ 9 Z 9 9	5DGO2Y+A7DHA7D.A4BDG RZ Q RRQ Y Q Y-8 9 O 9 9 9 9	4BBEAHDBGPKG83700022 Y8QY99Y9Y 9 9999 9
BTXT.AMO..A8..AA7A7G 9 Y9- Y9 Y9 Q O 9 9 9 -	KG7H7AB.7GBOJO7KAOAD 9 O Q- O8-Y9 Y-+Q9 - -9 9	GA44AJAHGO4FHA7DG5AJ ZY Z9Y9Z QRQ R9 ZY 9 O 9 O	7H+NAHHOAHH+83700023 R YYZR89-O 9
BTXT.ANH..A8..AAABBA 9 Y99 Y9 Y9Y9-Y 9 9 9 9	7DDAOAGO5SEAOAGA52F+ QQY+YZ+ 8QY+YZY 9Z 9 9 - 9 9 9	5OFD7BGO4AFB7BGO4AAA 9-9 QZ Q-9 QZ Q-9 Z Z	7DGA3DFH7BBE83700024 QZQ Z-9 Q8Q 9 99
BTXT.AN...A8..AAAAGD 9 Y9 Y9 Y9Y99Q 9 9 9 9	HJGO4ABOAVBDGO2YBOAE 99Z Q8-Y8QOZ 8-YZ Z9 9Z- 9	BJGO2YAJ7HGA5DAD7HGA QZZ -Y -ZY Q-9 -ZQ Z 9 Z 9	5HAA7IGA56FA83700025 --Y -ZQ 8-Y 9
BTXT.ANH..A8..AA7IAJ 9 Y9R Y9 Y9 -ZY 9 O 9 9 9	ADFA7HK3AACFAIA4FJ1D Y9-9 - 8QYQ8Z-Y8ZY 8 9 9 9Z 99 9	D77IGO28AH7IGA1DBO-E -8 -Z 9-9 -ZQ 88- Z 9 9	9DGO6BAACBA.83700026 8Z 8ZQQYZ 9 9 Z
BTXT.ANA..A8..AAAGKC 9 Y9Q Y9 Y9Y8 9 9 O 9 9 99	C2C.B.C6KUC7C6AAAHAA Q8Q - Q8 8Q8Q8ZQY9ZQ Z9Z Z9 9Z9Z9 Z9 9	C7.A5F.A5SDG5FDG5SBE Q8 Q Q Q 8-8 Q-8 88Q Z9 9 9 9 9 9 99	ABEFESAJAEAI83700027 Y99Q98Z9Y9Z- 9 9 9
BTXT.ANY..A8..AAABFA 9 Y9 Y9 Y9Y9ZQ 9 9 9 9 Z	5BBOAUC2F.5BGO2KAH7I Y8-Y8Q8Z Z -9 - 99 9Z9	GA1DBO.X8DFH7IFJ7HGO ZQ 88- 9 --9 --Y -Z 9 9 9	1DADOGGA6+AH83700028 8-9 9ZQ --9 9
BTXT.AOJ..A8..AA7IGA 9 Y9Y Y9 Y9 -ZQ 9 9 9 9 9	6+AJ7HGA66BO.J8CBOAA --Y -ZQ 98- 8 Q8 -Y 9 9 9 9 O9	7BGA6UAH7HGA6FBO.M8M QZY 8-9 -ZQ 88- 9 9 9	BOAA7HGA6OAE83700029 8 -Q -ZY 8-9 9 9
BTXT.AOH..A8..AA7HGA 9 Y9R Y9 Y9 -ZY 9 9 9	6UBO-A8QBOJU8YBOAADD 88- Q 8-Y9 8 ZYQO 9 9 9 9 Z	AAABNCAA7OGA6BAAABGA ZQY8 9YY +ZY --9Y9ZY Z99 9 -	7AFA7CAHADFA83700030 Q-Y QZOY9ZQ 9 9 Z
BTXT.AOA..A8..AA6DAA 9 Y9Q Y9 Y9 RZQ 9 9 Z Z	ABAAOSAAAAGA6DAHADFA Y8ZY 8-QY9ZQ QZOY9ZQ 99 9 9 O 9 Z	6BA.7HGA6DAA7CGA78BO Q- -ZQ Q-Y QZY 98 9 Z 9	A.ABA-DDKADA83700031 Z Y8Z QO 9QY 99 Z Z
BTXT.AOH..A8..AAABDG 9 Y9 Y9 Y9Y9-9 9 9 9	DANADA-AGA6KAOADF.6F QY 9QY YZY OZZY9Z Y Z Z 9 9 9	BEABDAAFBOAA7DBOJ59G 8QY98Y8Y8-Y9 O8-Y8 O 999 9 9 9 9 99	F.7HGO6KBOAA83700032 - -Z O8-Y9 9
BTXT.APA..A8..AA7DBO 9 Y9Y Y9 Y9 O8- 9 9 9 9 9	J39DBOA/9GBOABABGA6B Y8 8-Y8 Q8.-9Y9ZQ Y 9 9 9 Z9 9	.A7UDG7UBEABGUBXBOJ1 Y 9-8 98QY999888-Y8 9 999 999 9	BYBOAQ8/GO6B83700033 Q98-Y9Q Z Y Z 9 Z

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BTXT.AP8..A8..AABOAM    CWBOLALB-AAA3ALB-AAA    CALBAAAODAPDJAAAAAPH    DAAAAAAGAAAA83700034
9    Y99  Y9  Y98-Y9    Q98 YY8Y YY98Y8Y YY9    QY8YYYY 9Y9QYYY9YY9R    8YYYYYY8YYY9
     9    9   9 9       Z 9 999  99  99  99     Z99 999  9  999 99      99999999999

BTXT.APO..A8..AAAAAA    AAAAAAAAAAAAAAAA....    CTRLAAAAAAAAAAAAAAAA    A.CAW.XXXXXX83700035
9    Y9+  Y9  Y9YYYY    YYYYYYYYYYYYYYYY            YYYYYYYYYYYYYYYY    Y
     9 -  9   9 9999    9999999999999999            9999999999999999    9

BTXT.APQ..A8..AAXX.C    CW.XXXXXXXX.XXXXXXXX    .CSW.XXXXXXX.XXXXXX    XX.EXPECTED.83700036
9    Y90  Y9  Y9
     9    9   9

BTXT.APS..A8..AACSW.    XXXXXXXX.XXXXXXXX.AC    TUAL.SNS.00.EXPECTED    .SNS.XX.ACTU83700037
9    Y98  Y9  Y9
     9    9   9

BTXT.AQQ..A8..AAAL28    21.UCB.RESTORE.RTNCT    RL.DATA.AT.ADDR.XXXX    XX.FOR.ALTER83700038
9    Y99  Y9  Y9
     9    9.  9

BTXT.AQ+..A8..AAND.U    CB.RESTORED.WITH.NO.    BLOCK.DATA.CHK.AND.N    O.FOLDING.US83700039
9    Y9   Y9  Y9
     9    9   9

BTXT.AQH..A8..AAING.    CHAIN.XXCTRL.CDS.MIS    SING.OR.MIXED.WITH.D    ATA.CDSMISSI83700040
9    Y90  Y9  Y9
     9    9   9

BTXT.AQO..A8..AANG.C    TRL.AND.DATA.CDSALL.    DATA.CDS.MISSINGANY.    RESTORED.BUF83700041
9    Y9+  Y9  Y9
     9    9   9

BTXT.AQ8..A8..AAFERS    .MAY.BE.IN.ERROREITH    ER.CUSTOMER.AND.HEX.    CDS.MIXED.OR83700042
9    Y9   Y9  Y9
     9    9   9

BTXT.AJA..A8..AA.ONE    .TYPE.IS.INADEQUATE.    IN.NUMBER.TIO.LOOP.R    ECEIVES.SOLI83700043
9    Y8Q  Y9  Y9
     99Z  9   9

BTXT.AJQ..A8..AAD.CH    ANNEL.BUSY.FROM.THIS    .DEVICEDEVICE.XXXX.A    SSIGNED.BY.D83700044
9    Y8Z  Y9  Y9
     99   9   9

BTXT.AJJ..A8..AAM.DO    ES.NOT.HAVE.DATA.FOR    .UCB.RESTOREIF.DESIR    ED.TO.RESTOR83700045
9    Y8Y  Y9  Y9
     99   9   9

BTXT.AJQ..A8..AAE.AN    Y.DEVICES.THAT.DO.NO    T.HAVE.THE.DATACONSU    LT.THE.DESCR83700046
9    Y8   Y9  Y9
     99   9   9

BTXT.AKA..A8..AAIPTI    ON.FOR.THE.PROCEDURE    DEVICE.XXXX.UCB.NOT.    RESTORED.DUE83700047
9    Y8Q  Y9  Y9
     999  9   9

BTXT.AKH..A8..AA.TO.    INSUFFICIENT.DATA.CD    SOR.WRONG.CTRL.DEFIN    ITIONMAKE.DE83700048
9    Y8Z  Y9  Y9
     99   9   9

BTXT.AKA..A8..AAVICE    .RDYDEVICE.NOT.OPERA    TIONAL.ERROR.ON.UCB.    LOAD.SIO.SNS83700049
9    Y8Y  Y9  Y9
     99   9   9

BTXT.AKH..A8..AA.SIO    .AFTER.UCB.LOAD.ATTE    MPT-.NOT.ACCEPTED.SN    S.SIO.AFTER.83700050
9    Y80  Y9  Y9
     99-  9   9
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BTXT.AKO..A8..AAUCB.    LOAD.ATTEMPT.DID.NOT    .RECEIVE.AVAILABLE.F    ROM.DEVICE.N83700051
9    Y8   Y9  Y9
     99   9   9

BTXT.ALY..A8..AAO.BU    FFERS.RESTOREDAAAAAA    AAAAAAAAAAAAAAAAAAAA    AAAAAAAAAAA83700052
9    Y89  Y9  Y9                      YYYYYY    YYYYYYYYYYYYYYYYYYYY    YYYYYYYYYYY
     99   9   9                       999999    99999999999999999999    999999999999

BTXT.AL-..AS..AAAAAA    AAAAAAAAAAAAAAAAAAAA    AAAAAAAAAAAAAAAAAA..    ..........83700053
9    Y8   Y8  Y9YYYY    YYYYYYYYYYYYYYYYYYYY    YYYYYYYYYYYYYYYYYY
     99   99  9 9999    99999999999999999999    999999999999999999

BTXT.AM2..A2..AAAAAA    AAAAAAAAAAAAAAAAAAAA    AAAAAAAAAAAAAAAAAAAA    AAAAAA......83700054
9    Y88  Y9  Y9YYYY    Y9YYYYYYYYYYYYYYYYYY    YYYYYYYYYYYYYYYYYYYY    YYYYYY
     99   9   9 9999    9 99999999999999999     9999999999999999999     999999

BRLD.....AJ....AAAA    AAANAAANAAPAAAPAAAPA    AAPJHAP/.........       ..........83700055
9          YY    Y9Y9    8YQ98YQZ8Y9Z8Y988Y9R    8Y989Y9
           99    9 9     999 999 99  99  99      99  9

BEND.........AA....     ....................    ....................    ..........83700056
9              Y9
               9

BDAT.................   ....................    ....................    ..........83700057
9

CTRL.000E.0001.....     ....................    ....................    ..........83700058

CTRL.000F.0001.....     ....................    ....................    ..........83700059

CTRL.0010.0001.....     ....................    ....................    ..........83700060

AN1..F1F2.F3F4.F5F6.    F7F8.F9F0.7B7C.61E2.    E3E4................    ..........83700061

AN2..E5E6.E7E8.E950.    6B6C.D1D2.D3D4.D5D6.    D7D8................    ..........83700062

AN3..D960.5B5C.C1C2.    C3C4.C5C6.C7C8.C94E.    4B4C................    ..........83700063

AN4..F1F2.F3F4.F5F6.    F7F8.F9F0.7B7C.61E2.    E3E4................    ..........83700064

AN5..E5E6.E7E8.E950.    6B6C.D1D2.D3D4.D5D6.    D7D8................    ..........83700065

AN6..D960.5B5C.C1C2.    C3C4.C5C6.C7C8.C94E.    4B4C................    ..........83700066

AN7..F1F2.F3F4.F5F6.    F7F8.F9F0.7B7C.61E2.    E3E4................    ..........83700067

AN8..E5E6.E7E8.E950.    6B6C.D1D2.D3D4.D5D6.    D7D8................    ..........83700068

AN9..D960.5B5C.C1C2.    C3C4.C5C6.C7C8.C94E.    4B4C................    ..........83700069

AN10.F1F2.F3F4.F5F6.    F7F8.F9F0.7B7C.61E2.    E3E4................    ..........83700070

AN11.E5E6.E7E8.E950.    6B6C.D1D2.D3D4.D5D6.    D7D8................    ..........83700071

AN12.D960.5B5C.C1C2.    C3C4.C5C6.C7C8.C94E.    4B4C................    ..........83700072

AN13.F1F2.F3F4.F5F6.    F7F8.F9F0.7B7C.61E2.    E3E4................    ..........83700073

AN14.E5E6.E7E8.E950.    6B6C.D1D2.D3D4.D5D6.    D7D8................    ..........83700074

AN15.D960.5B5C.C1C2.    C3C4.C5C6.C7C8.C94E.    4B4C................    ..........83700075

HN1..F1F2.F3F4.F5F6.    F7F8.F9F0.7E7D.61E2.    E3E4................    ..........83700076

HN2..E5E6.E7E8.E950.    6B4D.D1D2.D3D4.D5D6.    D7D8................    ..........83700077

HN3..D960.5B5C.C1C2.    C3C4.C5C6.C7C8.C94E.    4B5D................    ..........83700078
```

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HN4..F1F2.F3F4.F5F6.  F7F8.F9F0.7E7D.61E2.  E3E4..............  ..........83700079
HN5..E5E6.E7E8.E950.  6B4D.D1D2.D3D4.D5D6.  D7D8..............  ..........83700080
HN6..D960.5B5C.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700081
HN7..F1F2.F3F4.F5F6.  F7F8.F9F0.7E7D.61E2.  E3E4..............  ..........83700082
HN8..E5E6.E7E8.E950.  6B4D.D1D2.D3D4.D5D6.  D7D8..............  ..........83700083
HN9..D960.5B5C.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700084
HN10.F1F2.F3F4.F5F6.  F7F8.F9F0.7E7D.61E2.  E3E4..............  ..........83700085
HN11.E5E6.E7E8.E950.  6B4D.D1D2.D3D4.D5D6.  D7D8..............  ..........83700086
HN12.D960.5B5C.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700087
HN13.F1F2.F3F4.F5F6.  F7F8.F9F0.7E7D.61E2.  E3E4..............  ..........83700088
HN14.E5E6.E7E8.E950.  6B4D.D1D2.D3D4.D5D6.  D7D8..............  ..........83700089
HN15.D960.5B5C.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700090
PN1..F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700091
PN2..E5E6.4F7A.6D7F.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700092
PN3..D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700093
PN4..6C5B.5C7B.507C.  4C5E.5F7D.6F6E.F1F2.  F3F4..............  ..........83700094
PN5..F5F6.F7F8.F9F0.  E7E8.61E2.E3E4.E5E6.  4F7A..............  ..........83700095
PN6..6D7F.6B7E.D1D2.  D3D4.D5D6.D7D8.D960.  E94D..............  ..........83700096
PN7..C1C2.C3C4.C5C6.  C7C8.C94E.4B5D.6C5B.  5C7B..............  ..........83700097
PN8..507C.4C5E.5F7D.  6F6E.F1F2.F3F4.F5F6.  F7F8..............  ..........83700098
PN9..F9F0.E7E8.61E2.  E3E4.E5E6.4F7A.6D7F.  6B7E..............  ..........83700099
PN10.D1D2.D3D4.D5D6.  D7D8.D960.E94D.C1C2.  C3C4..............  ..........83700100
PN11.C5C6.C7C8.C94E.  4B5D.6C5B.5C7B.507C.  4C5E..............  ..........83700101
PN12.5F7D.6F6E.F1F2.  F3F4.F5F6.F7F8.F9F0.  E7E8..............  ..........83700102
PN13.61E2.E3E4.E5E6.  4F7A.6D7F.6B7E.D1D2.  D3D4..............  ..........83700103
PN14.D5D6.D7D8.D960.  E94D.C1C2.C3C4.C5C6.  C7C8..............  ..........83700104
PN15.C94E.4B5D.6C5B.  5C7B.507C.4C5E.5F7D.  6F6E..............  ..........83700105
QN1..F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700106
QN2..E5E6.6D7F.5B5C.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700107
QN3..D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700108
QN4..F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700109
QN5..E5E6.4C5E.7B5C.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700110
QN6..D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700111
QN7..F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700112
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QN8..E5E6.6F6E.7C5C.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700113
QN9..D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700114
QN10.F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700115
QN11.E5E6.5F7D.505C.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700116
QN12.D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700117
QN13.F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700118
QN14.E5E6.4F7A.6C5C.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700119
QN15.D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700120
RN1..F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700121
RN2..E5E6.7D7C.5B5C.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700122
RN3..D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700123
RN4..F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700124
RN5..E5E6.6C7C.5B5C.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700125
RN6..D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700126
RN7..F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700127
RN8..E5E6.787C.5B5C.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700128
RN9..D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700129
RN10.F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700130
RN11.E5E6.4C7C.5B5C.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700131
RN12.D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700132
RN13.F1F2.F3F4.F5F6.  F7F8.F9F0.E7E8.61E2.  E3E4..............  ..........83700133
RN14.E5E6.507C.5B5C.  6B7E.D1D2.D3D4.D5D6.  D7D8..............  ..........83700134
RN15.D960.E94D.C1C2.  C3C4.C5C6.C7C8.C94E.  4B5D..............  ..........83700135
BLDT..............  ..................  ..................  ..........83700136
9
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LAST PAGE

1403 CARRIAGE FUNCTION TEST DESCRIPTION

TABLE OF CONTENTS

1. PURPOSE

1.1 INTENT.

CHANNEL 9 AND 12 TEST-- (RTN 1 & 2) WILL TEST THE ABILITY OF THE SENSE START I/O TO DETECT CHANNEL 9 AND 12 HOLES IN THE DIAGNOSTIC CARRIAGE TAPE, AND TO CHECK THAT CHANNEL 12 TURNS ON UNIT EXCEPTION, AND CHANNEL 9 TURNS ON UNIT CHECK. A SKIP AND TWO SPACE 1 OPERATIONS WITH COMMAND CHAINING IS USED TO DETERMINE TEST RESULTS ON THE PRINTER UNDER TEST.

FORMS SPACE AND SKIP TEST-- (RTN 3) WILL TEST THE FUNCTIONS OF THE CARRIAGE.

2. PREREQUISITES

2.1 PROGRAM REQUIREMENTS. A DM IS REQUIRED TO RUN THIS PROGRAM.

THE EXCLUSIVE CPU FLAG IS ON
THE PROGRAM IS RELOCATABLE

```
************************** NOTE ****************************
*  FOR UCS PRINTERS, THE UCS BUFFER SHOULD BE LOADED.      *
*  TO LOAD THE UCS BUFFER, USE PROGRAM ID F837             *
************************************************************
```

THIS TEST WILL BE BYPASSED FOR ANY 1403 WHICH HAS SELECTIVE TAPE LIST DEFINED IN THE DM UNIT DEFINITION TABLE.

THE UNIT DEFINITION TABLE-UDT-ENTRY MUST BE PUNCHED AS FOLLOWS.

UNIT CODE	OPTIONAL FEATURE DIGIT 1				OPTIONAL FEATURE DIGIT 2			
UNIT	ZZ	BIT 0 HEX 8	BIT 1 HEX 4	BIT 2 HEX 2	BIT 3 HEX 1	BIT 4 HEX 8	BIT 5 HEX 4	BIT 6 HEX 2	BIT 7 HEX 1
1403 PRINTER OR 1404 PRINTER CONTINUOUS FORMS	83	ASCII	SEL TAPE	LISTER	UNIV. CHAR. BUFF.	HI- SPEED PTR.	120 PRINT POS.	2821 2 CHNL SWITCH	

2.2 EQUIPMENT REQUIREMENTS.

INPUT DEVICE
STORAGE SIZE -- 4K PLUS STORAGE REQUIRED BY DM.
CPU
I/O CHANNEL
1403 PRINTER
2821 CONTROL UNIT
DIAGNOSTIC CARRIAGE TAPE. SEE 5.2

3. USE PROCEDURE

3.1 LOADING. STANDARD AS DESCRIBED IN THE USERS GUIDE.

3.2 OPERATING.

3.2.1 DIAGNOSTIC CARRIAGE TAPE MUST BE INSERTED.
3.2.2 STANDARD DM SENSE SWITCHES AS DESCRIBED IN THE USERS GUIDE.
3.2.3 SECTION SENSE SWITCHES

```
************************** NOTE ****************************
*  IF 2 CHANNEL SWITCH FEATURE INSTALLED, DISABLE THE UNUSED *
*  INTERFACE TO PREVENT NOT READY TO READY STATUS FROM BEING *
*  PRESENTED TO THE OTHER CHANNEL.                           *
************************************************************
```

THE SENSE SWITCHES SHOWN BELOW ARE IN THE SENSE SWITCH BYTES OF THEIR RESPECTIVE SECTION PREFACES. THE CHARACTER X REPRESENTS THE RELOCATION FACTOR CONTAINED IN REGISTER 15 DURING RUN TIME. THE SWITCH BITS ARE ZERO WHEN OFF, AND ONE WHEN ON.

SENSE SW. #	FUNCTION	SECTION OR ROUTINE	BYTE AND BIT
0	OFF--PROCEED NORMALLY ON--LOOP ON CURRENT START I/O, TEST I/O WITH NO ERROR PRINTOUTS OR CHECKING	SECTION F838	X004 0
2	OFF--PROCEED NORMALLY ON--LOOP ON CURRENT I/O COMMAND, OUTPUT ON PRINTER WITH ERROR PRINTOUTS ON C. E. OUTPUT DEVICE.	SECTION F838 RTN 3	X004 2
BYTE # 5	IF DISIRED, INSERT PRINT COMMAND CODE TO BE LOOPED ON. SEE CHART 6.1	SECTION F838 RTN 3	X005 ALL

3.3 PROGRAM HALTS

AT THE BEGINNING OF ROUTINE 1 THE C.E. INSTRUCTIONS WILL TELL THE C.E. TO PLACE THE DIAGNOSTIC CARRIAGE TAPE IN PLACE, RESTORE IT TO CHANNEL 1 USING THE CARRIAGE RESTORE KEY, CHECK FOR THE CHANNEL 1 HOLE DIRECTLY UNDER THE CARRIAGE BRUSHES, MAKE THE PRINTER READY AND PUSH INTERRUPT TO RESTART THE PROGRAM.

3.4 TERMINATION. STANDARD VIA SVC D6.

4. PRINTOUTS

4.1 INSTRUCTIONS TO THE OPERATOR

-INSERT TEST CARRIAGE TAPE,-
-RESTORE CARRIAGE TO CHAN.1-
-CHECK FOR CHAN.1 HOLE UNDER BRUSHES,-
-MAKE PRINTER READY PUSH INTERRUPT-

4.2 STATUS MESSAGES ON CE OUTPUT DEVICE

NORMAL PRINTOUTS ROUTINE 01

-SDO F8383 01 00123E 00E-	PROG ID AND REVISION, RTN, ADDR, DEVICE
-CHAN 9 DETECTED OK-	CHAN 9 HAS BEEN DETECTED CORRECTLY

NORMAL PRINTOUTS ROUTINE 02

-SDO F8383 02 001372 00E-	PROG ID AND REVISION, RTN, ADDR, DEVICE
-CHAN 12 DETECTED OK-	CHAN 12 HAS BEEN DETECTED CORRECTLY

ERROR PRINTOUTS ROUTINE 01

-*SDO F8383 01 00127E 00E-	PROG ID AND REVISION, RTN, ADDR, DEVICE
- NO CHAN 9 DETECTED IN SENSE BYT	ERROR CONDITION
- SNS ACT 40-	SENSE INDICATES INTERVENTION REQUIRED
-*SDO F8383 01 001278 00E-	SAME AS ABOVE
- GOT UNEXPECTED UNIT EXCEPTION	WHILE TESTING CHAN 9- ERROR CONDITION
- SNS ACT 01-	SENSE INDICATES CHANNEL 9 ONLY, CHAN 12
- CHAN 9 DETECTED-	UNIT EXCEPTION ERRONEOUSLY SET ON.

ERROR PRINTOUTS ROUTINE 02

-*SDO F8383 02 001335 00E-	SAME AS ABOVE
- NO CHAN 12 DETECTED-	ERROR CONDITION
-*SDO F8383 02 001328 00E-	SAME AS ABOVE

- GOT UNEXPECTED UNIT CK WHILE TESTING CHAN 12-	ERROR CONDITION
- SNS ACT 81-	SENSE INDICATES COMM REJ AND CHAN 9
- NO CHAN 12 DETECTED-	DID NOT DETECT CHAN 12 DUE TO COMM REJ.

ERROR PRINTOUTS ROUTINE 03

-DEVICE NOT OPERATIONAL-SET SS 0 TO LOOP ON SIO- SEE SENSE SWITCHES.
-DEVICE / CHANNEL BUSY TOO LONG AFTER SIO-
-NO CHANNEL END-
-COMMAND REJECT-
-INTRV REQUIRED- INTERVENTION REQUIRED
-BUS OUT CHECK-
-EQUIPMENT CHECK-
-SKIP X FAILED- CHANNEL NUMBER WILL BE FILLED IN.
-BUSY TOO LONG-
-NO DEVICE END-
-UNIT BUSY AFTER DEVICE END-
-NO CSW AFTER IMMEDIATE OPERATION-
-DATA CHECK-
-BUFFER CHECK- UCB PARITY CHECK

```
1403 CARRIAGE FUNCTION TEST


   4.3  PRINTOUTS ON DEVICE UNDER TEST

 WRITE SPACE 1      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
 WRITE SPACE 1      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
 WRITE SPACE 1      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / E
 WRITE SPACE 1      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EE
 WRITE SPACE 1      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEE
 WRITE SPACE 1      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEE
 WRITE SPACE 2      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEE

 WRITE SPACE 2      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEE

 WRITE SPACE 2      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEE

 WRITE SPACE 2      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEE

 WRITE SPACE 3      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEEEE


 WRITE SPACE 3      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEEEEEEE


 WRITE SPACE 3      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEEEEEEEEEE


 WRITE SPACE 3      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEEEEEEEEEEEEE



 IMMED SPACE 1      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEEEEEEEEEEEEEEEEE

 IMMED SPACE 1      EEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEEEEEEEEEEEEEEEEEEE

 IMMED SPACE 1      EEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEEEEEEEEEEEEEEEEEEEEE

 IMMED SPACE 1      EEEEEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE


 IMMED SPACE 2      EEEEEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE


 IMMED SPACE 2      EEEEEEEEEEEEEEEEEEEE / EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE


 IMMED SPACE 2      EEEEEEEEEEEEEEEEE / EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE


 IMMED SPACE 2      EEEEEEEEEEEEEE / EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE



 IMMED SPACE 3      EEEEEEEEEE / EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE



 IMMED SPACE 3      EEEEEE / EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE



 IMMED SPACE 3      EE / EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE



 IMMED SPACE 3     / EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
```

```
1403 CARRIAGE FUNCTION TEST


WRITE SKIP TO 1    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /

  CHANNEL    1     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 2    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /





  CHANNEL    2     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 3    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /





  CHANNEL    3     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 4    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /





  CHANNEL    4     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 5    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /





  CHANNEL    5     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 6    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /





  CHANNEL    6     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 7    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /





  CHANNEL    7     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 8    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /





  CHANNEL    8     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 9    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /





  CHANNEL    9     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 10   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /





  CHANNEL   10     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 11   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
```

```
  CHANNEL   11    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SKIP TO 12  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



  CHANNEL   12    EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



IMMED SKIP TO 1   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



IMMED SKIP TO 2   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



IMMED SKIP TO 3   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



IMMED SKIP TO 4   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



IMMED SKIP TO 5   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



IMMED SKIP TO 6   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



IMMED SKIP TO 7   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



IMMED SKIP TO 8   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
```

```
IMMED SKIP TO 9   EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



IMMED SKIP TO 10  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /



IMMED SKIP TO 11  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /




IMMED SKIP TO 12  EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
SPACE SUPPRESS OK XXXXXX EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE /
WRITE SPACE 1     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / E
SPACE SUPPRESS OK XXXXXX EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EE
WRITE SPACE 1     EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE / EEE
```

NOTE... XXXXXX IN ABOVE SAMPLE PRINTOUT IS NORMALLY OVERPRINTED.

5. COMMENTS

5.1 DETAILS ON SECTION FUNCTIONS.

F838 -- CHANNEL 9 AND 12 TEST RTN 1 AND 2

THE SENSE CHANNEL 9 AND 12 ROUTINE PRINTS SET-UP INSTRUCTIONS ON THE C.E. OUTPUT DEVICE AND GOES INTO THE WAIT STATE TO ALLOW TIME TO EXECUTE THE INSTRUCTIONS. THE PRINTOUT SAYS TO RESTORE THE DIAGNOSTIC CARRIAGE TAPE TO CHANNEL 1 AND TO BE SURE THAT THE CHANNEL 1 BRUSH IS RESTING IN THE CHANNEL 1 HOLE WHEN THE TEST IS STARTED. THIS SYNCHRONIZES THE CARRIAGE TAPE WITH THE PROGRAM. THE PROGRAM IS RESTARTED BY MAKING THE PRINTER READY AND PUSHING THE EXTERNAL INTERRUPT KEY.

A SKIP TO CHANNEL 1 FOLLOWED BY TWO SPACE 1 IMMEDIATE COMMANDS ARE ARE ISSUED. AFTER THE FIRST OF THE TWO SPACE 1 COMMANDS IS EXECUTED A CHANNEL 9 HOLE SHOULD BE DETECTED ON THE CARRIAGE TAPE AND BREAK COMMAND CHAIN WITH UNIT CHECK INDICATED.

A SKIP TO CHANNEL 4 FOLLOWED BY TWO SPACE 1 IMMEDIATE COMMANDS ARE ISSUED. AFTER THE FIRST OF THE TWO SPACE 1 COMMANDS IS EXECUTED A CHANNEL 12 HOLE SHOULD BE DETECTED ON THE CARRIAGE TAPE AND BREAK COMMAND CHAIN WITH UNIT EXCEPTION.

F838 -- FORMS SPACE AND SKIP TEST RTN 3

THE PROGRAM TESTS SPACE, SKIP, SPACE SUPPRESS, AND IMMEDIATE OPERATIONS. A TABLE HAS BEEN SET UP IN STORAGE -CCTAB- WHICH DICTATES THE SEQUENCE OF OPERATIONS. THIS ORDER MAY BE CHANGED WITH REP --REPLACE-- CARDS, OR MANUALLY AT RUN TIME.
ALL SPACE OPERATIONS MAY BE CHECKED BY SIGHTING ALONG THE DIAGONAL SLASH LINE. IF IT IS STRAIGHT, NO ERROR OCCURED.
SKIP OPERATIONS ARE CHECKED BY THE PROGRAM. A NINE OR TWELVE IS SENSED AFTER EACH SKIP.
TO REPEAT A SPECIFIC TYPE OF OPERATION, ENTER THE COMMAND IN THE PROGRAM SECTION PREFACE BYTE 005. SEE CHART 6.1 .
THE LETTER IS PLACED IN THE PRINT AREA TO PROVIDE A GUIDE FOR PRINT ALIGNMENT. IF ANOTHER CHARACTER IS DESIRED PUT THIS CHARACTER IN THE MVI INSTRUCTION AT ADDRESS -NOREST-.
SUPPRESS PRINTING IS CHECKED BY X-ING OUT THE WORD -FAILED-, AND ADDING THE WORD -OK-.

5.2 CARRIAGE TAPE -- F838

LENGTH 96 SPACES

LINE NO -HOLE	LINE NO.-HOLE	LINE NO.-HOLE
01 - 01	33 - 05	65 - 09
02 - 09	34 - 12	66 - 12
09 - 02	41 - 06	73 - 10
10 - 09	42 - 12	74 - 09
17 - 03	49 - 07	81 - 11
18 - 09	50 - 12	82 - 09
25 - 04	57 - 08	89 - 12
26 - 12	58 - 12	90 - 09

6. APPENDIX

6.1 1403 COMMAND CODES.

```
**************************************************************************
*                                          COMMAND CODE BITS         HEX
*      FUNCTION                            0 1 2 3   4 5 6 7         CODE
*
* NO OP  . . . . . . . . . . . . . . .    0 0 0 0   0 0 1 1   . . .  03
* SENSE  . . . . . . . . . . . . . . .    0 0 0 0   0 1 0 0   . . .  04
* TEST I/O . . . . . . . . . . . . . .    0 0 0 0   0 0 0 0   . . .  00
* PR SP SUP  . . . . . . . . . . . . .    1 0 0 0   0 0 0 1   . . .  81
* PR SP 1  . . . . . . . . . . . . . .    0 0 0 0   1 0 0 1   . . .  09
* PR SP 2  . . . . . . . . . . . . . .    0 0 0 1   0 0 0 1   . . .  11
* PR SP 3  . . . . . . . . . . . . . .    0 0 0 1   1 0 0 1   . . .  19
* IMMED SP1  . . . . . . . . . . . . .    0 0 0 0   1 0 1 1   . . .  0B
* IMMED SPX  . . . . . . . . . . . . .    0 0 0 X   X 0 1 1   . . .  --
* IMMED SKIP 1 . . . . . . . . . . . .    1 0 0 0   1 0 1 1   . . .  8B
* IMMED SKIP 2 . . . . . . . . . . . .    1 0 0 1   0 0 1 1   . . .  9B
* IMMED SKIP X . . . . . . . . . . . .    1 X X X   X 0 1 1   . . .  --
* PR SKIP 1  . . . . . . . . . . . . .    1 0 0 0   1 0 0 1   . . .  89
* PR SKIP 2  . . . . . . . . . . . . .    1 0 0 1   0 0 0 1   . . .  91
* PR SKIP X  . . . . . . . . . . . . .    1 X X X   X 0 0 1   . . .  --
*                                         I I       I I I I
*                            SKIP BIT---I I       I I I I--WRITE BIT
*                                           I-------I I I
*                                               I     I I----IMMEDIATE
*                   SPACE--SKIP VALUE 8 4 2 1--I     I
*                                                     I---SENSE
*  WHERE X MAKES UP THE TOTAL NUMBER OF LINES
*  SPACED OR SKIPPED
*                         ( NOTE...LOOPING ON ANY IMMEDIATE SKIP COMMAND
* WILL PRODUCE NO CARRIAGE MOTION.  NO INDICATION OF THIS WILL BE GIVEN
* TO THE PROGRAM. )
*
**************************************************************************
```

6.2 1403 SENSE BYTE

```
**************************************************************************
*  ONE SENSE BYTE
*  BIT    MEANING                  STATUS
*
*   0   COMMAND REJECT           UNIT CHECK
*   1   INTERVENTION REQUIRED      ''    ''
*   2   BUS OUT CHECK              ''    ''
*   3   EQUIPMENT CHECK            ''    ''
*   4   DATA CHECK                 ''    ''
*   5   BUFFER CHECK               ''    ''
*   6   NOT USED
*   7   CHANNEL 9 SENSED         UNIT CHECK
**************************************************************************
```

-- LAST PAGE --

```
                        8383   TITLE
                        ********************************************************************
                        *  MODIFICATIONS                                                   *
                        *
                        * REVISION LEVEL 3.  THIS REVISION DIFFERS FROM VERSION 2 AS FOLLOWS...
                        *      1.  THIS PROGRAM NO LONGER RESTORES THE UCS BUFFER.  USE PROGRAM
                        *          ID F837 TO RESTORE THE UCS BUFFER.
                        *      2.  THE PROGRAM HAS BEEN MODIFIED TO INCLUDE TESTING OF THE
                        *          CHANNEL 9 AND 12 LATCHES WHICH WAS PREVIOUSLY DONE ON THE
                        *          NOW OBSOLETE PROGRAM ID F839.
                        *      3.  TESTING OF INVALID COMMANDS HAS BEEN REMOVED AND IS NOW BEING
                        *          DONE IN PROGRAM ID F831
                        *      4.  BUFFER RESTORE FUNCTION HAS BEEN REMOVED AND IS NOW BEING
                        *          DONE BY PROGRAM ID F837.
                        * E.C. PREREQUISITES
                        *     MACHINE . . . 2821 MUST BE AT EC 125655 OR LATER
                        *     PROGRAM . . . NONE
                        *
                        ********************************************************************
                        *    VERSION 2                                                     *
                        *      EC 125632  THE PROGRAM HAS BEEN MODIFIED TO RESET BLOCK DATA *
                        *                 CHECK LATCH, ON UCS PRINTERS, DURING INITIALIZATION*
                        *                 OF THE SECTION.                                  *
                        *
                        * USE DESCRIPTION F838* AT EC 125655, DATED NOV 15, 1966 OR LATER.
                        ********************************************************************
                        ********************************************************************
                        XF8383 START 4096
                               USING *,15
                        ******************                          ******************
                        * SECTION PREFACE ********************************** SECTION PREFACE *
                        ******************                          ******************
001000  F8383000      SECNO  DC    XL4'F8383000'      PROGRAM,SECTION AND REVISION NOS.  *
001004  00000000      SNSW   DC    XL4'00'            SECTION SENSE SWITCHES             *
001008  0000                 DC    XL2'00'                                               *
00100A  0000          ICM    DC    XL2'00'            INTERRUPTION CONDITION MASK        *
00100C  00            SDMF   DC    XL1'00'            SECTION DM FLAGS                   *
00100D  01            NIOU   DC    XL1'01'            NUMBER OF UNIT TABLE ENTRYS        *
00100E  C0            FLAG1  DC    X'C0'              EXCLUSIVE CPU                      *
00100F  00            FLAG2  DC    X'00'              I/O INT ARE ERR, EXT INT TO PROG   *
001010  0104000000    INPSW  DC    X'0104000000'      DISABLED, SPVSR STATE, NO PGM MASK *
001015  0011FC                DC    AL3(BEGIN)         ADR OF 1ST ROUTINE PREFIX          *
001018  0000000000000000      EXOPSW DC  XL8'0'        SECTION OLD EXTERNAL PSW           *
001020  0000000000000000      SVOPSW DC  XL8'00'       CLEAR ALL OLD PSWS                 *
001028  0000000000000000      PGOPSW DC  XL8'00'       PROGRAM OLD PSW                    *
001030  0000000000000000      MCOPSW DC  XL8'00'       MACHINE CHECK OLD PSW              *
001038  0000000000000000      IOOPSW DC  XL8'00'       I/O OLD PSW                        *
001040  0000000000000000      CSW    DC  XL8'00'       CHANNEL STATUS WORD                *
001048  00000000              CAW    DC  XL4'00'       CAW                                *
00104C  00000000000000000000  DC    XL12'00'           RESERVED FOR DM USE                *
001055  000000
001058  0004000000    EXNPSW DC    X'00040000000'     EXTERNAL NEW PSW                   *
00105D  000000        SRET   DC    XL3'0'             ADR OF EXT INTRPT ROUTINE          *
001060  0000000000000000      SVNPSW DC  XL8'00'       SUPERVISOR NEW PSW                 *
001068  0000000000000000      PGNPSW DC  XL8'00'       PROGRAM NEW PSW                    *
001070  0000000000000000      MCNPSW DC  XL8'00'       MACHINE CHECK NEW PSW              *
001078  01040000      IONPSW DC    XL4'01040000'      I/O NEW PSW                        *
00107C  00000000              DC    XL4'0'
001080                        DS    96C                96 BYTE REG DUMP AREA FOR DM USE   *
0010E0  83            UNIT1  DC    X'83'              UNIT TYPE -                        *
0010E1  00            U1OP   DC    X'00'              OPTIONAL FEATURES BYTE             *
0010E2  8000          U1ADDR DC    X'8000'            FLAGS AND CHAN/UNIT ADDRESS        *
                        ********************************************************************
                        ********************************************************************
                        *
                        *                        INITIALIZE ROUTINE                        *
```



```
0010E4  91 40 F 0E1           *
                        ********************************************************************
0010E8  47 80 F 0F4     INITAL TM    U1OP,X'40'        CHECK FOR STL FEATURE
0010EC  0A DO                  BC    NONE,ZOOM           BR. IF NOT DEFINED IN UDT
0010EE  20                     SVC   X'D0'
0010EF  15                     DC    X'20'             PRINT -STL-SECTION BYPASSED-
0010F0  FB2C                   DC    X'15'
0010F2  0A D6                  DC    AL2(STL-BASE+REG)
0010F4  0A DO                  SVC   X'D6'             EXIT FROM ROUTINE
0010F6  A0              ZOOM   SVC   X'D0'
0010F7  01                     DC    X'A0'
0010F8  F2F0                   DC    X'01'
0010FA  1B DD                  DC    AL2(BLANK-BASE+REG)
0010FC  91 40 E 196            SR    R13,R13           SET UP FOR SUPERVISOR STATE
001100  47 80 F 106            TM    406(14),X'40'     CHECK FOR FORCED PROBLEM STATE
001104  18 DF                  BC    NONE,BLOOP          BR. IF NOT
001106  58 CO F 0E0            LR    R13,R15           SET UP FOR PROBLEM STATE
00110A  54 CO F C90     BLOOP  L     R12,UNIT1         LOAD REG 12 FROM UNIT TABLE
00110E  49 CO F 1BC            N     R12,MOD50         AND OUT BITS FOR MODEL 50
001112  47 80 F 134            CH    R12,SAVDEV        COMPARE FOR SAME DEVICE ADDRESS
001116  40 CO F 1BC            BC    EQ,GITOUT         BR. IF EQUAL
00111A  0A DO                  STH   R12,SAVDEV        PLACE CURRENT DEVICE ADDR IN AREA
00111C  34                     SVC   X'D0'             PRINT OPERATOR INSTRUCTIONS
00111D  1B                     DC    X'34'             INSERT CARRIAGE TAPE
00111E  F13A                   DC    X'1B'
001120  0A DO                  DC    AL2(TEL1-BASE+REG)
001122  A0                     SVC   X'D0'             RESTORE CARRIAGE TO 1
001123  1C                     DC    X'A0'
001124  F155                   DC    X'1C'
001126  0A DO                  DC    AL2(TEL2-BASE+REG)
001128  A0                     SVC   X'D0'             CHECK POS OF BRUSHES
001129  2B                     DC    X'A0'
00112A  F171                   DC    X'2B'
00112C  0A DO                  DC    AL2(TEL3-BASE+REG)
00112E  80                     SVC   X'D0'             MAKE PRINTER READY
00112F  1F                     DC    X'80'
001130  F19C                   DC    X'1F'
001132  0A DA                  DC    AL2(TEL4-BASE+REG)
001134  92 00 F 98C    GITOUT MVI   OUTSNS+9,X'00'    WAIT FOR INTERRUPT TO CONTINUE
001138  07 FB                  BCR   UNC,R11           CLEAR SENSE
00113A  40C9D5E2C5D9E340E3     TEL1  DC    C' INSERT TEST CAR'   RETURN VIA REGISTER 11
001143  C5E2E340C3C1D9
00114A  D9C9C1C7C540E3C1D7           DC    C'RIAGE TAPE,'
001153  C56B
001155  40D9C5E2E3D6D9C540     TEL2  DC    C' RESTORE CARRIAG'
00115E  C3C1D9D9C9C1C7
001165  C540E3D640C3C8C1D5           DC    C'E TO CHAN. 1'
00116E  4B40F1
001171  40C3C8C5C3D240C6D6     TEL3  DC    C' CHECK FOR CHAN.'
00117A  D940C3C8C1D54B
001181  F140C8D6D3C56B40F1           DC    C'1 HOLE, 1 LINE P'
00118A  40D3C9D5C540D7
001191  C1E2E340C2D9E4E2C8           DC    C'AST BRUSHES'
00119A  C5E2
00119C  40D4C1D2C540D7D9D5     TEL4  DC    C' MAKE PRNTR RDY,'
0011A5  E3D940D9C4E86B
0011AC  40D7E4E2C840C9D5E3           DC    C' PUSH INTERRUPT'
0011B5  C5D9D9E4D7E3
0011BC                               CNOP  0,4
0011BC  FFFF            SAVDEV DC    X'FFFF'
0011BE  92 40 F CB4     LOOP   MVI   CCW1+4,X'40'     SET UP TO CHAIN COMMANDS
0011C2  41 A0 F CB0            LA    R10,CCW1          SET UP CAW
0011C6  91 80 F 004     STRTIO TM    SNSW,X'80'        SEE IF SENSE SWITCH 0 STILL ON
0011CA  47 80 F 1E2            BC    NONE,SQUARE       BR. IF SS 0 OFF
0011CE  50 AD 0 048            ST    R10,HCAW(R13)     SET UP CAW
0011D2  9D 00 C 000            TIO   0(R12)            ISSUE TIO
0011D6  47 70 F 1C6            BC    NCC0,STRTIO       LOOP UNTIL CLEAR
```

```
0011DA   9C 00 C 000          SIO   0(R12)              ISSUE START I-O
0011DE   47 F0 F 1C6          BC    UNC,STRTIO          BR. TO TIO
0011E2   58 9D 0 198   SQUARE L     R9,WT(R13)          LOAD WAIT FACTOR
0011E6   88 90 0 005          SRL   R9,5                ADJUST
0011EA   9D 00 C 000   TT     TIO   0(R12)              ISSUE TEST I-O
0011EE   46 90 F 1EA          BCT   R9,TT               LOOP UNTIL CLEAR
0011F2   92 00 F C84          MVI   CCW1+4,X'00'        RESTORE CCW TO NO CHAIN COMMAND
0011F6   47 F0 F 5F4          BC    UNC,SIOSIO          BACK TO MAIN PROGRAM
                       *
                       *
                       *
                       ********************************************************************
                       *
                       *
                       *                    ROUTINE 1 - CHANNEL 9 TEST                    *
                       *
                       *
                       ********************************************************************
0011FA                         CNOP  0,4
0011FA   07 00                 BCR   0,0
0011FC   01            BEGIN   DC    X'01'
0011FD   000308                DC    AL3(BEGIN2-BASE)
001200   45 B0 F 0E4            BAL   R11,INITAL          BR. TO INITIALIZER ROUTINE
001204   58 9E 0 198            L     R9,WT(R14)          LOAD WAIT FACTOR
001208   88 90 0 003            SRL   R9,3                ADJUST
00120C   9D 00 C 000   TSTCLR   TIO   0(R12)              CLEAR PENDING INTERRUPT
001210   47 70 F 236            BC    NCCO,ITRY           LOOP UNTIL CLEAR
001214   92 8B F 440   DO9       MVI   GOSKP,X'8B'         INSURE SKIP TO CHAN 1 IN CCW
001218   92 0F F BA8            MVI   SWITCH,X'0F'        SET UP SIO SWITCH
00121C   92 C0 F BA9            MVI   SWITCH+1,X'C0'
001220   92 09 F 424            MVI   NSWCH,X'09'         ROUTINE SWITCH
001224   41 A0 F 440            LA    R10,GOSKP           SET UP CAW
001228   50 AD 0 048            ST    R10,HCAW(R13)
00122C   45 60 F 5DC            BAL   R6,SIO1             BR. TO SIO ROUTINE
001230   47 F0 F 20C            BC    UNC,TSTCLR          BR. TO START AGAIN
001234   0A D6          END9    SVC   X'D6'               EXIT ROUTINE
001236   46 90 F 20C    ITRY    BCT   R9,TSTCLR           LOOP UNTIL CLEAR OR TIME OUT
00123A   47 F0 F 214            BC    UNC,DO9             TRY AGAIN FOR CLEAR DEVICE
00123E   95 01 F 982    CKIT    CLI   SAVSNS,X'01'        COMPARE FOR CHAN 9 IN SENSE
001242   47 60 F 286            BC    UNEQ,DECIDE         BR. IF NO UNIT CK CHAN 9
001246   91 01 D 044            TM    HCSW+4(R13),X'01'   TEST FOR UNIT EXCEPTION
00124A   47 80 F 27A            BC    NONE,REWORK         BR. IF NO UNIT EXCEPTION
00124E   0A D0                 SVC   X'D0'
001250   A0                     DC    X'A0'
001251   01                     DC    X'01'
001252   F2F0                   DC    AL2(BLANK-BASE+REG)
001254   0A D0                  SVC   X'D0'
001256   64                     DC    X'64'
001257   33                     DC    X'33'
001258   F3F1                   DC    AL2(UNEXUE-BASE+REG)
00125A   0A D0                  SVC   X'D0'
00125C   E0                     DC    X'E0'
00125D   0B                     DC    X'0B'
00125E   F983                   DC    AL2(OUTSNS-BASE+REG)
001260   0A D0          BACK9   SVC   X'D0'
001262   C0             BK9     DC    X'C0'
001263   10             BK91    DC    X'10'
001264   F2F2                   DC    AL2(BUTYFL-BASE+REG)
001266   92 C0 F 262            MVI   BK9,X'C0'           RESTORE MESSAGE PARAMETER
00126A   92 10 F 263            MVI   BK91,X'10'          RESTORE MESSAGE PARAMETER
00126E   91 80 F 004            TM    SNSW,X'80'          TEST FOR LOOP SW
001272   47 10 F 214            BC    ALL,DO9             BR. TO LOOP
001276   47 F0 F 28E            BC    UNC,CLR9            EXIT ROUTINE
00127A   92 04 F 262    REWORK  MVI   BK9,X'04'           SET UP MESSAGE PARAMETERS
00127E   92 13 F 263            MVI   BK91,X'13'          SET UP MESSAGE PARAMETERS
001282   47 F0 F 260            BC    UNC,BACK9           GO PRINT OUT CHAN 9 OK
001286   91 01 F 982    DECIDE  TM    SAVSNS,X'01'        SEE IF CHAN 9 IN SENSE
00128A   47 10 F 2C6            BC    ALL,VARY9           ALTER MESSAGE TO SAY--HAVE CHAN 9
```



```
00128E   91 01 D 044   DECI    TM    HCSW+4(R13),X'01'   SEE IF UNIT EXCEPTION
001292   47 80 F 2A0            BC    NONE,BACK10         BR. IF NO UNIT EXCEPTION
001296   92 E0 F 2A2            MVI   BK10,X'E0'          MODIFY MESSAGE PRINTOUT
00129A   0A D0                 SVC   X'D0'
00129C   64                    DC    X'64'
00129D   33                    DC    X'33'
00129E   F3F1                  DC    AL2(UNEXUE-BASE+REG)
0012A0   0A D0         BACK10  SVC   X'D0'
0012A2   64            BK10    DC    X'64'
0012A3   20                    DC    X'20'
0012A4   F2D0                  DC    AL2(BLAB-BASE+REG)
0012A6   0A D0                 SVC   X'D0'
0012A8   C0                    DC    X'C0'
0012A9   0B                    DC    X'0B'
0012AA   F983                  DC    AL2(OUTSNS-BASE+REG)
0012AC   92 64 F 2A2           MVI   BK10,X'64'
0012B0   D2 01 F 2D1 F 305     MVC   BLAB+1(2),NO        RESTORE CHAN 9 MESSAGE
0012B6   91 80 F 004           TM    SNSW,X'80'          TEST SS 0 FOR LOOP OPTION
0012BA   47 10 F 214           BC    ALL,DO9             BR. TO LOOP
0012BE   92 00 F 424   CLR9    MVI   NSWCH,X'00'         RESET ROUTINE SWITCH
0012C2   47 F0 F 234           BC    UNC,END9            BR. TO EXIT ROUTINE
0012C6   D2 01 F 2D1 F 2F0     MVC   BLAB+1(2),BLANK     REMOVE  N O  FROM MESSAGE
0012CC   47 F0 F 28E           BC    UNC,DECI            BR. TO GET REST OF PRINTOUTS
0012D0   40D5D640C3C8C1D540    BLAB  DC    C' NO CHAN 9 DETEC'
0012D9   F940C4C5E3C5C3
0012E0   E3C5C440C9D540E2C5            DC    C'TED IN SENSE BYT'
0012E9   D5E2C540C2E8E3
0012F0   4040          BLANK   DC    C'  '
0012F2   40C3C8C1D540F940C4    BUTYFL DC    C' CHAN 9 DETECTED'
0012FB   C5E3C5C3E3C5C4
001302   40D6D2         OK      DC    C' OK'
001305   D5D6           NO      DC    C'NO'
                       *
                       *
                       *
                       ********************************************************************
                       *
                       *
                       *                    ROUTINE 2 - CHANNEL 12 TEST                   *
                       *
                       *
                       ********************************************************************
001308                         CNOP  0,4
001308   02            BEGIN2  DC    X'02'               ROUTINE PREFIX
001309   000458                 DC    AL3(BEGIN3-BASE)    ROUTINE PREFIX
00130C   45 B0 F 0E4            BAL   R11,INITAL          BR. TO INITIALIZER ROUTINE
001310   9D 00 C 000   BACKUP  TIO   0(R12)              CLEAR PREVIOUS UNIT CHECK
001314   92 A3 F 440   DO12      MVI   GOSKP,X'A3'         INSURE SKIP TO CHAN 4 IN CCW
001318   92 12 F 424            MVI   NSWCH,X'12'         ROUTINE SWITCH
00131C   92 0F F BA8            MVI   SWITCH,X'0F'        SET UP SIO SWITCH
001320   92 C0 F BA9            MVI   SWITCH+1,X'C0'
001324   41 A0 F 440            LA    R10,GOSKP           SET UP CAW
001328   50 AD 0 048            ST    R10,HCAW(R13)       SET UP CAW
00132C   45 60 F 5DC            BAL   R6,SIO1             BR. TO SIO ROUTINE
001330   47 F0 F 310            BC    UNC,BACKUP          BR. TO TRY AGAIN
001334   0A D6          END12   SVC   X'D6'               ROUTINE EXIT
001336   91 01 D 044    GOTST   TM    HCSW+4(R13),X'01'   TEST FOR UNIT EXCEPTION
00133A   47 10 F 370            BC    ALL,ISGOOD          BR. IF NO ERROR
00133E   91 40 F BA8            TM    SWITCH,X'40'        WAS THERE UNIT CHECK
001342   47 80 F 356            BC    NONE,TELIM          BR. IF NO UNIT CHECK PREVIOUSLY
001346   92 C0 F 358    SAY1    MVI   TE,X'C0'            MODIFY MESSAGE PRINTOUT
00134A   0A D0                 SVC   X'D0'
00134C   64                    DC    X'64'
00134D   2D                    DC    X'2D'
00134E   F3C4                  DC    AL2(UNEXUC-BASE+REG)
001350   0A D0                 SVC   X'D0'
001352   E0                    DC    X'E0'
001353   0B                    DC    X'0B'
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001354    F983                      DC    AL2(OUTSNS-BASE+REG)
001356    0A D0                TELIM SVC   X'D0'
001358    44                   TE    DC    X'44'
001359    14                         DC    X'14'
00135A    F3B0                       DC    AL2(BLAB1-BASE+REG)
00135C    92 44 F 358                MVI   TE,X'44'            MODIFY MESSAGE PRINTOUT
001360    91 80 F 004          SPHERE TM    SNSW,X'80'          TEST FOR SS 0 ON
001364    47 10 F 314                BC    ALL,DO12            BR. TO LOOP IF SS 0 ON
001368    92 00 F 424          CLR12 MVI    NSWCH,X'00'         RESET ROUTINE SWITCH
00136C    47 F0 F 334                BC    UNC,END12           EXIT
001370    91 40 F BA8          ISGOOD TM    SWITCH,X'40'        UNIT CHECK PREVIOUSLY
001374    47 80 F 394                BC    NONE,NOPROB         BR. IF NO UNIT CK PREVIOUS
001378    92 C0 F 396                MVI   NOPB,X'C0'          MODIFY MESSAGE
00137C    D2 01 F 437 F 2F0          MVC   LOVLY1+2(2),BLANK   INSURE ERROR MESSAGE
001382    0A D0                      SVC   X'D0'
001384    A0                         DC    X'A0'
001385    01                         DC    X'01'
001386    F2F0                       DC    AL2(BLANK-BASE+REG)
001388    0A D0                      SVC   X'D0'
00138A    64                         DC    X'64'
00138B    2D                         DC    X'2D'
00138C    F3C4                       DC    AL2(UNEXUC-BASE+REG)
00138E    0A D0                      SVC   X'D0'
001390    E0                         DC    X'E0'
001391    0B                         DC    X'0B'
001392    F983                       DC    AL2(OUTSNS-BASE+REG)
001394    0A D0                NOPROB SVC   X'D0'
001396    14                   NOPB  DC    X'14'
001397    14                         DC    X'14'
001398    F425                       DC    AL2(LOVLY-BASE+REG)
00139A    D2 02 F 436 F 302          MVC   LOVLY1+1(3),OK      INSURE CORRENT PRINTOUT
0013A0    92 14 F 396                MVI   NOPB,X'14'          MODIFY MESSAGE PRINTOUT
0013A4    91 40 F BA8                TM    SWITCH,X'40'
0013A8    47 10 F 360                BC    ALL,SPHERE          BR. TO SEE IF LOOP SW IS ON
0013AC    47 F0 F 368                BC    UNC,CLR12           EXIT ROUTINE
                               *
0013B0    40D5D640C3C8C1D540   BLAB1 DC    C' NO CHAN 12 DETE'
0013B9    F1F240C4C5E3C5
0013C0    C3E3C5C4                   DC    C'CTED'
0013C4    40C7D6E340E4D5C5E7   UNEXUC DC    C' GOT UNEXPECTED '
0013CD    D7C5C3E3C5C440
0013D4    E4D5C9E340C3D240E6         DC    C'UNIT CK WHILE TE'
0013DD    C8C9D3C540E3C5
0013E4    E2E3C9D5C740C3C8C1         DC    C'STING CHAN 12'
0013ED    D540F1F2
0013F1    40C7D6E340E4D5C5E7   UNEXUE DC    C' GOT UNEXPECTED '
0013FA    D7C5C3E3C5C440
001401    E4D5C9E340C5E7C3C5         DC    C'UNIT EXCEPTION W'
00140A    D7E3C9D6D540E6
001411    C8C9D3C540E3C5E2E3         DC    C'HILE TESTING CHA'
00141A    C9D5C740C3C8C1
001421    D540F9                     DC    C'N 9'
001424    00                   NSWCH DC    X'00'
001425    40C3C8C1D540F1F240   LOVLY DC    C' CHAN 12 DETECTE'
00142E    C4C5E3C5C3E3C5
001435    C440D6D2             LOVLY1 DC   C'D OK'
001440    8B 001BAA 4000 0001  GOSKP CCW   X'8B',PRINT,X'40',1
001448    0B 001BAA 4000 0001        CCW   X'0B',PRINT,X'40',1
001450    0B 001BAA 0000 0001        CCW   X'0B',PRINT,X'00',1
                               *
                               *
                               *
                               ********************************************************************************
                               *                                                                              *
                               *                ROUTINE 3 - FORMS SPACE AND SKIP TEST                         *
                               *                                                                              *
                               ********************************************************************************
001458                               CNOP  0,4
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001458    03                   BEGIN3 DC    X'03'               ROUTINE PREFIX
001459    00FFFF                      DC    X'00FFFF'           ROUTINE PREFIX
00145C    45 B0 F 0E4                 BAL   11,INITAL           BR. TO INITIALIZE THE PROGRAM
001460    1B 77                T2B    SR    R7,R7               CLEAR CONTROL COUNTER
001462    41 50 F C2C                 LA    R5,PRINT+130        RESET REG 5 SLASH POSITION
001466    1B 44                NEXT   SR    R4,R4               CLEAR CONTROL CHARACTER
001468    91 FF F 005          NEXT1  TM    SNSW+1,X'FF'        CHECK FOR CONSTANT CCW - SS OPTION
00146C    47 80 F 478                 BC    NONE,NEXT2
001470    43 40 F 005                 IC    R4,SNSW+1           GET CCW FROM SWITCHES
001474    47 F0 F 47C                 BC    UNC,NEXT3           BYPASS NEXT CCW FETCH
001478    43 47 F B59          NEXT2  IC    R4,CCTAB(R7)        GET NEXT CCW FROM TABLE
00147C    42 40 F CB0          NEXT3  STC   R4,CCW1             STORE INST IN CCW
001480    92 40 F BAA                 MVI   PRINT,C' '          CLEAR THE PRINT AREA
001484    D2 82 F BAB F BAA           MVC   PRINT+1(131),PRINT  CLEAR THE PRINT AREA
00148A    94 00 F BA9                 NI    SWITCH+1,X'00'      CLEAR SWITCH
00148E    91 02 F CB0          TWRITE TM    CCW1,X'02'          TEST FOR WRITE
001492    47 10 F 4A0                 BC    ALL,IMMED           BR. IF AN IMMEDIATE COMMAND
001496    D2 05 F BAA F AFB           MVC   PRINT(6),CWRITE     MOVE 'WRITE' TO PRINT
00149C    47 F0 F 4AA                 BC    UNC,TSPACE
0014A0    D2 05 F BAA F ABE    IMMED  MVC   PRINT(6),CIMMED     MOVE 'IMMED' TO PRINT OUT
0014A6    96 40 F BA9                 OI    SWITCH+1,X'40'      SET UP IMMEDATE SPACE SWITCH
0014AA    91 80 F CB0          TSPACE TM    CCW1,X'80'          TEST SPACE
0014AE    47 10 F 512                 BC    ALL,SKIP            BR. IF A SKIP COMMAND
0014B2    D2 05 F BB0 F B01           MVC   PRINT+6(6),CSPACE   MOVE 'SPACE' TO PRINT
0014B8    88 40 0 003                 SRL   R4,3                SHIFT BITS RIGHT TO GET SPACE
0014BC    42 40 F BB7                 STC   R4,PRINT+13           NUMBER. STOR SPACE NO. IN PRINT
0014C0    96 F0 F BB7                 OI    PRINT+13,X'F0'        AREA. OR IN -F0- TO PRINT OUT
0014C4    91 02 F CB0                 TM    CCW1,X'02'          CHECK FOR IMMEADATE SPACE
0014C8    47 80 F 4E8                 BC    NONE,STOSP          BR. IF A SPACE COMMAND
0014CC    1B 54                       SR    R5,R4               STOR CURRENT  /  POS IN REG 4
0014CE    41 60 F BC8                 LA    R6,PRINT+30
0014D2    91 04 F 0E1                 TM    U1OP,X'04'          120 POSITION PRINTER
0014D6    47 80 F 4DE                 BC    NONE,BZ             BR. IF NOT
0014DA    41 60 F BBC                 LA    R6,PRINT+18         CHECK SLASH COUNTER
0014DE    19 56                BZ     CR    R5,R6               SEE IF SLASH IN MESSAGE AREA. BR. NO
0014E0    47 20 F 4FE                 BC    HI,NOREST           DO NOT RESET THE SLASH COUNTER
0014E4    47 F0 F 4EE                 BC    UNC,RESET5
0014E8    18 04                STOSP  LR    R0,R4               STORE SPACE COUNT
0014EA    47 F0 F 4FE                 BC    UNC,NOREST
0014EE    41 50 F C2C          RESET5 LA    R5,PRINT+130        RESET SLASH POSITION
0014F2    91 04 F 0E1                 TM    U1OP,X'04'          CHECK IF 120 POS PRINTER
0014F6    47 80 F 4FE                 BC    NONE,NOREST         BR. IF NOT
0014FA    41 50 F C20                 LA    R5,PRINT+118
0014FE    92 C5 F BBC          NOREST MVI   PRINT+18,C'E'       SET E TO PRINT
001502    D2 71 F BBD F BBC           MVC   PRINT+19(114),PRINT+18 MOVE E TO ALL LOCATIONS
001508    D2 02 5 000 F CAA           MVC   0(3,5),CSLASH       INSERT SLASH
00150E    47 F0 F 55C                 BC    UNC,SETCAW
001512    D2 07 F BB0 F AF3    SKIP   MVC   PRINT+6(8),CSKIP    MOVE 'SKIP ' TO PRINT
001518    96 80 F BA9                 OI    SWITCH+1,X'80'      SET UP SKIP SWITCH
00151C    88 40 0 003          ITEM   SRL   R4,3                SHIFT BITS TO DETERMINE SKIP TO WHAT
001520    4B 40 F CA4                 SH    R4,CX19             SUBTRACT 19
001524    47 20 F 542                 BC    HI,GRTER
001528    4A 40 F CA0                 AH    R4,CX9
00152C    42 40 F BBA                 STC   R4,PRINT+16         STORE SKIP TO NUMBER
001530    96 F0 F BBA                 OI    PRINT+16,X'F0'      LOAD IN F0 TO PRINT OUT
001534    92 40 F A66                 MVI   CSKFAL+5,X'40'
001538    D2 00 F A67 F BBA           MVC   CSKFAL+6(1),PRINT+16  PUT CHAR IN FAIL MESSAGE
00153E    47 F0 F 4EE                 BC    UNC,RESET5
001542    4B 40 F CA8          GRTER  SH    R4,CX1              SUBTRACT 1 FROM SKIP TO INFO
001546    42 40 F BBA                 STC   R4,PRINT+16         MOVE SKIP TO INFO TO PRINT
00154A    96 F0 F BBA                 OI    PRINT+16,X'F0'      ADJUST FOR PRINTOUT
00154E    92 F1 F BB9                 MVI   PRINT+15,X'F1'      MOVE HIGH ORDER DIGIT TO PRINT
001552    D2 01 F A66 F BB9           MVC   CSKFAL+5(2),PRINT+15  PUT CHAR IN FAIL MESSAGE
001558    47 F0 F 4EE                 BC    UNC,RESET5            RESET SLASH COUNTER
00155C    41 40 F CB0          SETCAW LA    R4,CCW1             SET UP
001560    50 4D 0 048                 ST    R4,HCAW(R13)          CAW
001564    95 01 F CB0                 CLI   CCW1,X'01'          CHECK FOR SPACE SUPPRESS
001568    47 60 F 576                 BC    UNEQ,BSIO
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00156C    96 20 F BA9              OI    SWITCH+1,X'20'
001570    D2 18 F BAA F B07        MVC   PRINT(25),CSPSUP      SPACE SUPPRESS TO PRINT
001576    45 60 F 5D8    BSIO      BAL   R6,SIOBEG             SIO
00157A    95 01 F C80              CLI   CCW1,X'01'            CHECK FOR SPACE SUPPRESS
00157E    47 80 F 590              BC    EQ,IMDATA
001582    91 02 F C80              TM    CCW1,X'02'            CHECK FOR IMMEDIATE SPACE
001586    47 10 F 590              BC    ALL,IMDATA
00158A    1B 50                    SR    R5,R0                 SUBTRACT SLASH COUNT
00158C    47 F0 F 594              BC    UNC,LRED6
001590    5B 50 F C94    IMDATA    S     R5,C1                 UP DATE SLASH COUNTER
001594    41 60 F BC8    LRED6     LA    R6,PRINT+30           SET UP FOR MAX
001598    91 04 F 0E1              TM    U1OP,X'04'            CHECK FOR 120 POSITION PRINTER
00159C    47 80 F 5A4              BC    NONE,DZ               BR. IF NOT
0015A0    41 60 F BBC              LA    R6,PRINT+18
0015A4    19 56          DZ        CR    R5,R6                 CHECK TO SEE IF SLASH IS MAX
0015A6    47 20 F 5BA              BC    HI,NOSUP
0015AA    41 50 F C2C              LA    R5,PRINT+130
0015AE    91 04 F 0E1              TM    U1OP,X'04'            CHECK FOR 120 POS PRINTER
0015B2    47 80 F 5BA              BC    NONE,NOSUP
0015B6    41 50 F C20              LA    R5,PRINT+118
0015BA    91 FF F 005    NOSUP     TM    SNSW+1,X'FF'          CHECK FOR CONSTANT CCW
0015BE    47 50 F 466              BC    ANY,NEXT              BR. IF CONSOLE ENTERED COMMAND
0015C2    91 20 F 004              TM    SNSW,X'20'            TEST SENSE SWITCH 2
0015C6    47 10 F 466              BC    ALL,NEXT              BR. TO LOOP CURRENT SIO COMMAND
0015CA    5A 70 F C94              A     R7,C1                 UP DATE CONTROL TABLE
0015CE    55 70 F C98              CL    R7,C54                PROGRAM FINISHED
0015D2    47 40 F 466              BC    LO,NEXT                NOT FINISHED
0015D6    0A D6          EXIT1     SVC   X'D6'                 ROUTINE FINISHED
0015D8                             CNOP  0,4                   PROGRAM ALIGN
                         *
                         *
                         *
                         ********************************************************************************
                         *
                         *                          *****  SIO ROUTINE  *****                  *
                         *
                         ********************************************************************************
0015D8    94 00 F BA8    SIOBEG NI     SWITCH,X'00'            RESET SWITCH
0015DC    92 00 F CC5    SIO1   MVI    CCW3+5,X'00'            CLEAR SENSE DATA
0015E0    92 00 D 044           MVI    HCSW+4(R13),X'00'       CLEAR STATUS
0015E4    58 9E 0 198           L      R9,WT(R14)              LOAD WAIT FACTOR
0015E8    88 90 0 003           SRL    R9,3                    ADJUST
0015EC    91 80 F 004           TM     SNSW,X'80'              TEST SENSE SWITCH 0
0015F0    47 10 F 61E           BC     ALL,WHICH               BR. TO LOOP SIO  TIO
0015F4    9C 00 C 000    SIOSIO SIO    0(R12)                  START I/O
0015F8    47 10 F 62A           BC     CC3,SNOTOP                NOT OPERATIONAL
0015FC    47 20 F 640           BC     CC2,SBUSY                 DEVICE / CHANNEL BUSY
001600    47 40 F 656           BC     CC1,SCSWST                CSW STORED
001604    91 40 F BA9           TM     SWITCH+1,X'40'          CHECK FOR IMMEDATE OPERATION
001608    47 80 F 65E           BC     NONE,TIOBEG               GO TO WAIT FOR I/O SIGNAL
00160C    91 FF F BA8           TM     SWITCH,X'FF'            CHECK FOR SECOND TIME IN LOOP
001610    47 50 F 65E           BC     ANY,TIOBEG                BR. IF SECOND TIME THROUGH
001614    0A D0                 SVC    X'D0'                   PRINT - NO CSW AFTER IMMEDATE
001616    4021                  DC     XL2'4021'                     OPERATION
001618    FAC4                  DC     AL2(NOCSW-BASE+REG)
00161A    47 F0 F 65E           BC     UNC,TIOBEG               SIO OK
00161E    91 1B F 424    WHICH  TM     NSWCH,X'1B'             SEE IF FROM RTN 1 OR 2
001622    47 70 F 1C6           BC     MIXED,STRTIO            BR. TO LOOP
001626    47 F0 F 1BE           BC     UNC,LOOP
                         ******
                         *       SIO   NOT OPERATIONAL ROUTINE
                         ******
00162A    0A D0          SNOTOP SVC    X'D0'                   PRINT-DEVICE NOT OPERATIONAL
00162C    A0                    DC     X'A0'
00162D    01                    DC     X'01'
00162E    F2F0                  DC     AL2(BLANK-BASE+REG)
001630    0A D0                 SVC    X'D0'
001632    4430                  DC     XL2'4430'
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001634    F990                     DC    AL2(CNOTOP-BASE+REG)
001636    91 80 F 004              TM    SNSW,X'80'              TEST FOR SENSE SWITCH 0 TO LOOP
00163A    47 10 F 1BE              BC    ALL,LOOP                BR. TO LOOP IF SS 0 IS ON
00163E    07 F6                    BCR   UNC,R6
                         *******
                         *       SIO   BUSY ROUTINE
                         *******
001640    46 90 F 5F4    SBUSY     BCT   R9,SIOSIO               BUSY TOO LONG
001644    0A D0                    SVC   X'D0'
001646    A0                       DC    X'A0'
001647    01                       DC    X'01'
001648    F2F0                     DC    AL2(BLANK-BASE+REG)
00164A    0A D0                    SVC   X'D0'                   PRINT-BUSY TOO LONG
00164C    4429                     DC    XL2'4429'                AFTER SIO
00164E    F9C0                     DC    AL2(CSBUSY-BASE+REG)
001650    9D 00 C 000              TIO   0(R12)
001654    07 F6                    BCR   UNC,R6
                         *******
                         *       SIO   CSW STORED ROUTINE
                         *******
001656    91 C0 F BA9    SCSWST    TM    SWITCH+1,X'C0'          CHECK FOR IMMEDATE COMMAND
00165A    47 50 F 68E              BC    ANY,TCSWST
                         *
                         *
                         *
                         ********************************************************************************
                         *
                         *                              TIO ROUTINE
                         *
                         ********************************************************************************
00165E    91 60 F BA8    TIOBEG    TM    SWITCH,X'60'            CHECK FOR SENSE COMMAND
001662    47 50 F 82C              BC    ANY,TIOSEN
001666    58 9E 0 198              L     R9,WT(R14)              LOAD WAIT FACTOR
00166A    88 90 0 003              SRL   R9,3                    ADJUST
00166E    9D 00 C 000    TIOTIO    TIO   0(R12)                  TEST I/O
001672    47 10 F 62A              BC    CC3,SNOTOP                CHECK NOT OPER
001676    47 20 F 682              BC    CC2,TBUSY                 CHECK FOR BUSY
00167A    47 40 F 68E              BC    CC1,TCSWST                CHECK CSW STORED
00167E    47 80 F 6EE              BC    CC0,TDVEND                CHECK FOR ERRORS
                         *******
                         *       TIO   TBUSY
                         *******
001682    46 90 F 66E    TBUSY     BCT   R9,TIOTIO
001686    0A D0                    SVC   X'D0'                   PRINT-BUSY TOO LONG
001688    4410                     DC    XL2'4410'                AFTER TIO
00168A    FA81                     DC    AL2(CTBUSY-BASE+REG)
00168C    07 F6                    BCR   UNC,R6                  BACK TO PROGRAM
                         ******
                         *       TIO   CSW STORED ROUTINE
                         ******
00168E    91 02 D 044    TCSWST    TM    HCSW+4(R13),X'02'       TEST FOR UNIT CHECK
001692    47 80 F 69E              BC    NONE,TCSW               BR. IF NO UNIT CHECK
001696    96 40 F BA8              OI    SWITCH,X'40'            SET UNIT CHECK SWITCH
00169A    47 F0 F 6FA              BC    UNC,MISSDE
00169E    91 1B F 424    TCSW      TM    NSWCH,X'1B'             TEST IF FROM RTN 9 OR 12
0016A2    47 70 F 6EE              BC    MIXED,TDVEND            BR. IF FROM RTN 9 OR 12
0016A6    91 80 F BA8              TM    SWITCH,X'80'            CHECK FOR FIRST TIME THRU
0016AA    47 10 F 6EE              BC    ALL,TDVEND              CHECK FOR DEVICE END
0016AE    96 80 F BA8              OI    SWITCH,X'80'            SET SWITCH
0016B2    91 08 D 044              TM    HCSW+4(R13),X'08'       TEST FOR CHANNEL END
0016B6    47 10 F 6D6              BC    ALL,CECDE
0016BA    D2 07 F 9EA D 040        MVC   CSCSW(8),HCSW(R13)      SAVE CSW
0016C0    0A D0                    SVC   X'D0'
0016C2    A0                       DC    X'A0'
0016C3    01                       DC    X'01'
0016C4    F2F0                     DC    AL2(BLANK-BASE+REG)
0016C6    0A D0                    SVC   X'D0'                   PRINT-NO CHANNEL END
0016C8    440F                     DC    XL2'440F'
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0016CA    FA11                          DC    AL2(CNCE-BASE+REG)
0016CC    D2 07 D 040 F 9EA             MVC   HCSW(8,R13),CSCSW     RESTORE CSW
0016D2    47 F0 F 6EE                   BC    UNC,TDVEND
0016D6    91 04 D 044           CECDE   TM    HCSW+4(R13),X'04'     TEST FOR DEVICE END
0016DA    47 80 F 66E                   BC    NONE,TIOTIO
0016DE    0A D0                         SVC   X'D0'
0016E0    A0                            DC    X'A0'
0016E1    01                            DC    X'01'
0016E2    F2F0                          DC    AL2(BLANK-BASE+REG)
0016E4    0A D0                         SVC   X'D0'                 PRINT-DEVICE END
0016E6    440F                          DC    XL2'440F'
0016E8    FA71                          DC    AL2(CDEERR-BASE+REG)
0016EA    47 F0 F 66E                   BC    UNC,TIOTIO
0016EE    91 02 D 044           TDVEND  TM    HCSW+4(R13),X'02'     TEST FOR UNIT CHECK
0016F2    47 80 F 706                   BC    NONE,TDVE             BR. IF NO UNIT CHECK
0016F6    96 40 F BA8                   OI    SWITCH,X'40'          SET UNIT CHECK SWITCH
0016FA    91 1B F 424           MISSDE  TM    NSWCH,X'1B'           SEE IF FROM RTN 9 OR 12
0016FE    47 70 F 8E2                   BC    MIXED,DOSNS           GO ISSUE SENSE
001702    47 F0 F 764                   BC    UNC,TIOOK             GO ON IF NOT
001706    D2 01 F 98C F 98E     TDVE    MVC   OUTSNS+9(2),XX        CLEAR SENSE PRINTOUT
00170C    92 00 F 982                   MVI   SAVSNS,X'00'          CLEAR SENSE SAVE AREA
001710    91 04 D 044                   TM    HCSW+4(R13),X'04'     TEST FOR DEVICE END
001714    47 10 F 734                   BC    ALL,DEDONE            BR. IF RECEIVED DEVICE END
001718    46 90 F 66E                   BCT   R9,TIOTIO
00171C    D2 07 F 9EA D 040     NOGOT   MVC   CSCSW(8),HCSW(R13)    SAVE CSW
001722    0A D0                         SVC   X'D0'
001724    A0                            DC    X'A0'
001725    01                            DC    X'01'
001726    F2F0                          DC    AL2(BLANK-BASE+REG)
001728    0A D0                         SVC   X'D0'                 PRINT-NO DEVICE END
00172A    440F                          DC    XL2'440F'
00172C    FA91                          DC    AL2(CNDEND-BASE+REG)
00172E    D2 07 D 040 F 9EA             MVC   HCSW(8,R13),CSCSW     RESTORE CSW
001734    91 40 F BA8           DEDONE  TM    SWITCH,X'40'          TEST TO SKIP BUSY CHECK
001738    47 10 F 764                   BC    ALL,TIOOK             BR. IF SWITCH ON
00173C    91 09 F 424           DEBUSY  TM    NSWCH,X'09'
001740    47 10 F 286                   BC    ALL,DECIDE            BR. IF FROM RTN 1
001744    91 10 D 044                   TM    HCSW+4(R13),X'10'     TEST FOR BUSY
001748    47 80 F 764                   BC    NONE,TIOOK            BR. IF NOT BUSY
00174C    D2 07 F 9EA D 040             MVC   CSCSW(8),HCSW(R13)    SAVE CSW
001752    0A D0                         SVC   X'D0'
001754    A0                            DC    X'A0'
001755    01                            DC    X'01'
001756    F2F0                          DC    AL2(BLANK-BASE+REG)
001758    0A D0                         SVC   X'D0'                 PRINT UNIT BUSY AFTER DEVICE END
00175A    441C                          DC    XL2'441C'
00175C    FAA1                          DC    AL2(CDBUSY-BASE+REG)
00175E    D2 07 D 040 F 9EA             MVC   HCSW(8,R13),CSCSW     RESTORE CSW
001764    91 40 F BA8           TIOOK   TM    SWITCH,X'40'          TEST UNIT CHECK SWITCH
001768    47 80 F 788                   BC    NONE,SKIP1
00176C    41 40 F CC0                   LA    R4,CCW3
001770    50 4D 0 048                   ST    R4,HCAW(R13)
001774    91 09 F 424                   TM    NSWCH,X'09'           TEST IF FROM RTN 1
001778    47 10 F 23E                   BC    ALL,CKIT              BR. TO CHECK IF FROM RTN 1
00177C    91 12 F 424                   TM    NSWCH,X'12'           TEST IF FROM RTN 2
001780    47 10 F 336                   BC    ALL,GOTST             GO TEST FOR UNIT EXCEPTION
001784    47 F0 F 5F4                   BC    UNC,SIOSIO
001788    91 12 F 424           SKIP1   TM    NSWCH,X'12'           TEST IF FROM RTN 2
00178C    47 10 F 336                   BC    ALL,GOTST             GO TEST FOR UNIT EXCEPTION
001790    91 04 F BA8                   TM    SWITCH,X'04'
001794    47 80 F 7A4                   BC    NONE,SKIP2            NO NINE HOLE
001798    0A D0                         SVC   X'D0'
00179A    A0                            DC    X'A0'
00179B    01                            DC    X'01'
00179C    F2F0                          DC    AL2(BLANK-BASE+REG)
00179E    0A D0                         SVC   X'D0'                 PRINT SKIP FAILED
0017A0    440F                          DC    X'440F'
0017A2    FA61                          DC    AL2(CSKFAL-BASE+REG)
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0017A4    91 80 F BA9           SKIP2   TM    SWITCH+1,X'80'        CHECK FOR SKIP FLAG
0017A8    47 80 F 7D6                   BC    NONE,SPSUP            GO TO SPACE SUPPRESS
0017AC    95 A1 F CB0                   CLI   CCW1,X'A1'            CHECK FOR TEST HOLE
0017B0    47 40 F 7BC                   BC    LO,NITM
0017B4    95 D1 F CB0                   CLI   CCW1,X'D1'
0017B8    47 40 F 7C4                   BC    LO,TWTM
0017BC    96 04 F BA8           NITM    OI    SWITCH,X'04'          SET NINE SWITCH
0017C0    47 F0 F 7C8                   BC    UNC,FTE
0017C4    96 08 F BA8           TWTM    OI    SWITCH,X'08'          SET TWELVE HOLE SWITCH
0017C8    91 02 F CB0           FTE     TM    CCW1,X'02'            CHECK FOR IMMEDIATE OP
0017CC    47 10 F 7D6                   BC    ALL,SPSUP             GO TO SPACE SUPPRESS
0017D0    D2 0D F BAA F AE5             MVC   PRINT(14),CCHAN
0017D6    95 01 F CB0           SPSUP   CLI   CCW1,X'01'            CHECK FOR SPACE SUPPRESS
0017DA    47 60 F 7E4                   BC    UNEQ,SPACE                GO TO IMMEDIATE SPACE CHECK
0017DE    D2 09 F BB9 F B21             MVC   PRINT+15(10),COKXX    MASK OUT FAILED
0017E4    91 E0 F BA9           SPACE   TM    SWITCH+1,X'E0'        CHECK FOR SPACE IMMEDIATE
0017E8    47 80 F 80E                   BC    NONE,TSTCK
0017EC    94 00 F BA9                   NI    SWITCH+1,X'00'        CLEAR SWITCH
0017F0    94 0F F BA8                   NI    SWITCH,X'0F'          RESET SWITCHES
0017F4    91 FE F CC5                   TM    CCW3+5,X'FE'          SEE IF ANY SENSE INFO
0017F8    47 80 F 802                   BC    NONE,BYBY1
0017FC    0A D0                         SVC   X'D0'
0017FE    C0                            DC    X'C0'
0017FF    01                            DC    X'01'
001800    F2F0                          DC    AL2(BLANK-BASE+REG)
001802    41 40 F CB8           BYBY1   LA    R4,CCW2               SET UP CAW
001806    50 4D 0 048                   ST    R4,HCAW(R13)
00180A    47 F0 F 5DC                   BC    UNC,SIO1              BR. TO SIO
00180E    91 08 F BA8           TSTCK   TM    SWITCH,X'08'          CHECK FOR TWELVE HOLE SWITCH
001812    47 80 F 8D2                   BC    NONE,CHANOF           GO PRINT BLANK
001816    91 01 D 044                   TM    HCSW+4(R13),X'01'     TEST FOR UNIT EXCEPTION
00181A    47 10 F 8D2                   BC    ALL,CHANOF
00181E    0A D0                         SVC   X'D0'
001820    A0                            DC    X'A0'
001821    01                            DC    X'01'
001822    F2F0                          DC    AL2(BLANK-BASE+REG)
001824    0A D0                         SVC   X'D0'                 PRINT SKIP FAILED
001826    440F                          DC    X'440F'
001828    FA61                          DC    AL2(CSKFAL-BASE+REG)
00182A    07 F6                 SIOFIN  BCR   UNC,R6                 BRANCH BACK TO MAIN PROGRAM
                                *
                                *
                                *
                                ********************************************************************
                                *
                                *                    TIO SENSE ROUTINE
                                *
                                ********************************************************************
00182C    58 9E 0 198           TIOSEN  L     R9,WT(R14)            LOAD WAIT FACTOR
001830    88 90 0 004                   SRL   R9,4                  ADJUST
001834    9D 00 C 000           TS      TIO   0(R12)                TEST I-O
001838    47 80 F 840                   BC    CC0,BILLF               BR. IF CLEAR
00183C    46 90 F 834                   BCT   R9,TS
001840    91 FE F CC5           BILLF   TM    CCW3+5,X'FE'          TEST FOR ANY SENSE INFO
001844    47 50 F 85A                   BC    ANY,HDR               GO PRINT HEADER IF ANY SENSE
001848    91 04 F BA8                   TM    SWITCH,X'04'          IS CHAN 9 EXPECTED
00184C    47 80 F 788                   BC    NONE,SKIP1            BR. IF NO CHAN 9 EXPECTED
001850    91 01 F CC5                   TM    CCW3+5,X'01'          IS CHAN 9 IN SENSE BYTE
001854    47 80 F 85A                   BC    NONE,HDR              BR. IF NO CHAN 9 EXPECTED
001858    07 F6                         BCR   UNC,R6                RETURN VIA REG 6
00185A    0A D0                 HDR     SVC   X'D0'
00185C    64                            DC    X'64'
00185D    01                            DC    X'01'
00185E    F2F0                          DC    AL2(BLANK-BASE+REG)
001860    91 80 F CC5           TSAVBL  TM    CCW3+5,X'80'
001864    47 80 F 86E                   BC    NONE,INTREQ
001868    0A D0                         SVC   X'D0'                 PRINT-COMMAND REJECT
00186A    E00F                          DC    XL2'E00F'
```

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00186C   FA21                        DC    AL2(CCOMRJ-BASE+REG)
00186E   91 40 F CC5        INTREQ   TM    CCW3+5,X'40'
001872   47 80 F 87C                 BC    NONE,BUSOC
001876   0A DO                       SVC   X'DO'                 PRINT-INT REQUIRED
001878   E00F                       DC    XL2'E00F'
00187A   FA31                       DC    AL2(CINTRQ-BASE+REG)
00187C   91 20 F CC5        BUSOC    TM    CCW3+5,X'20'
001880   47 80 F 88A                 BC    NONE,EQCK
001884   0A DO                       SVC   X'DO'                 PRINT-BUS OUT CHECK
001886   E00F                       DC    XL2'E00F'
001888   FA41                       DC    AL2(CBUSOC-BASE+REG)
00188A   91 10 F CC5        EQCK     TM    CCW3+5,X'10'
00188E   47 80 F 898                 BC    NONE,DTACK            BR. IF NO DATA CHECK
001892   0A DO                       SVC   X'DO'                 PRINT-EQUIPMENT CHECK
001894   E010                       DC    XL2'E010'
001896   FA51                       DC    AL2(CEQPCK-BASE+REG)
001898   91 08 F CC5        DTACK    TM    CCW3+5,X'08'          TEST FOR DATA CHECK
00189C   47 80 F 8A6                 BC    NONE,BUFCK            BR. IF NO DATA CHECK
0018A0   0A DO                       SVC   X'DO'
0018A2   E0                         DC    X'E0'
0018A3   0B                         DC    X'0B'
0018A4   FB41                       DC    AL2(DATOUT-BASE+REG)
0018A6   91 04 F CC5        BUFCK    TM    CCW3+5,X'04'          TEST FOR BUFFER CHECK
0018AA   47 80 F 8B4                 BC    NONE,SENOK            BR. IF NO BUFFER CHECK
0018AE   0A DO                       SVC   X'DO'
0018B0   E0                         DC    X'E0'
0018B1   0D                         DC    X'0D'
0018B2   FB4C                       DC    AL2(BUFOUT-BASE+REG)
0018B4   91 04 F BA8        SENOK    TM    SWITCH,X'04'          CHECK FOR NINE HOLE SWITCH
0018B8   47 80 F 788                 BC    NONE,SKIP1
0018BC   91 01 F CC5                 TM    CCW3+5,X'01'
0018C0   47 10 F 8D2                 BC    ALL,CHANOF            GO PRINT BLANK AND CLEAR CHAIN FLAG
0018C4   0A DO                       SVC   X'DO'
0018C6   E0                         DC    X'E0'
0018C7   01                         DC    X'01'
0018C8   F2F0                       DC    AL2(BLANK-BASE+REG)
0018CA   0A DO                       SVC   X'DO'                 PRINT-SKIP FAILED
0018CC   C00F                       DC    XL2'C00F'
0018CE   FA61                       DC    AL2(CSKFAL-BASE+REG)
0018D0   07 F6                      BCR   UNC,R6
0018D2   91 FE F CC5        CHANOF   TM    CCW3+5,X'FE'          SEE IF ANY SENSE INFO
0018D6   47 80 F 8E0                 BC    NONE,BYBY
0018DA   0A DO                       SVC   X'DO'
0018DC   C0                         DC    X'C0'
0018DD   01                         DC    X'01'
0018DE   F2F0                       DC    AL2(BLANK-BASE+REG)
0018E0   07 F6              BYBY     BCR   UNC,R6
                             *
0018E2   D2 07 F 9EA D 040  DOSNS    MVC   CSCSW(8),HCSW(R13)    SAVE CSW
0018E8   41 40 F CC0        HOPE     LA    R4,CCW3               SET UP TO DO SENSE
0018EC   50 4D 0 048                 ST    R4,HCAW(R13)          SET UP TO DO SENSE COMMAND
0018F0   9C 00 C 000        START    SIO   0(R12)                DO SENSE
0018F4   47 10 F 954                 BC    CC3,ISNOOP              BR. IF NOT OPERATIONAL
0018F8   47 20 F 95C                 BC    CC2,ISBSY               BR. IF BUSY
0018FC   47 40 F 936                 BC    CC1,OHNO                BR. IF CSW STORED
001900   58 9E 0 198                 L     R9,WT(R14)            LOAD WAIT
001904   88 90 0 004                 SRL   R9,4                  ADJUST
001908   9D 00 C 000        TSTIO    TIO   0(R12)                DO TIO SENSE
00190C   47 80 F 914                 BC    CC0,GOTIT
001910   46 90 F 908                 BCT   R9,TSTIO              TRY AGAIN
001914   92 00 F 982        GOTIT    MVI   SAVSNS,X'00'          CLEAR SENSE SAVE AREA
001918   D2 00 F 982 F CC5           MVC   SAVSNS(1),CCW3+5      MOVE SENSE BYTE TO SAVE
00191E   D2 00 F 98C F CC5           MVC   OUTSNS+9(1),CCW3+5    MOVE SENSE TO MESSAGE
001924   0A DD                       SVC   X'DD'
001926   0001                       DC    AL2(1)
001928   098C                       DC    AL2(OUTSNS+9-BASE)    CONVERT FOR MESSAGE OUTPUT
00192A   098C                       DC    AL2(OUTSNS+9-BASE)    CONVERT FOR MESSAGE OUTPUT
00192C   D2 07 D 040 F 9EA           MVC   HCSW(8,R13),CSCSW     RESTORE CSW
```



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001932   47 F0 F 734                 BC    UNC,DEDONE            BR.
001936   91 02 D 044        OHNO     TM    HCSW+4(R13),X'02'     IS IT UNIT CHECK
00193A   47 10 F 942                 BC    ALL,IMWEAK            BR. IF UNIT CHECK
00193E   47 F0 F 948                 BC    UNC,PLEASE
001942   0A DO              IMWEAK   SVC   X'DO'
001944   44                         DC    X'44'
001945   1E                         DC    X'1E'
001946   F964                       DC    AL2(SICK-BASE+REG)
001948   9D 00 C 000        PLEASE   TIO   0(R12)                CLEAR
00194C   47 70 F 948                 BC    NCC0,PLEASE             TRY AGAIN
001950   47 F0 F 8E8                 BC    UNC,HOPE
001954   45 60 F 62A        ISNOOP   BAL   R6,SNOTOP             GO PRINT NOT OPERATIONAL
001958   47 F0 F 8E8                 BC    UNC,HOPE
00195C   45 60 F 640        ISBSY    BAL   R6,SBUSY              GO PRINT DEVICE BUSY
001960   47 F0 F 8E8                 BC    UNC,HOPE
001964   40C7D6E340E4D5C9E3  SICK     DC    C' GOT UNIT CHECK '
00196D   40C3C8C5C3D240
001974   D6D540C9E2E2E4C540          DC    C'ON ISSUE SENSE'
00197D   E2C5D5E2C5
001982   00                 SAVSNS   DC    X'00'
001983   40E2D5E240C1C3E340 OUTSNS   DC    C' SNS ACT XX'
00198C   E7E7
00198E   E7E7               XX       DC    C'XX'
                             *
                             *****************************************************************
                             *
                             *                    CONSTANTS AND COMMENTS                     *
                             *
                             *****************************************************************
001990                       CNOP  0,4
001990   40C4C5E5C9C3C540D5  CNOTOP DC    C' DEVICE NOT OPER'   COMMENT NOT OPER
001999   D6E340D6D7C5D9
0019A0   C1E3C9D6D5C1D360E2          DC    C'ATIONAL-SET SS 0'
0019A9   C5E340E2E240F0
0019B0   40E3D640D3D6D6D740          DC    C' TO LOOP ON SIO '
0019B9   D6D540E2C9D640
0019C0   40C4C5E5C9C3C54061 CSBUSY DC    C' DEVICE / CHANNE'   COMMENT BUSY
0019C9   40C3C8C1D5D5C5
0019D0   D340C2E4E2E840E3D6          DC    C'L BUSY TOO LONG '   COMMENT BUSY
0019D9   D640D3D6D5C740
0019E0   C1C6E3C5D940E2C9D6          DC    C'AFTER SIO '
0019E9   40
0019EA   4040404040404040  CSCSW    DC    C'                '   COMMENT CSW
0019F3   40404040404040
0019FA   4060C3E2E640E2E3D6          DC    C' -CSW STORED AFT'     ,,
001A03   D9C5C440C1C6E3
001A0A   C5D940E2C9D640              DC    C'ER SIO '              ,,
001A11   40D5D640C3C8C1D5D5 CNCE     DC    C' NO CHANNEL END '   COMMENT
001A1A   C5D340C5D5C440
001A21   40C3D6D4D4C1D5C440 CCOMRJ   DC    C' COMMAND REJECT '   COMMENT
001A2A   D9C5D1C5C3E340
001A31   40C9D5E3D9E540D9C5 CINTRQ   DC    C' INTRV REQUIRED '
001A3A   D8E4C9D9C5C440
001A41   40C2E4E240D6E4E340 CBUSOC   DC    C' BUS OUT CHECK  '     ,,
001A4A   C3C8C5C3D240
001A51   40C5D8E4C9D7D4C5D5 CEQPCK   DC    C' EQUIPMENT CHECK'     ,,
001A5A   E340C3C8C5C3D2
001A61   E2D2C9D740404040C6 CSKFAL   DC    C'SKIP    FAILED  '     ,,
001A6A   C1C9D3C5C44040
001A71   40C4C5E5C9C3C540C5 CDEERR   DC    C' DEVICE END     '   COMMENT
001A7A   D5C440404040
001A81   40C2E4E2E840E3D6D6 CTBUSY   DC    C' BUSY TOO LONG  '   COMMENT
001A8A   40D3D6D5C74040
001A91   40D5D640C4C5E5C9C3 CNDEND   DC    C' NO DEVICE END  '   COMMENT
001A9A   C540C5D5C44040
001AA1   40E4D5C9E340C2E4E2 CDBUSY   DC    C' UNIT BUSY AFTER'   COMMENT
001AAA   E840C1C6E3C5D9
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001AB1  40C4C5E5C9C3C540C5          DC    C' DEVICE END  '  '    COMMENT
001ABA  D5C44040
001ABE  C9D4D4C5C440        CIMMED  DC    C'IMMED '
001AC4  40D5D640C3E2E640C1  NOCSW   DC    C' NO CSW AFTER IM'   COMMENT
001ACD  C6E3C5D940C9D4
001AD4  D4C5C4C9C1E3C540D6          DC    C'MEDIATE OPERATIO'   COMMENT
001ADD  D7C5D9C1E3C9D6
001AE4  D5                          DC    C'N'
001AE5  4040404040C3C8C1D5  CCHAN   DC    C'     CHANNEL  '
001AEE  D5C5D34040
001AF3  E2D2C9D740E3D640    CSKIP   DC    C'SKIP TO '           COMMENT
001AFB  E6D9C9E3C540        CWRITE  DC    C'WRITE '             COMMENT
001B01  E2D7C1C3C540        CSPACE  DC    C'SPACE '             COMMENT
001B07  E2D7C1C3C540E2E4D7  CSPSUP  DC    C'SPACE SUPPRESS  '
001B10  D7D9C5E2E24040
001B17  4040C6C1C9D3C5C440          DC    C'  FAILED  '
001B20  40
001B21  D6D240E7E7E7E7E7E7  COKXX   DC    C'OK XXXXXX  '        MASK FOR SPACE SUPPRESS
001B2A  4040
001B2C  40E2E3D360E2C5C3E3  STL     DC    C' STL-SECTION BYP'
001B35  C9D6D540C2E8D7
001B3C  C1E2E2C5C4                  DC    C'ASSED'
001B41  40C4C1E3C140C3C8C5  DATOUT  DC    C' DATA CHECK'
001B4A  C3D2
001B4C  40C2E4C6C6C5D940C3  BUFOUT  DC    C' BUFFER CHECK'
001B55  C8C5C3D2
001B59  090909090909        CCTAB   DC    X'090909090909'       CONTROL TABLE
001B5F  1111111119191919    CCTAB1  DC    X'1111111119191919'   CONTROL
001B67  0B0B0B0B13131313    CCTAB2  DC    X'0B0B0B0B13131313'   CONTROL
001B6F  1B1B1B1B899199A1    CCTAB3  DC    X'1B1B1B1B899199A1'   CONTROL TABLE
001B77  A9B1B9C1C9D1D9E1    CCTAB4  DC    X'A9B1B9C1C9D1D9E1'   CONTROL TABLE
001B7F  8B939BA3ABB3BBC3    CCTAB5  DC    X'8B939BA3ABB3BBC3'   CONTROL TABLE
001B87  C8D3DBE301090109    CCTAB6  DC    X'C8D3DBE301090109'   CONTROL TABLE
001B8F  0000000000000000    CCTAB7  DC    X'0000000000000000'   SPARE CONTROL TABLE
001B97  0000000000000000    CCTAB8  DC    X'0000000000000000'   SPARE CONTROL TABLE
001B9F  0000000000000000    CCTAB9  DC    X'0000000000000000'   SPARE CONTROL TABLE
001BA7  00                  SIODIS  DC    X'00'
001BA8  0000                SWITCH  DC    X'0000'
001BAA                      PRINT   DS    150C                  PRINT AREA
001C40                      RDAR    DS    80C
001C90                              CNOP  0,4
001C90  00003FFF            MOD50   DC    X'00003FFF'
001C94  00000001            C1      DC    X'00000001'           CONSTANT ONE
001C98  00000036            C54     DC    X'00000036'
001C9C  0000                UNTAB   DC    X'0000'
001C9E                              CNOP  0,4
001C9E  07 00                     BCR   0,0
001CA0   0009               CX9     DC    X'0009'               CONSTANT NINE
001CA2                              CNOP  0,4
001CA2  07 00                     BCR   0,0
001CA4   0019               CX19    DC    X'0019'               CONSTANT NINTEEN
001CA6                              CNOP  0,4
001CA6  07 00                     BCR   0,0
001CA8   0001               CX1     DC    X'0001'               CONSTANT 1
001CAA  406140C5            CSLASH  DC    C' / E'               SLASH
001CB0  00 001BAA 0000 0084 CCW1    CCW   X'00',PRINT,00,132    CHANNEL COMMAND TESTED
001CB8  09 001BAA 0000 0084 CCW2    CCW   X'09',PRINT,00,132    WRITE C/MMAND AFTER IMMEADATE
001CC0  04 001CC5 0000 0001 CCW3    CCW   X'04',CCW3+5,00,1     SENSE COMMAND
                            *
                            *
                            *
                            ********************************************************************************
                            *
                            *                              EQUATES                                         *
                            *
                            ********************************************************************************
                    000000  R0      EQU   0
                    000001  R1      EQU   1                     SET UP REG AS LOCATIONS
```



```
000002  R2      EQU   2
000003  R3      EQU   3
000004  R4      EQU   4
000005  R5      EQU   5
000006  R6      EQU   6
000007  R7      EQU   7
000008  R8      EQU   8
000009  R9      EQU   9
00000A  R10     EQU   10
00000B  R11     EQU   11
00000C  R12     EQU   12
00000D  R13     EQU   13
00000E  R14     EQU   14
00000F  R15     EQU   15
0001A0  DMSS    EQU   416
000198  WT      EQU   408
001000  BASE    EQU   SECNO
00F000  REG     EQU   X'F000'
0001B4  DMOUT   EQU   436
00000F  UNC     EQU   15
000008  NONE    EQU   8
000007  MIXED   EQU   7
000005  ANY     EQU   5
000001  ALL     EQU   1
000008  CC0     EQU   8
000004  CC1     EQU   4
000002  CC2     EQU   2
000001  CC3     EQU   1
000007  NCC0    EQU   7
000040  HCSW    EQU   X'40'
000048  HCAW    EQU   X'48'
000008  EQ      EQU   8
000004  LO      EQU   4
000002  HI      EQU   2
000006  UNEQ    EQU   6
                END
```

1403 CARRIAGE FUNCTION TEST

POST ASSEMBLY DATA.

REFERENCES TO DEFINED SYMBOLS.

2	14DE	BZ	14D6						
4	1C94	C1	1590,	15CA					
2	15A4	DZ	159C						
1	8	EQ	1112,	157E					
1	2	HI	14E0,	1524,	15A6				
1	4	LO	15D2,	17B0,	17B8				
2	1305	NO	12B0						
3	1302	OK	139A						
1	0	R0	14E8,	158A					
1	1	R1							
1	2	R2							
1	3	R3							
1	4	R4	1466,	1466,	1470,	1478,	147C,	14B8,	14BC
			14CC,	14E8,	151C,	1520,	1528,	152C,	1542
			1546,	155C,	1560,	176C,	1770,	1802,	1806
			18E8,	18EC					
1	5	R5	1462,	14CC,	14DE,	14EE,	14FA,	158A,	1590
			15A4,	15AA,	15B6				
1	6	R6	122C,	132C,	14CE,	14DA,	14DE,	1576,	1594
			15A0,	15A4,	163E,	1654,	168C,	182A,	1858
			18D0,	18E0,	1954,	195C			
1	7	R7	1460,	1460,	1478,	15CA,	15CE		
1	8	R8							
1	9	R9	11E2,	11E6,	11EE,	1204,	1208,	1236,	15E4
			15E8,	1640,	1666,	166A,	1682,	1718,	182C
			1830,	183C,	1900,	1904,	1910		
1	1358	TE	1346,	135C					
4	1834	TS	183C						
4	11EA	TT	11EE						
1	198	WT	11E2,	1204,	15E4,	1666,	182C,	1900	
2	198E	XX	1706						
1	1	ALL	1272,	128A,	12BA,	133A,	1364,	13A8,	1492
			14AE,	1586,	15C6,	15F0,	163A,	16AA,	1686
			1714,	1738,	1740,	1778,	1780,	178C,	17CC
			181A,	18C0,	193A				
1	5	ANY	15BE,	1610,	165A,	1662,	1844		
1	1262	BK9	1266,	127A					
4	1C98	C54	15CE						
4	1048	CAW							
1	8	CC0	167E,	1838,	190C				
1	4	CC1	1600,	167A,	18FC				
1	2	CC2	15FC,	1676,	18F8				
1	1	CC3	15F8,	1672,	18F4				
8	1040	CSW							
2	1CA8	CX1	1542						
2	1CA0	CX9	1528						
4	1214	DO9	123A,	1272,	12BA				
4	17C8	FTE	17C0						
2	185A	HDR	1844,	1854					
2	100A	ICM							
1	A	R10	11C2,	11CE,	1224,	1228,	1324,	1328	
1	B	R11	1138,	1200,	130C				
1	C	R12	1106,	110A,	110E,	1116,	11D2,	11DA,	11EA
			120C,	1310,	15F4,	1650,	166E,	1834,	18F0
			1908,	1948					
1	D	R13	10FA,	10FA,	1104,	11CE,	11E2,	1228,	1246
			128E,	1328,	1336,	1560,	15E0,	168E,	1682
			16BA,	16CC,	16D6,	16EE,	1710,	171C,	172E
			1744,	174C,	175E,	1770,	1806,	1816,	18E2
			18EC,	192C,	1936				
1	E	R14	1204,	15E4,	1666,	182C,	1900		

1403 CARRIAGE FUNCTION TEST

1	F	R15	1104						
1	F000	REG	10F0,	10F8,	111E,	1124,	112A,	1130,	1252
			1258,	125E,	1264,	129E,	12A4,	12AA,	134E
			1354,	135A,	1386,	138C,	1392,	1398,	1618
			162E,	1634,	1648,	164E,	168A,	16C4,	16CA
			16E2,	16E8,	1726,	172C,	1756,	175C,	179C
			17A2,	1800,	1822,	1828,	185E,	186C,	187A
			1888,	1896,	18A4,	18B2,	18C8,	18CE,	18DE
			1946						
16	1B2C	STL	10F0						
2	1460	T2B							
1	F	UNC	1138,	11DE,	11F6,	1230,	123A,	1276,	1282
			12C2,	12CC,	1330,	136C,	13AC,	1474,	149C
			14E4,	14EA,	150E,	153E,	1558,	158C,	161A
			1626,	163E,	1654,	168C,	169A,	16D2,	16EA
			1702,	1784,	17C0,	180A,	182A,	1858,	18D0
			18E0,	1932,	193E,	1950,	1958,	1960	
4	1000	BASE	10F0,	10F8,	111E,	1124,	112A,	1130,	11FD
			1252,	1258,	125E,	1264,	129E,	12A4,	12AA
			1309,	134E,	1354,	135A,	1386,	138C,	1392
			1398,	1618,	162E,	1634,	1648,	164E,	168A
			16C4,	16CA,	16E2,	16E8,	1726,	172C,	1756
			175C,	179C,	17A2,	1800,	1822,	1828,	185E
			186C,	187A,	1888,	1896,	18A4,	18B2,	18C8
			18CE,	18DE,	1928,	192A,	1946		
1	12A2	BK10	1296,	12AC					
1	1263	BK91	126A,	127E					
16	12D0	BLAB	12A4,	12B0,	12C6				
4	1576	BSIO	1568						
2	18E0	BYBY	18D6						
8	1CB0	CCW1	11BE,	11C2,	11F2,	147C,	148E,	14AA,	14C4
			155C,	1564,	157A,	1582,	17AC,	17B4,	17C8
			17D6						
8	1CB8	CCW2	1802						
8	1CC0	CCW3	15DC,	176C,	17F4,	1840,	1850,	1860,	186E
			187C,	188A,	1898,	18A6,	18BC,	18D2,	18E8
			1918,	191E,	1CC0				
4	123E	CKIT	1778						
4	12BE	CLR9	1276						
16	1A11	CNCE	16CA						
2	1CA4	CX19	1520						
4	128E	DEC1	12CC						
1	1A0	DMSS							
4	1314	DO12	1364						
2	1234	END9	12C2						
4	188A	EQCK	1880						
1	48	HCAW	11CE,	1228,	1328,	1560,	1770,	1806,	18EC
1	40	HCSW	1246,	128E,	1336,	15E0,	168E,	16B2,	16BA
			16CC,	16D6,	16EE,	1710,	171C,	172E,	1744
			174C,	175E,	1816,	18E2,	192C,	1936	
4	18E8	HOPE	1950,	1958,	1960				
4	151C	ITEM							
4	1236	ITRY	1210						
4	11BE	LOOP	1626,	163A					
1	7	NCC0	11D6,	1210,	194C				
2	1466	NEXT	15BE,	15C6,	15D2				
1	100D	NIOU							
4	17BC	NITM	17B0						
1	8	NONE	10E8,	1100,	11CA,	124A,	1292,	1342,	1374
			146C,	14C8,	14D6,	14F6,	159C,	15B2,	1608
			1692,	16DA,	16F2,	1748,	1768,	1794,	17A8
			17E8,	17F8,	1812,	184C,	1854,	1864,	1872
			1880,	188E,	189C,	18AA,	18B8,	18D6	
1	1396	NOPB	1378,	13A0					
4	1936	OHNO	18FC						
1	1C40	RDAR							
4	1346	SAY1							
1	100C	SDMF							

16	1964	SICK	1946
4	15DC	SIO1	122C, 132C, 180A
6	1512	SKIP	14AE
4	1004	SNSW	11C6, 126E, 12B6, 1360, 1468, 1470, 15BA
			15C2, 15EC, 1636
3	105D	SRET	
4	169E	TCSW	1692
6	1706	TDVE	16F2
16	113A	TEL1	111E
16	1155	TEL2	1124
16	1171	TEL3	112A
16	119C	TEL4	1130
4	17C4	TWTM	17B8
1	10E1	UIOP	10E4, 14D2, 14F2, 1598, 15AE
1	6	UNEQ	1242, 1568, 17DA
2	10F4	ZOOM	10E8
2	1260	BACK9	1282
1	11FC	BEGIN	1015
4	1840	BILLF	1838
16	13B0	BLAB1	135A
2	12F0	BLANK	10F8, 1252, 12C6, 137C, 1386, 162E, 1648
			16C4, 16E2, 1726, 1756, 179C, 1800, 1822
			185E, 18C8, 18DE
4	1106	BLOOP	1100
4	18A6	BUFCK	189C
4	187C	BUSOC	1872
4	1802	BYBY1	17F8
14	1AE5	CCHAN	17D0
6	1B59	CCTAB	1478
4	16D6	CECDE	16B6
4	1368	CLR12	13AC
11	1B21	COKXX	17DE
16	19EA	CSCSW	16BA, 16CC, 171C, 172E, 174C, 175E, 18E2
			192C
8	1AF3	CSKIP	1512
1	1B4	DMOUT	
6	18E2	DOSNS	16FE
4	1898	DTACK	188E
2	1334	END12	136C
2	15D6	EXIT1	
1	100E	FLAG1	
1	100F	FLAG2	
8	1440	GOSKP	1214, 1224, 1314, 1324
4	1914	GOTIT	190C
4	1336	GOTST	1780, 178C
4	1542	GRTER	1524
6	14A0	IMMED	1492
5	1010	INPSW	
4	195C	ISBSY	18F8
16	1425	LOVLY	1398
4	1594	LRED6	158C
1	7	MIXED	1622, 16A2, 16FE
4	1C90	MOD50	110A
4	1468	NEXT1	
4	1478	NEXT2	146C
4	147C	NEXT3	1474
16	1AC4	NOCSW	1618
6	171C	NOGOT	
4	15BA	NOSUP	15A6, 15B2
1	1424	NSWCH	1220, 12BE, 1318, 1368, 161E, 169E, 16FA
			173C, 1774, 177C, 1788
1	1BAA	PRINT	1440, 1448, 1450, 1462, 1480, 1484, 1484
			1496, 14A0, 14B2, 14BC, 14C0, 14CE, 14DA
			14EE, 14FA, 14FE, 1502, 1502, 1512, 152C
			1530, 1538, 1546, 154A, 154E, 1552, 1570
			1594, 15A0, 15AA, 15B6, 17D0, 17DE, 1CB0
			1CB8
4	1640	SBUSY	15FC, 195C

4	1000	SECND	1CC8
4	18B4	SENOK	18AA
4	1788	SKIP1	1768, 184C, 18B8
4	17A4	SKIP2	1794
4	17E4	SPACE	17DA
4	17D6	SPSUP	17A8, 17CC
4	18F0	START	
2	14E8	STOSP	14C8
4	1682	TBUSY	1676
2	1356	TELIM	1342
4	1764	TIOOK	1702, 1738, 1748
4	180E	TSTCK	17E8
4	1908	TSTIO	1910
1	10E0	UNIT1	1106
2	1C9C	UNTAB	
6	12C6	VARY9	128A
4	161E	WHICH	15F0
2	12A0	BACK10	1292
4	1310	BACKUP	1330
1	1308	BEGIN2	11FD
1	1458	BEGIN3	1309
13	1B4C	BUFOUT	18B2
16	12F2	BUTYFL	1264
16	1A41	CBUSOC	1888
16	1A21	CCOMRJ	186C
8	1B5F	CCTAB1	
8	1B67	CCTAB2	
8	1B6F	CCTAB3	
8	1B77	CCTAB4	
8	1B7F	CCTAB5	
8	1B87	CCTAB6	
8	1B8F	CCTAB7	
8	1B97	CCTAB8	
8	1B9F	CCTAB9	
16	1AA1	CDBUSY	175C
16	1A71	CDEERR	16E8
16	1A51	CEQPCK	1896
4	18D2	CHANOF	1812, 181A, 18C0
6	1ABE	CIMMED	14A0
16	1A31	CINTRQ	187A
16	1A91	CNDEND	172C
16	1990	CNOTOP	1634
16	19C0	CSBUSY	164E
16	1A61	CSKFAL	1534, 1538, 1552, 17A2, 1828, 18CE
4	1CAA	CSLASH	1508
6	1B01	CSPACE	14B2
16	1B07	CSPSUP	1570
16	1A81	CTBUSY	168A
6	1AFB	CWRITE	1496
11	1B41	DATOUT	18A4
4	173C	DEBUSY	
4	1286	DECIDE	1242, 1740
4	1734	DEDONE	1714, 1932
5	1058	EXNPSW	
8	1018	EXOPSW	
4	1134	GITOUT	1112
4	1590	IMDATA	157E, 1586
2	1942	IMWEAK	193A
4	10E4	INITAL	1200, 130C, 145C
4	186E	INTREQ	1864
4	1078	IONPSW	
8	1038	IOOPSW	
4	1370	ISGOOD	133A
4	1954	ISNOOP	18F4
4	1435	LOVLY1	137C, 139A
8	1070	MCNPSW	
8	1030	MCOPSW	
4	16FA	MISSDE	169A

1403 CARRIAGE FUNCTION TEST

```
  2   1394 NOPROB    1374
  4   14FE NOREST    14E0,  14EA,  14F6
 11   1983 OUTSNS    1134,  125E,  12AA,  1354,  1392,  1706,  191E
                     1928,  192A
  8   1068 PGNPSW
  8   1028 PGOPSW
  4   1948 PLEASE    193E,  194C
  4   14EE RESET5    14E4,  153E,  1558
  4   127A REWORK    124A
  2   11BC SAVDEV    110E,  1116
  1   1982 SAVSNS    123E,  1286,  170C,  1914,  1918
  4   1656 SCSWST    1600
  4   155C SETCAW    150E
  4   15D8 SIOBEG    1576
  1   1BA7 SIODIS
  2   182A SIOFIN
  4   15F4 SIOSIO    11F6,  1640,  1784
  2   162A SNOTOP    15F8,  1672,  1954
  4   1360 SPHERE    13A8
  4   11E2 SQUARE    11CA
  4   11C6 STRTIO    11D6,  11DE,  1622
  8   1060 SVNPSW
  8   1020 SVOPSW
  2   1BA8 SWITCH    1218,  121C,  131C,  1320,  133E,  1370,  13A4
                     148A,  14A6,  1518,  156C,  15D8,  1604,  160C
                     1656,  165E,  1696,  16A6,  16AE,  16F6,  1734
                     1764,  1790,  17A4,  17BC,  17C4,  17E4,  17EC
                     17F0,  180E,  1848,  1884
  4   168E TCSWST    165A,  167A
  4   16EE TDVEND    167E,  16A2,  16AA,  16D2
  4   165E TIOBEG    1608,  1610,  161A
  4   182C TIOSEN    1662
  4   166E TIOTIO    1682,  16DA,  16EA,  1718
  4   1860 TSAVBL
  4   14AA TSPACE    149C
  4   120C TSTCLR    1230,  1236
  4   148E TWRITE
  2   10E2 U1ADDR
 16   13C4 UNEXUC    134E,  138C
 16   13F1 UNEXUE    1258,  129E
  1   1000 XF8383
          NO ERROR DETECTED IN ABOVE ASSEMBLY
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F838 1403 CARRIAGE FUNCTION TEST

PERIODS CORRESPOND TO BLANK COLUMNS.

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COLS.  1 THROUGH 20     COLS.  21 THROUGH 40        COLS.  41 THROUGH 60     COLS.  61 THROUGH 80

BESD......AA..AAXF83     83..AAAA.ADH........        ................840     214.125655..83830001
9         YQ  Y9             YYQY Y8
          99  9              9999 99

BTXT.AAA..A8..AA88AA     AAAAAAAAAA0AADAAAAJD        AAAAAAAAAAAAAAAAAAAA     AAAAAAAAAAAA83830002
9    YQY  Y9  Y9 9QY     YYYYYYYYY9+Y99YYYY9Q        YYYYYYYYYYYYYYYYYYYY     YYYYYYYYYYYY
     999  9   9   Z9     999999999 9  9999 Z         99999999999999999999     999999999999

BTXT.AA8..A8..AAAAAA     AAAAAAAAAAAAAAAAAAAA        AAAAAAAAADAAAAAAAAAA     AAAAAAAAAAAA83830003
9    YQ9  Y9  Y9YYYY     YYYYYYYYYYYYYYYYYYYY        YYYYYYYYY9YYYYYYYYYY     YYYYYYYYYYYY
     99   9   9 9999     99999999999999999999        999999999 9999999999     999999999999

BTXT.AA0..AA..AAAAAA     AAAAADAAAAAA........        ....................     ............83830004
9    YQ+  YQ  Y9YYYY     YYYY99YYYYYY
     99-  99  9 9999     9999  999999

BTXT.AAS..A8..AACAAA     A.0JGA04B0JNCUB0B0JA        20LEA.JFGA1FQGH00SD0     DAA01DGA14.083830005
9    YQ8  Y9  Y90YYY     -  ZZY  8-Y9Q88 8-Y9         8Q- Z-ZY 99QR+ 8R+      QQ8+ QZY 9 +
     99   9   9 9 9               9 9 Z99 9           99        9              Z   0

BTXT.AJQ..A8..AA1DB0     4L12B0JM1EB0JT1AB0AP        1DBBBA9DGC.INSERT.TE     ST.CARRIAGE.83830006
9    Y99  Y9  Y9 Q8-     98 88-Y8 R8-Y8 R8-Y8         Q8Q-Y Y9Q
     9    9   9  09       9 99  9  9  9 09  9          99 9   Z

BTXT.AJ+..A8..AATAPE     T.RESTORE.CARRIAGE.T        O.CHANC.1.CHECK.FOR.     CHANC1.HOLET83830007
9    Y9   Y9  Y9         8                                   8                     8    8
     9    9   9

BTXT.AJH..A8..AA.1.L     INE.PAST.BRUSHES.MAK        E.PRNTR.RDYT.PUSH.IN     TERRUPTAGGB.83830008
9    Y90  Y9  Y9                                                8                    YQQ-
     9    9   9                                                                      9ZZ

BTXT.AJ0..A8..AADDAJ     DAAA0DGA1S+NAHEA0AG0        1FDA0AG01FHEAHHAAEEA     0AFA1KBADDG083830009
9    Y9+  Y9  Y9Q0ZY     QQ-Y 9ZY   YYZQY+YZ+          QY+YZ   RQ9-0QY9QY     +YZQ Y-YQ0Z
     9    9   9 Z-       Z0          9  9 9 -          9 9          9  9       9   9 9Z-

BTXT.AJ8..A8..AA54GA     AACHEA0UHFAHHAACEA0A        G026BC4.BGCQB0CRBA4U     AJ4.+NAHE-5D83830010
9    Y9   Y9  Y9  9Y     9Y99ZQ  RQ9-0QY9QY+Y        Z+ 9-Y  -8Q0-+Q0-8 9     ZY    YYZZ  Q
     9    9   9    9      9  0          9 99         -        9Z  Z  9              9   9

BTXT.AKA..A8..AAG02D     B0FA2DG02MEA9BG-2FAA        0DGA22B0JA20B0M331B0     SC9CB00A22B083830011
9    Y9Q  Y9  Y9Z  8     8 ZQ 8Z  9-9 0Z  0-9        -ZZY 88-Y9  8-Z9  8-     88 08-+Q  -+
     9 Z  9   9    9     9   9                            9     9     9        9  9  9

BTXT.AKQ..A8..AA2KBA     2LAA0DGA2MG02FBD2KBL        2LG02-AA9BGA2FAA0DGA     2JBS2KB0M33183830012
9    Y9Z  Y9  Y9 Z-Q      Z-Y 9ZQ 9Z  Q-9 Z-9         ZZ   -9 0ZQ  -9-ZZY      Y-8 08-Z9
     9    9   9    9             9    0                         9                     9

BTXT.AKJ..A8..AAB0MJ     20B00C9CBM2KKA2J3EAA        0DGA2MBA4UG024KA2J20     G02F.NO.CHAN83830013
9    Y9Y  Y9  Y98-ZY      -8-+8 0-Z 0 9   9-Y         9ZQ 9-Y 9Z  9 9         Z  Y
     9    9   9 9  9       9 9                          9  9

BTXT.AKQ..A8..AA.9.D     ETECTED.IN.SENSE.BYT        ...CHAN.9.DETECTED.0     KN0ABADHEA0U83830014
9    Y9   Y9  Y9                                                                Y9Y9RZQ
     9    9   9                                                                 9 9  0

BTXT.ALA..A8..AAEA0A     BL4.BK4UBGCQB0CRAJ4.        +NAHE-5DG03AB0AA0DGA     30A.CQGA3FB083830015
9    Y9Q  Y9  Y9QY+Y     -0  -9 9-8Q0-+Q0ZY           YYZZ  QZ  Q8 -9-ZZQ      +- Q0ZY R-+
     9 9  9   9 9 9                9Z   Z             9    9  99       9       -  Z

BTXT.ALH..A8..AA3HB0     MV3DB0SC9CB0DM3ABD3H        AA0DGA3MBA4UG034A.CQ     GA3DB03FKA4783830016
9    Y9Z  Y9  Y9 R8-     Z8  8-88 08-Z9 Q-Z R        -Y 9ZQ 9-Y 9Z  9- Q0     ZY --+ - 9 9
     9    9   9  9        9  9  9  9    0                9   9         Z
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F838 1403 CARRIAGE FUNCTION TEST

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BTXT.ALA..A8..AA20B0    JA20B0MV3DB0SC9CB0MM    4VKB463BBM3FA.CQGA3-    G03Q.NO.CHAN83830017
9    Y9Y  Y9  Y9  8-    Y9  8-Z8  8-88 08-99     9 9 9 9-9 -- Q0ZQ      Z  Z
     9    9   9   9          9  9  9  9  9                     Z  9

BTXT.ALH..A8..AA.12.    DETECTED.GOT.UNEXPEC    TED.UNIT.CK.WHILE.TE    STING.CHAN.183830018
9    Y90  Y9  Y9
     9 -  9   9

BTXT.ALO..A8..AA2.GO    T.UNEXPECTED.UNIT.EX    CEPTION.WHILE.TESTIN    G.CHAN.9A.CH83830019
9    Y9   Y9  Y9                                                                 Y
     9    9   9                                                                  9

BTXT.AMY..A8..AAAN.1    2.DETECTED.OKAAAAAAA    CALK.AAACALK.AAACALK    AAAACAGGEA0U83830020
9    Y99  Y9  Y9                     YYYYYYY    YY8Y YY98Y8Y YY98Y8Y    YYY99YQQZQ
     9    9   9                      9999999     99  99 999  99 999     999  9ZZ 0

BTXT.AM-..A8..AALGA+    DULDAGOEGA4HC.OEG044    CGCJB.DAB.CKKBCLCKDA    CRABDAGA4JKE83830021
9    Y9   Y9  Y98RZ     Q88Z-Q 9ZY RZ  9Z  8    ZZQ8Z QQ- QY 0QYQY-Y    Q0-9QQZQ Y 9
     9    9   9 90      Z99  Z      0             Z   Z0  Z   Z Z  9    Z   Z0 9

BTXT.AMH..A8..AACKBC    G04KKECKBFF.CRAADAGA    5KKECACAH.ACB.CGFOCG    ABDAGA4YLDA-83830022
9    Y9-  Y9  Y9QYQQ    Z  Y 9QYQQ- Q0-YQQZQ     9 9QQQ90 Y9Z Q0- Q0    -9QQZY  8RZ
     9    9   9 Z ZZ          Z Z0  Z   Z0 9        Z0Z   9  Z-  Z-      Z0    9

BTXT.AMO..A8..AACHAD    OJGA4FA-CDJFGJ4FG040    QDG04FA+DUADOJGA4FA+    DJBECDKACECD83830023
9    Y9-  Y9  Y9Q -9     ZZY QZ QQ8RZY QZ  Y    99Z  QZ Q8-9 ZZY QZ     QY- QQ RQQQQ
     9    9   9 Z            9  Z09  9 Z   9          Z  Z9        Z    Z9  Z0 0Z0Z0

BTXT.ANH..A8..AAKB+A    DKG05MKGCAB3FACRH.AC    C.DMGJ5BB.DJB.CBFOCB    B.BOKABPCBG083830024
9    Y99  Y9  Y9 9 Y    QYZ  8 9QQQ -YQ00 Y9    8 Q0ZY Z8 QYZ QQ- QQ    - QZ YQZQQZ
     9    9   9    9    Z         Z0Z   Z  9      Z 9    Z   Z0  Z0      Z  9Z Z0

BTXT.AN...A8..AA40C.    DQB.CBFOCBB1CIKABOCI    G040A.DA+EAHEADAG-5F    FJCRKQCKCGE-83830025
9    Y9   Y9  Y9 Y8     Q0Z QQ- QQ- Q0 9QZQ0    Z  YZ QQ 8YZ-9QQZ  R    -YQ0 9QYQ9Z
     9    9   9  9      Z   Z0  Z0  Z-  Z Z-       9  Z0  9   Z0   0     9Z   Z Z

BTXT.ANH..A8..AA5QEA    DAGA5AABDAGA5AL+G05D    L+DDA-CHADOJGA5MA-CD    JFGJ5BA+DUAD83830026
9    Y9R  Y9  Y9  -9    QQZY Q-9QQZQ Q8 Z  -    8 Q-Z Q -9 ZZY 0Z QQ    8RZY QZ Q8-9
     9 0  9   9         Z0        Z0 9  9         Z   Z            Z0    9  9 0  Z9

BTXT.ANA..A8..AAOJGA    5BA+DJAGOEG+40AJODGA    40KODDEODHG.40BODACQ    BADEBAODHFAH83830027
9    Y9Q  Y9  Y9 ZZY     QZ QY-Q 9Z  Z-Y 9ZQ     Z8+Q-R+Q-Z  Z8 -YQ0    -YQ -Y-ZRQ9-
     9 0  9   9          0  Z9 Z         9  9      -Z  -Z     9  9Z      9Z  9

BTXT.ANY..A8..AAHAAC    AAODGA6ODAOAGA6SGJ6.    G.6FA.CRGA6OAGCQG+6O    BO./BDG06OAL83830028
9    Y9   Y9  Y90QY9    -Y 9ZQ 8QY+YZQ 8ZY      Z  R- Q0ZY 8-QQ0Z  8    8- 9Q Z  8-8
     9    9   9   9          9 9 9 9 9 9 9            Z       ZZ        9   Z      9

BTXT.AOJ..A8..AA4UGO    1FG01FBOJA20B0DA9AAA    ODGA1FG6FA54BOJA20B0    D/90EAOAG6A083830029
9    Y9Y  Y9  Y9 9Z+      Z  Q8-Y9  8-ZQ Q-Y     9ZQ Q9 ZQ  8-Y9  8-    Z8 +QY+Y9 -+
     9 9  9   9    -          09      9  Z         9 0      9     9      9   9 9

BTXT.AOH..A8..AACRG+    6FA-CQG+8UHFAHHAACEA    OAGA6SGJ6BG.6FGA6OFA    6WBODABAG6AB83830030
9    Y9R  Y9  Y9Q0Z      Y- Q0Z  8RQ9-0QY9QY    +YZQ 8ZY 0Z  YZY YZQ     88-ZQQ09 -9
     9    9   9 Z            Z    9       9 9    9 9 9 9         9        9  9Z

BTXT.ADA..A8..AAODGA    6FF.CQG06BAL4UG06OAA    CQGA6OFACQAHODGA6OKG    9KO.BOJA20B083830031
9    Y9Q  Y9  Y9-ZZY     Q- Q0Z  Q-8 9Z+ Y-Y    Q0ZQ Y-YQ0-9-ZZQ   9     Y- 8-Y9  8-
     9    9   9              Z    Z 9   - 9     Z  9 9  Z        9       9  9    9

BTXT.AOH..A8..AADGBJ    KGO.9KG06OADODGA6WBO    JA20BODGBAG06WABODGA    7FF.CQAL4UG083830032
9    Y9   Y9  Y9Z8Q9     9-   YZ   Y-9-ZZY 88-  Y9  8-Z8QRZ  8-9-ZZY     9- Q0-8 9Z+
     9    9   9  9Z           9   9          9       9  9Z0                 Z  9  -

BTXT.APA..A8..AA8SGO    7MKA9D9FBA9BADODGA74    FA6WKG9KO.BOJA20BODG    BAKGO.9KA.CQ83830033
9    Y9Y  Y9  Y9  Z      Z 9 Y Y-Y 0-9-ZZQ 9    ZQ 8 9 Y- 8-Y9  8-Z8    Q- 9-  Y- Q0
     9 9  9   9                  9        9           9  9     9  9     Z      9  Z
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F838 1403 CARRIAGE FUNCTION TEST

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BTXT.AP8..A8..AAGA7M    AA4UGA2FAAODGA7MKG9K    O.BOJA20BODMBJKGO.9K    A.CQGA7HA.D083830034
9    Y99  Y9  Y9ZQ Z    -8 9ZQ 0-Q-ZZY Z 9 Y    - 8-Y9  8-Z8Q0 9-  Y    - Q0ZY 0Z Q+
     9    9   9  9       9   9   9         9     9       9  9Z      9     Z        Z

BTXT.APO..A8..AA+EAH    AA4UGA26AK4UGA36G054    AK4UGA36ADCQGA7MBOJA    20BODGB/AACR83830035
9    Y9+  Y9  Y9 8YZ    -8 9ZQ 8-9 9ZQ 9Z       -9 9ZQ 9-9Q0ZY 08-Y9      8-Z8Q -YQ0
     9 -  9   9   9      9   9 9    9               9     Z      9        9  9Z   Z

BTXT.APQ..A8..AAGA7O    EJDAG.7DEJDAG.7DFDCQ    G07HFHCQABDAGA7OKECK    BVEADAG-7UKA83830036
9    Y90  Y9  Y9ZY      -0QQZ  Q- QQZ   -9Q0    Z    -9Q0-9QQZQ   8QY   Q -9QQZ     8
     9    9   9           Z0   0  Z0      Z             Z   Z0 9   9Z   Z   Z0      9

BTXT.APS..A8..AACIC/    ASCRGA8FDACRDGCQAFDE    GA8BBOOA20A.DH+EAHGO    5DAHCQGA8KAA83830037
9    Y98  Y9  Y9Q0Q9    -8Q0ZY 8-YQ0-8Q0-QQ     ZY 98-+9  Z Q0 8YZZ      Q-9Q0ZY  -9
     9    9   9 Z-Z      Z      9 9Z  9Z  ZZ        9         Z-  9      9  Z

BTXT.AQQ..A8..AAODGA    8KBOJA20BODGB/G6HFAH    HAADEAOAGA8.FA84AFDE    G+8KADCQGA7H83830038
9    Y99  Y9  Y9-ZZQ      8-Y9  8-Z8Q 9 RQ9-    0QY9QY+YZY  ZQ 9-QQ     Z  8-9Q0ZY 0
     9    9   9    9     9       9  9Z             9  9 9          ZZ         Z

BTXT.AQ+..A8..AAAADE    GA8KG6BOMA20AADEGA8W    BOSGB/A.DEGA84BOSGB1    AJDEGA8BBOSG83830039
9    Y9   Y9  Y9-9Q     ZY 89 8-Z9  -YQ ZY 8    8-88Q9- Q ZY 88-88Q9    -YQ ZY Y8-88
     9    9   9   Z             9       Z       9  9Z   Z      9  9Z     9Z      9  9

BTXT.AQH..A8..AABAAA    DEGA8HBOSABAAHDEGA8O    BOSCCAADDEGA8DBOSECD    ADCQGA7HAADE83830040
9    Y90  Y9  Y9QZ-Q    Q ZY -8-8QQR-9Q ZY 0    8-88QZ-9Q ZY 08-88Q8    -9Q0ZY 0-9Q
     9    9   9 Z  9    Z       9  9Z   Z       9  9Z   Z    -9  9Z       Z       Z

BTXT.AQO..A8..AAGA8K    BOSA20BOOGB/G6AFDEGA    8SBOOA20G6KG9KO.A.DO    +EAHDAOAGA9D83830041
9    Y9+  Y9  Y9ZQ      8-89   8-+8Q 9 -QQ ZY    88-+9  9  9 Y- Z Q+     8YZQY+YZQ R
     9    9   9  9      9       9  9Z    ZZ      9          9    Z        9  9 9 9

BTXT.AQ8..A8..AAGJ9M    G.96HFAHHAADEAOAGA9M    FA9HBA9BKA9BDEKA9DDE    BEAAADADKGO.83830042
9    Y9   Y9  Y9ZY 8    Z  9RQ9-0QY9QY+YZY 9    ZQ 9-Y 0 Y 0Q  Y YQ     8QY98Y8Y 9-
     9    9   9  9                 9  9 9            9   9  Z  9  Z     999 9 9

BTXT.AJA..A8..AA9KGO    74ABODGA9BG09HBODO9M    EAOAG09HG08YE-6SG08Y    E-6.G08Y.GOT83830043
9    Y8Q  Y9  Y9 YZ      9-9-ZZQ ZZ  Z8-Z8 Z    QY+YZ+ ZZ   Z  8Z       Z   Z
     99Z  9   9  9             9        9  9     9 9 -          9

BTXT.AJQ..A8..AA.UNI    T.CHECK.ON.ISSUE.SEN    SEA.SNS.ACT.XXXX.DEV    ICE.NOT.OPER83830044
9    Y8Z  Y9  Y9                                  Y
     99   9   9                                   9

BTXT.AJJ..A8..AAATIO    NAL-SET.SS.O.TO.LOOP    .ON.SIO..DEVICE./.CH    ANNEL.BUSY.T83830045
9    Y8Y  Y9  Y9
     99   9   9

BTXT.AJQ..A8..AAOO.L    ONG.AFTER.SIO.......    ...........-CSW.STOR    ED.AFTER.SIO83830046
9    Y8   Y9  Y9
     99   9   9

BTXT.AKA..A8..AA..NO    .CHANNEL.END..COMMAN    D.REJECT..INTRV.REQU    IRED..BUS.OU83830047
9    Y8Q  Y9  Y9
     999  9   9

BTXT.AKH..A8..AAT.CH    ECK...EQUIPMENT.CHEC    KSKIP....FAILED...DE    VICE.END....83830048
9    Y8Z  Y9  Y9
     99   9   9

BTXT.AKA..A8..AA..BU    SY.TOO.LONG...NO.DEV    ICE.END...UNIT.BUSY.    AFTER.DEVICE83830049
9    Y8Y  Y9  Y9
     99   9   9

BTXT.AKH..A8..AA.END    ..IMMED..NO.CSW.AFTE    R.IMMEDIATE.OPERATIO    N.....CHANNE83830050
9    Y80  Y9  Y9
     99-  9   9
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F838 1403 CARRIAGE FUNCTION TEST

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BTXT.AKO..A8..AAL..S     KIP.TO.WRITE.SPACE.S       PACE.SUPPRESS....FAI     LED..OK.XXXX83830051
9    Y8   Y9  Y9
     99   9   9

BTXT.ALY..A8..AAXX..     .STL-SECTION.BYPASSE       D.DATA.CHECK.BUFFER.     CHECKAAAAAAJ83830052
9    Y89  Y9  Y9                                                                   8888889
     99   9   9                                                                    999999

BTXT.AL-..A8..AAJJJJ     JJJCCCCLLLLLLLLIAIJR       AIAIJRJCCCLLCCCCLCTA     AAAAAAAAAAAA83830053
9    Y8   Y9  Y99998     888888899988880--00        00    ZY-QOYOQ Y Q 9     898YYYYYYYYY
     99   9   9    9     9999999    9999            --         -0 9 9        9 9999999999

BTXT.ALH..AK..AAAAAA     AAAAAAAAAAAAAA......       ..................       ...........83830054
9    Y8-  Y9  Y9YYYY     YYYYYYYYYYYYYY
     99   9   9 9999     99999999999999

BTXT.AMA..A8..AAAA7G     AAAAAAA6AAGAAAGAAJGA       AA./.EAAAALKAAADAALK     AAADDAMEAAAA83830055
9    Y8Q  Y9  Y9YY8Q     YYY9YYY9YY9YY89YY89Y       Y9    YYYY8YYYYO8Y8Y     YYYO9Y8 YYY9
     99   9   9 999Z     999 999 99 999 999 9       9     99999 999 999      999  99 999

BRLD.....AJ....AAAA      AAANAAMAAAMAAAMAAAMA       AAMIHAMA............     ...........83830056
9         YY    Y9Y9     8YQ98Y9Z8Y988Y9R8Y8O       8Y8O9Y8
          99    9 9      999 99  99  99  999-       999- 99

BEND.........AA....      ..................         ..................       ...........83830057
9            Y9
             9

BLDT.................    ..................         ..................       ...........83830058
9
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