IBM POUGHKEEPSIE
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Diagnostic Engineering Publication

1410/7010

Subject: Diagnostic Program M014 - 1410/7010-1401 TOPSY Compatibility

Sequence Number 291
Replaces

I. System and Channel One Cards 2 cards 001 - 002

II. Program also includes an 86 card reader test deck for 1402 reader tests. This deck is not punched with a sequence number field. Description of the deck is provided in Section 2.00.08.0 of the program write-up.

Enclosures: 58 Pages
Card Deck for CARD ONLY SYSTEMS (as punched by UP51)
8 Cards - Card Loader (1-7) and 1 Core Clear
147 Cards No. 001 - 147 Data Cards
1 Card Execute Card

Distribution:
X 1410
X 7010
Other

M014A

TOPSY PROGRAM

FOR

1410/7010 - 1401 COMPATIBILITY

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2.00.00.0 TEST DESCRIPTION

00.1 MODIFICATIONS

This is a new program.

00.2 DESCRIPTION

This program is designed to test the reliability of 1410/7010 while operating in 1401 mode. Routines included within this program provide tests of both CPU and I/O to supplement tests made in previous 1410/7010 - 1401 compatibility programs. Routines are executed in the following sequence:

Routines 1 - 8	CPU Tests
Routines 9 - 13	Printer Tests
Routines 14 - 15	Punch Tests
Routines 16 - 19	Routines to test card-tape, tape-tape, tape-punch and tape-print operations.
Routines 20 - 46	Scramble overlap I/O tests.

Note: An 86 card reader test deck is required for reader tests. See Section 2.00.08.0 for list of reader test cards.

As with all 1410/7010 - 1401 compatibility programs, the system is assumed to be functioning properly while in 1410/7010 mode. The program therefore tests only those areas affected by 1401 compatibility circuits. The following programs should be run before testing with M014.

M011 - 1410/7010-1401 CPU Compatibility
M012 - 1410/7010-1401 I/O Compatibility

All test routines communicate with two common control routines to test for inquiry and to test TAD locations for looping routines, indicating errors and halting on error. Errors will normally be indicated by a six character typeout as follows:

ERR XXX *

* XXX indicates the three-digit representation of the five-digit error address.

Reference to the error address in the program listing will provide an explanation for the error.

00.2 DESCRIPTION (continued)

The program will normally make one complete pass of all CPU routines and all I/O routines for which ready units have been indicated as available in control set up before typing PASS and testing TAD3 for repeat of entire program. If TAD3 is not 1, the program will halt to change mode back to 1410/7010. Pressing computer reset and start will call in the next program. If TAD3 is a 1, program will halt to allow set up of I/O for next pass. Pressing computer reset and start will begin execution of the next pass.

Note: Immediately after the loading of the program and while the system is still in 1410/7010 mode, the units indicated as available in control area will be tested for ready status. The control area will be modified to bypass tests for non-ready devices. If tapes are to be tested, the two lowest numbered ready drives, excluding drive 0, will be used.

00.3 EQUIPMENT REQUIRED

CPU, console printer; optional units are 1402 Reader-Punch, 1403 Printer and 729 or 7330 tapes.

00.4 CARD DECK

7	Cards	Load Program
1	Card	Core Clear Card
	Cards numbered 001-147	Program
	Card numbered 001	Is Standard system control card
	Card numbered 002	Is Standard Channel 1 control card
1	Card	Execute Card (Branch to 02000)

00.5 MACHINE E.C. LEVEL

00.6 PASS LENGTH

Approximately 1/2 min. assuming a full system with bypass of manual routines.

2.00.01.0 LOADING PROCEDURE

01.1 FROM CARDS

A. 7010 - 1410 without Load Button

1. Clear memory
2. Display memory location 00000
3. Alter to

   RL%1100011$. for channel 1 reader

   XL=1100011$. for channel 2 reader

4. Set to Run, Computer Reset, Start.

B. 7010 with Load Button

1. Clear memory
2. Computer reset
3. Depress Load button

01.2 FROM TAPE (80 Character Master or Memory Dump Tape)

A. 7010 - 1410 without Load Button

1. Clear memory
2. Display memory location 00000
3. Alter to -

   RL%B000011$. for channel 1 tape drive

   XL=B000011$. for channel 2 tape drive

4. Set to Run, Computer Reset, Start.

B. 7010 with Load Button

1. Clear memory
2. Computer reset
3. Depress tape Load button

2.00.02.0 OPERATING PROCEDURE

Load program.

Program will type the following:

M014A
SET SENSE SW A ON
SET I/O CK STOP SW OFF
SET COMPATIBILITY SW TO 1401
PRESS START

A normal program halt will occur at 02008 to allow the operator to set switches as indicated in the typeout. The control area specifying units to be tested and/or TAD locations may also be modified at this time if desired. The control area will already have been modified at this point to bypass tests for non-ready devices indicated as available. To include a previously non-ready device, make it ready and alter control area accordingly before pressing Start. To include tapes, it will be necessary to alter locations 7991 and/or 7992 to the numbered drives to be used.

Note: An 86 card reader test deck is required for reader tests. See Section 02.00.08.0 for list of reader test cards.

The following are control locations that are tested by the program:

Location 1291	Test 729 or 7330 tape unit specified in location 7991 if this location is a 1 (used as read tape).
Location 1292	Test 729 or 7330 tape unit specified in location 7992 if this location is a 1 (used as write tape).
Location 1301	Test 1402 reader if this location is an R.
Location 1303	Test 1402 punch if this location is a P.
Location 1305	Test 1403 printer if this location is a P.

2.00.02.0 OPERATING PROCEDURE (continued)

Location 1306 — If N, print only numeric data for numeric chain. If A, print data for alpha chain.

Location 1257 — Program tests this location for 0 to determine 10K memory. If not 0, greater than 10K memory is assumed.

Under normal conditions (all TADS 0 and no errors encountered) program will make one complete pass without stopping and then test TAD3 for repeat or continue. If it is desired to execute the manual routines along with the normal routines, it will be necessary to alter TAD4 (location 1004) to a 1. Manual routines are those that require manual intervention for proper execution such as disabling of print hammer, setting of switches, etc. Required steps of manual intervention will be indicated by a console printer typeout.

Normal program operations may be altered by using the Console Printer Inquiry routine to set one or several of the following TAD locations to "1."

TAD	Address	If Not 1 (Normal)	If Set to 1
0	01000 (=00)	Normal typeouts	Bypass all typeouts for scoping
1	01001 (=01)	No loops	Loop on present routine
2	01002 (=02)	No halts	Halt on error
3	01003 (=03)	1 pass only	Cycle program indefinitely
4	01004 (=04)	Bypass manual routines	Execute manual routines
5	01005 (=05)	No loops on same data	Loop routine using same data

The Console Printer Inquiry routine mentioned above may be used to alter TADS. To alter TADS do the following:

2.00.02.0 OPERATING PROCEDURE (continued)

Depress Inquiry Request Key

Note: If program is stopped when this key is depressed, it will be necessary to press computer start to branch on inquiry. Machine should type an I, make a space and unlock the keyboard for insertion of characters (1's or 0's) beginning at location 01000.

Key in the six numbers (0's and 1's) for desired set up of TAD0 - TAD5 (location 01000 - 01005).

Note: The program requires that the six digits always be altered even though it may be desired to change only TAD3 (location 01003). If an error is made during the key-in, the inquiry cancel key may be depressed to terminate the inquiry and branch program back to the same read console printer instruction.

Depress the inquiry release key to resume running.

2.00.03.0 OPERATING HINTS AND COMMENTS

1. Post restart for all routines is contained in locations 1901 - 1904. Locations 0001 - 0004 will contain a branch to 1901 to allow restart of any routine by depressing computer reset and start.

2. If a routine is causing an alarm failure and it is desired to loop the routine for scoping, do the following:

   a. Alter TAD1 to 1 to loop the routine.

   b. Turn the check control switch to RESET and RESTART mode.

   c. If failure is occurring within a reader test, it may be desirable to duplicate the cards being used with the failing routine to allow for continuous looping.

   Note: Altering TAD1 to 1 is desired for intermittent alarm failures to insure that the program will stay in the failing routine.

2.00.03.0 OPERATING HINTS AND COMMENTS (continued)

3. Normal print output for print test routines will include three types as follows:

Type 1	100 positions containing all 64 characters and beginning with BZ01
Type 2	26 lines of 20 positions (F-Z & 0-4)
Type 3	132 positions of PRBUSYTEST or PRTERRTEST

If printer chain is numeric, types 1 and 3 above will appear as 0123456789 and only 0-4 will print in type 2. Any standard carriage tape may be used. The program will call for a skip to one during test for ready units while in 1410/7010 mode.

4. The routine to force punch errors allows ten cards to be punched and then reinserted in the punch feed, 9 edge first face down, to cause hole count checks. Almost any prepunched cards may be used for this test. Mention of this is made to allow for the processing of a larger card deck for the purpose of looping this routine.

5. Normal tape operations with tapes of sufficient lengths will not cause the encountering of end of reel with tape write instructions. Tape rewinds within the program are never bypassed, so that only several feet of tape will be used. If end of reel is encountered during tape writes, the program may rewind the tape prematurely or "END OF REEL" may type without rewinding. Either of these results may cause errors to occur such as non-compares when checking the data written, etc. They merely provide indication that End of Reel was encountered and it is suggested that longer reels of tape be used unless the branch on EOR appears to be erroneous.

6. Tape errors resulting in other than scramble overlap routines (21-46) will be indicated only after ten successive retries have been made. Within routines 21-46, however, a single read or write tape error will cause an error typeout. Within these routines a check for tape error is not made until the tape operation along with the associated I/O operation is completed. A few tape errors, therefore, may be tolerated during a pass of the program but should not be consistent.

2.00.03.0 OPERATING HINTS AND COMMENTS (continued)

7. If printouts are not inhibited, routine No. 4 to cause system check error with move of location containing no bits will result in two error printouts, one for channel A error and one for channel B error before typing message to restore CK control switch to normal.

2.00.04.0 PROGRAM STOPS AND RESTARTS

N	02008	Normal halt while in 1410/7010 mode following typeout of program ID and instructions for setting switches. Set switches and press Start.
N	02223	Normal halt following instruction message for altering location 7800. Alter this location to no bits (hold shift, depress 8 key), set CK control switch to restart and press Start..
N	02261	Normal halt following message to restore CK control switch to normal. Set switch to normal and press Start.
N	02772	Normal halt following message to disable print hammer. Disable print hammer and press Start.
N	02990	Normal halt following message to restore print hammer. After restoring the print hammer, press Start..
N	03070	Normal halt following message to insert cards in punch hopper. Insert last ten cards punched 9 edge first face down followed by blank cards in punch and press Start.
N	05951	Normal halt following message to set compatibility switch to 1410/7010. Set switch and press computer reset and start to continue.

2.00.04.0 PROGRAM STOPS AND RESTARTS (continued)

N	05961	Normal halt following completion of one program pass when TAD3 is set to 1. Depress computer reset and start for next pass.
	06544	Halt following typeout indicating tape write error when TAD2 is set to 1. Press Start to attempt write again.
	06689	Tape Read Error halt - occurs following typeout of tape read error message when TAD2 is set to 1. Press Start to continue.
	06823	Halt following typeout indicating false TP EOF when TAD2 is set to 1. Press Start to continue.
	06907	Error halt - occurs following error typeout when TAD2 is set to 1. Press Start to continue.

2.00.05.0 TYPEOUTS

05.1 NON-ERROR TYPEOUTS

M014A
SET SENSE SW A ON
SET I/O CK STOP SW OFF
SET COMPATIBILITY SW TO 1401
PRESS START

This typeout occurs after program is loaded while system is still in 1410/7010 mode.

ALTER LOC 7800 TO NO BITS SET CK CONTROL SW TO RESTART AND PRESS START

SET CK CONTROL SW TO NORMAL PRESS START

These typeouts occur in routine 4 to force system check error with move of location containing no bits (will occur only when TAD4 is set to 1).

2.00.05.0 TYPEOUTS (continued)

DISABLE 1403 PRINT HAMMER PRESS START

RESTORE 1403 PRINT HAMMER TO NORMAL STATUS
PRESS START

These typeouts occur in routine to force printer error (will occur only when TAD4 is set to 1).

READY 10 CARDS JUST PUNCHED IN
PUNCH 9 EDGE FIRST FACE DOWN
FOLLOWED BY BLANK CARDS PRESS START

This typeout occurs following punching of ten cards to be used in force punch error routines (will occur only when TAD 4 is set to 1).

SET COMPATIBILITY SW TO 1410/7010 PRESS COMPUTER RESET AND START

This typeout occurs at end of program pass if TAD3 is not 1.

PASS

Occurs after one complete pass of the program.

05.2 ERROR TYPEOUTS

TP WR ERR XXX
TP RD ERR XXX

These typeouts will occur when ten successive tries to read or write a record on tape in other than scramble overlap routines have failed. XXX will be the three-digit representation of the five-position error address. See address conversion chart. (These typeouts can occur only when TAD0 does not contain a 1.)

END OF REEL

This typeout occurs whenever END OF REEL is sensed when writing tape in other than scramble overlap routines. (Can occur only when TAD0 does not contain a 1.)

05.2 ERROR TYPEOUTS (continued)

FALSE TP EOF XXX

This typeout occurs whenever a false end of file is detected when reading tape. XXX is the three-digit representation of the five-position error address; occurs only when TAD0 does not contain a 1.

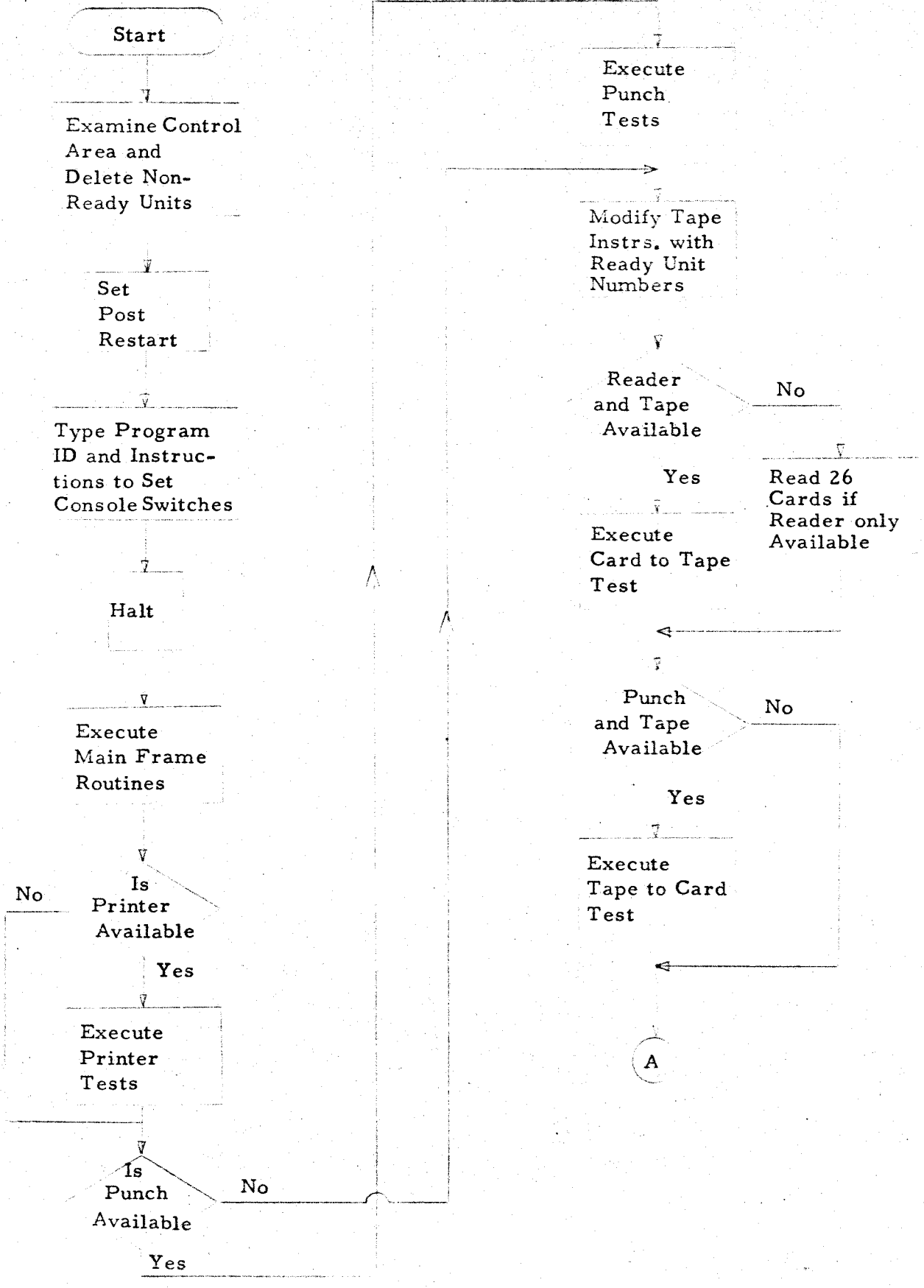
ERR XXX

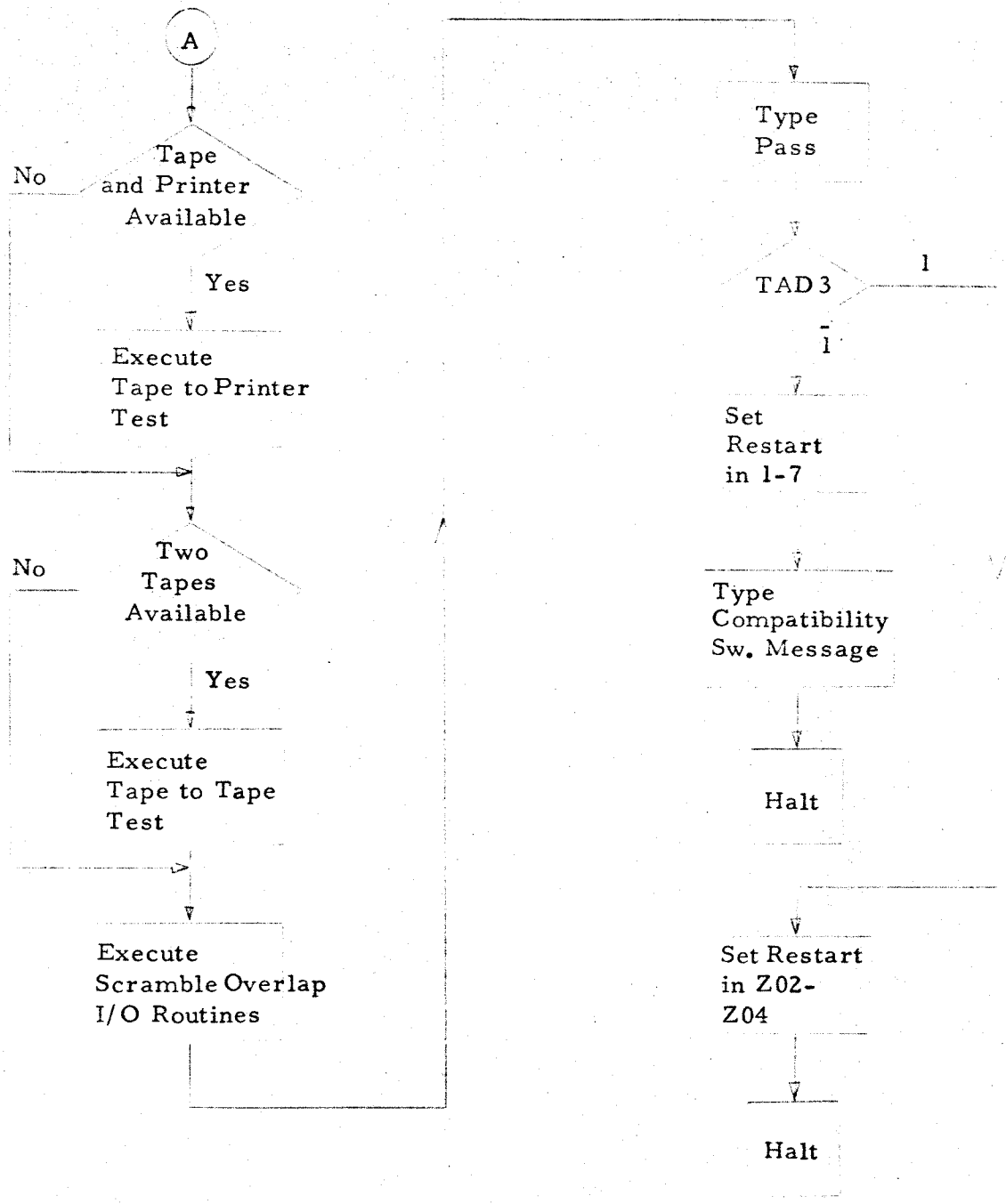
This typeout occurs whenever an error is detected within a test routine and TAD0 does not contain a 1. XXX is the three-digit representation of the five-position error address. Error addresses may be deciphered as follows:

B = 2		B = 8
A = 1		A = 4
0	0	0
Hundredths		Units

EX. ERR P2S

B A
P2S = 722 = 06722


Start
Examine Control Area and Delete Non-Ready Units
Set Post Restart
Type Program ID and Instructions to Set Console Switches
Halt
Execute Main Frame Routines
Is Printer Available
No
Yes
Execute Printer Tests
Is Punch Available
No
Yes
Execute Punch Tests
Modify Tape Instrs. with Ready Unit Numbers
Reader and Tape Available
No
Yes
Read 26 Cards if Reader only Available
Execute Card to Tape Test
Punch and Tape Available
No
Yes
Execute Tape to Card Test
A


A
Tape and Printer Available
No
Yes
Execute Tape to Printer Test
Two Tapes Available
No
Yes
Execute Tape to Tape Test
Execute Scramble Overlap I/O Routines
Type Pass
TAD 3
1
-1
Set Restart in 1-7
Type Compatibility Sw. Message
Halt
Set Restart in Z02-Z04
Halt

ACTUAL ADDRESSES	ZONE BITS OVER HUNDREDS POSITION	ZONE BITS OVER UNITS POSITION	3-CHARACTER ADDRESSES
0000 to 0999	No Zine Bits	No Zone Bits	000 to 999
1000 to 1999	A-Bit (Zero-Zone)	No Zone Bits	↑00 to Z99
2000 to 2999	B-Bit (11-Zone)	No Zone Bits	↓00 to R99
3000 to 3999	AB-Bits (12-Zone)	No Zone Bits	?00 to 199
4000 to 4999	No Zone Bits	A-Bit (Zero-Zone)	00↓ to 99Z
5000 to 5999	A-Bit (Zero-Zone)	A-Bit (Zero-Zone)	↑0↓ to Z9Z
6000 to 6999	B-Bit (11-Zone	A-Bit (Zero-Zone)	↓0↓ to R9Z
7000 to 7999	AB-Bits (12-Zone)	A-Bit (Zero-Zone)	?0↓ to 19Z
8000 to 8999	No Zone Bits	B-Bit (11-Zone)	00↓ to 99R
9000 to 9999	A-Bit (Zero-Zone)	B-Bit (11-Zone)	↑0↓ to Z9R
10000 to 10999	B-Bit (11-Zone)	B-Bit (11-Zone)	↓0↓ to R9R
11000 to 11999	AB-Bits (12-Zone)	B-Bit (11-Zone)	?0↓ to 19R
12000 to 12999	No Zone Bits	AB-Bits (12-Zone)	00? to 99↓
13000 to 13999	A-Bit (Zero-Zone)	AB-Bits (12-Zone)	↑0? to Z9↓
14000 to 14999	B-Bit (11-Zone)	AB-Bits (12-Zone)	↓0? to R9↓
15000 to 15999	AB-Bits (12-Zone)	AB-Bits (12-Zone)	?0? to 19↓

2.00.00.0 READER TEST DECK

MC14 READER TEST DECK

```
0         1         2         3         4         5         6         7         8
1.....0.....0.....0.....0.....0.....0.....0.....0.....0.....0.....0.....0
BZ01 AAAAAAAAAAAAAAAAAAA
BZ01 BBBBBBBBBBBBBBBBBBB
BZ01 CCCCCCCCCCCCCCCCCCC
BZ01 DDDDDDDDDDDDDDDDDDD
BZ01 EEEEEEEEEEEEEEEEEEE
BZ01 FFFFFFFFFFFFFFFFFFF
BZ01 GGGGGGGGGGGGGGGGGGG
BZ01 HHHHHHHHHHHHHHHHHHH
BZ01 IIIIIIIIIIIIIIIIIII
BZ01 JJJJJJJJJJJJJJJJJJJ
BZ01 KKKKKKKKKKKKKKKKKKK
BZ01 LLLLLLLLLLLLLLLLLLL
BZ01 MMMMMMMMMMMMMMMMMMM
BZ01 NNNNNNNNNNNNNNNNNNN
BZ01 OOOOOOOOOOOOOOOOOOO
BZ01 PPPPPPPPPPPPPPPPPPP
BZ01 QQQQQQQQQQQQQQQQQQQ
BZ01 RRRRRRRRRRRRRRRRRRR
BZ01 SSSSSSSSSSSSSSSSSSS
BZ01 TTTTTTTTTTTTTTTTTTT
BZ01 UUUUUUUUUUUUUUUUUUU
BZ01 VVVVVVVVVVVVVVVVVVV
BZ01 WWWWWWWWWWWWWWWWWWW
BZ01 XXXXXXXXXXXXXXXXXXX
BZ01 YYYYYYYYYYYYYYYYYYY
BZ01 ZZZZZZZZZZZZZZZZZZZ
```

CARDS 27-36 PUNCHED AS FOLLOWS

```
                                      +++++ -----   0000       0
                                      34567 34567   456734567+-2
BZ01 FGHIJKLMNOPQRSTUVWX*Z0123456789888888+88888-/*888888888008 ABCDEFGHIJK*MNOPQ
```

* IN COLS 25, 50 AND 75 INDICATE 3, 4, 5, 7, AND 8 PUNCHES

CARDS 37-36 PUNCHED AS FOLLOWS

```
                                      +++++ -----  00000       0
                                      34567 34567  3456734567+-2
BZ01 FGHIJKLMNOPQRSTUVWXYZ0123456789888888+88888-/888888888008 ABCDEFGHIJKLMNOPQ
```

```
SEQ PG LIN  LABEL  OP    OPERANDS                                                  SFX CT  LOCN  INSTRUCTION

101 AA 00   000    JOB   1410/7010-1401 TOPSY COMPATIBILITY TEST
I02 AA 01          CTL   461111
103 AA 03
I04 AA 04                      * * * * * * * * * * * * * * * * *
105 AA 06                                1410/7010 -1401
I06 AA 07                              COMPATIBILITY TEST
I07 AA 08                      * * * * * * * * * * * * * * * * *
I08 AA 09
I09 AA 10   TAD0   EQU   1000                                                          1000
110 AA 11   TAD1   EQU   1001                                                          1001
111 AA 12   TAD2   EQU   1002                                                          1002
112 AA 13   TAD3   EQU   1003                                                          1003
113 AA 14   TAD4   EQU   1004                                                          1004
I14 AA 15   TAD5   EQU   1005                                                          1005
115 AA 16   SYSI   EQU   1256                                                          1256
116 AA 17   CHN1   EQU   1289                                                          1289
I17 AA 18   START  EQU   2000                                                          2000
I18 AA 19
119 AA 20
120 AA 21          ORG   SYSI                                                                  1256
121 AA 22          DC    @                                  @                   32  1287
122 AA 23          DC    @ @                                                     1  1288
123 AA 24
I24 AA 25          ORG   1239                                                                  1239
125 AA 26          DCW   @1J8X&0291-9@                                            11  1249
126 AA 27          DCW   @M014A@                                                   5  1254
I27 AA 28          DCW   @‡@                                                       1  1255
128 AA 29
I29 AA 30          ORG   1000                                                                  1000
I30 AA 31          DC    @000000@                                                  6  1005
131 AA 32          DCW   @‡@                                                       1  1006
I32 AA 33
133 AA 34          ORG   CHN1                                                                  1289
I34 AA 35          DC    @                                  @                   32  1320
135 AA 36          DC    @                        @                                25  1345
```

```
SEQ PG LIN  LABEL   OP   OPERANDS                                  SFX CT  LOCN  INSTRUCTION

136 AA 38           JOB  1410/7010-1401 TOPSY COMPATIBILITY TEST
137 AA 40
138 AA 41           ORG  1439                                                  1439
139 AA 42
140 AA 43
141 AA 44                      LOOP CHECK ROUTINE
142 AA 45                      THIS ROUTINE IS ENTERED AT
143 AA 46                      COMPLETION OF TEST ROUTINE
144 AA 47                      TO CK FOR INQUIRY AND LOOP
145 AA 48
146 AA 49   LOOPCK  SBR  LPEX&003                  SET ROUTINE EXIT    4  1439  H U59
147 AA 50           BIN  ALTER,Q                   CK FOR INQUIRY      5  1443  B U68 Q
148 AA 51           BCE  POST-003,TAD1,1           TEST FOR LOOP       8  1448  B Z01 ÷01 1
149 AA 52   LPEX    B    0000                      ROUTINE EXIT        4  1456  B 000
150 AA 53   ERRLOC  DCW  @ERR    @                                     7  1466
151 AA 54           DCW  @÷@                                           1  1467
152 AA 55
153 AA 56
154 AA 57                      CONSOLE PRINTER INQUIRY ROUTINE
155 AA 58
156 AA 59   ALTER   SBR  ALTEX&003                 SET ROUTINE EXIT    4  1468  H U88
157 AA 60           MCW  %TO,1000,R                READ CON. PRTR.     8  1472  M %TO ÷00 R
158 AA 61                                          TO ALTER TADS
159 AA 62           BIN  *-012,*                   CK FOR INQ ERR      5  1480  B U72 *
160 AA 63   ALTEX   B    0000                      ROUTINE EXIT        4  1485  B 000
161 AA 64
162 AA 65
163 AA 66                      ROUTINE TO TEST TAD5 FOR
164 AA 67                      LOOP ON SAME DATA AND
165 AA 68                      TO TEST FOR INQUIRY
166 AA 69
167 AA 70   TAD5CK  SBR  TD5EX&003                 SET ROUTINE EXIT    4  1489  H V09
168 AA 71           BIN  ALTER,Q                   CK FOR INQUIRY      5  1493  B U68 Q
169 AA 72           BCE  0001,TAD5,1               TEST FOR LOOP       8  1498  B 001 ÷05 1
170 AA 73   TD5EX   B    0000                      ROUTINE EXIT        4  1506  B 000
```

```
SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION

171 AA 75          JOB   1410/7010-1401 TOPSY COMPATIBILITY TEST
172 AA 77          ORG   2000                                                            2000
173 AA 78
174 AA 79          DCW   @J08500 @                                           7  2006
175 AA 80                                                  GO TO 8500 TO
176 AA 81                                                  DELETE NON READY
177 AA 82                                                  DEVICES
178 AA 83                                                  SET RESTART AND
179 AA 84                                                  TYPE PROGRAM ID
180 AA 85          DCW   @.@                                                1  2007
181 AA 86                                                  HALT TO SET COMP
182 AA 87                                                  SW TO 1401
183 AA 88                                                  PRESS START
184 AA 89          LCA   RESTA&004,0005                    SET RESTART       7  2008  L &2W 005
185 AA 90
186 AA 91
187 AA 92                          ROUTINE NO. 1
188 AA 93
189 AA 94                          EXECUTE BRANCH IF CHAR EQUAL
190 AA 95                          INSTRUCTION WITH INSTRUCTION
191 AA 96                          LENGTHS GREATER THAN 8
192 AA 97                          EXECUTE ROUTINE 5 TIMES
193 AA 98
194 AA 99          NOP   *&005                             SET ROUT. START   4  2015  N -23
195 AB 00          SAR   POST                              ADDR IN Z02-Z04   4  2019  Q Z04
196 AB 01          BCE   BCE,TAD5,1                        BYPASS RESET      8  2023  B -64 ‡05 1
197 AB 02          LCA   DMS,BCE&015                       SET EXTENSION OF  7  2031  L &3X -79
198 AB 03          CW    BCE&008                            BCE INSTR        4  2038  ¤ -72
199 AB 04          LCA   ZER3,0089                         RESET XR1         7  2042  L &4‡ 089
200 AB 05   NX     SW    BCE&008&X1                        SET WM            4  2049  , -X2
201 AB 06          CW    BCE&006&X1                        CLEAR WM          4  2053  ¤ -X0
202 AB 07          MCW   BCE&007&X1,CHTEST                 SET CHARACTER     7  2057  M -X1 &4/
203 AB 08   BCE    BCE   BROK,CHTEST,A                     EXEC BCE INSTR    8  2064  B -84 &4/ A
204 AB 09          DCW   @NBNCNDNE@                                          8  2079
205 AB 10          B     TYP1-031                          BR CH EQ INST     4  2080  B Q2X
206 AB 11                                                  FAILED TO BRANCH
207 AB 12   BROK   B     TAD5CK                            CK FOR LOOP ON    4  2084  B U89
208 AB 13                                                  SAME LEN INSTR
209 AB 14          A     TWO,0089                          ADD 2 TO XR1      7  2088  A &4S 089
210 AB 15          C     0089,Z10                          CK FOR 5 PASSES   7  2095  C 089 &4V
211 AB 16          BU    NX                                EXEC NEXT INST    5  2102  B -49 /
212 AB 17          B     LOOPCK                            CK FOR LOOP       4  2107  B U39
213 AB 18
214 AB 19
215 AB 20                          ROUTINE NO. 2
216 AB 21
217 AB 22                          EXECUTE TWO ADDRESS SBR INSTR
218 AB 23                          H XXX YYY
219 AB 24
220 AB 25          NOP   *&005                             SET ROUT. START   4  2111  N J19
```

```
SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION

221 AB 26          SAR   POST                          ADDR IN Z02-Z04      4  2115  Q Z04
222 AB 27          LCA   ZER3,0089                     RESET XR1            7  2119  L &4# 089
223 AB 28          LCA   XXX,TSBR                       AND B FLD           7  2126  L &5/ &4Y
224 AB 29          SBR   0089,TSBR                     2 ADDR SBR           7  2133  H 089 &4Y
225 AB 30          C     0089,TSBRAN                   CK RESULT            7  2140  C 089 &5U
226 AB 31          BU    TYP1                          CONTENTS OF XR1      5  2147  B Q5Y /
227 AB 32                                              IS INCORRECT
228 AB 33          C     TSBR,XXX                      CK B FLD             7  2152  C &4Y &5/
229 AB 34          BU    TYP1                          B FIELD CHANGED      5  2159  B Q5Y /
230 AB 35                                              SHOULD BE XXX
231 AB 36          B     LOOPCK                        CK FOR LOOP          4  2164  B U39
232 AB 37
233 AB 38
234 AB 39                          ROUTINE NO. 3
235 AB 40                          EXECUTE INDEXED NOP INSTRUCTION
236 AB 41
237 AB 42          NOP   *&005                         SET ROUT START       4  2168  N J76
238 AB 43          SAR   POST                          ADDR IN Z02-Z04      4  2172  Q Z04
239 AB 44          LCA   BKCYC,0089                    LOAD XR1 - I9E       7  2176  L Z8V 089
240 AB 45          NOP   1000&X1,1000&X1               EXECUTE NOP          7  2183  N ##0 ##0
241 AB 46          B     LOOPCK                                             4  2190  B U39
242 AB 47
243 AB 48
244 AB 49                          ROUTINE NO. 4
245 AB 50                          FORCE SYSTEM CHECK ERROR
246 AB 51                          WITH MOVE OF LOC. CONTAINING
247 AB 52                          EVEN NUMBER OF BITS
248 AB 53                          TEST BRANCH ON PROCESS ERROR
249 AB 54                          %LOC ALTERED TO EVEN BITS
250 AB 55                          FROM CONSOLE TYPEWRITER¤
251 AB 56          BCE   EX8,TAD4,1                    CK FOR MANL TEST     8  2194  B K06 #04 1
252 AB 57          B     RN5                           BYPASS ROUTINE       4  2202  B K65
253 AB 58  EX8     NOP   MKSTP                         SET ROUT START       4  2206  N K27
254 AB 59          SAR   POST                          ADDR IN Z02-Z04      4  2210  Q Z04
255 AB 60          MCW   %T0,PROCMS-031,W              TYPE MESSAGE         8  2214  M %T0 C5/ W
256 AB 61          H                                   HALT TO ALTER        1  2222  .
257 AB 62                                              LOC 7800
258 AB 63                                              HOLD SHIFT AND
259 AB 64                                              DEPRESS KEY 8
260 AB 65          SW    7801                          SET WM               4  2223  , H0/
261 AB 66  MKSTP   MCW   7800,7801                     EXEC MOVE OP         7  2227  M H0# H0/
262 AB 67          BIN   ROK8,%                        CK FOR PROC ERR      5  2234  B K43 %
263 AB 68          B     TYP1-031                      PROGRAM FAILED       4  2239  B Q2X
264 AB 69                                              TO BR ON PROCESS
265 AB 70                                              ERROR
266 AB 71  ROK8    BIN   TYP1,%                        ERR LATCH DID        5  2243  B Q5Y %
267 AB 72                                              NOT RESET
268 AB 73          B     LOOPCK                        CK FOR LOOP          4  2248  B U39
269 AB 74          MCW   %T0,RESCK-031,W               TYPE MESSAGE         8  2252  M %T0 A2W W
270 AB 75          H                                   HALT TO RESTORE      1  2260  .
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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION

271 AB 76                                                  CK CONTROL SW
272 AB 77          CS    7801                              CLEAR WORK AREA      4  2261  / H0/
273 AB 78
274 AB 79
275 AB 80                          ROUTINE NO. 5
276 AB 81                          ADD 99 TO 11 AND CHECK
277 AB 82                          FOR /0 RESULT WITH OVERFLOW
278 AB 83
279 AB 84   RN5    NOP   *&005                                SET ROUT START      4  2265  N K73
280 AB 85          SAR   POST                              ADDR IN Z02-Z04      4  2269  Q Z04
281 AB 86          LCA   AA1,ADAREA                                             7  2273  L B5/ B6X
282 AB 87          A     NINT9,ADAREA                      EXECUTE ADD          7  2280  A B6Z B6X
283 AB 88          C     ADAREA,ADAN                       CK RESULT            7  2287  C B6X B5Z
284 AB 89          BU    TYP1                              RESULT OF ADD        5  2294  B Q5Y /
285 AB 90                                                   IS INCORRECT
286 AB 91          BAV   *&005                             CK FOR OVERFLOW      5  2299  B L08 Z
287 AB 92          B     TYP1-031                          DID NOT GET OVFL     4  2304  B Q2X
288 AB 93          B     LOOPCK                            CK FOR LOOP          4  2308  B U39
289 AB 94
290 AB 95
291 AB 96                          ROUTINE NO. 6
292 AB 97                          ADD 99 TO /1 AND CHECK
293 AB 98                          FOR J0 RESULT WITH OVERFLOW
294 AB 99
295 AC 00          NOP   *&005                             SET ROUT START       4  2312  N L20
296 AC 01          SAR   POST                              ADDR IN Z02-Z04      4  2316  Q Z04
297 AC 02          LCA   AA1&002,ADAREA                                         7  2320  L B5T B6X
298 AC 03          A     NINT9,ADAREA,E                    XECUTE ADD           8  2327  A B6Z B6X E
299 AC 04          C     ADAREA,ADAN&002                   CK RESULT            7  2335  C B6X B6/
300 AC 05          BU    TYP1                              RESULT OF ADD        5  2342  B Q5Y /
301 AC 06                                                  IS INCORRECT
302 AC 07          BAV   *&005                             CK FOR OVERFLOW      5  2347  B L56 Z
303 AC 08          B     TYP1-031                          DID NOT GET OVFL     4  2352  B Q2X
304 AC 09          B     LOOPCK                            CK FOR LOOP          4  2356  B U39
305 AC 10
306 AC 11
307 AC 12                          ROUTINE NO. 7
308 AC 13                          ADD 99 TO J1 AND CHECK
309 AC 14                          FOR A0 RESULT WITH OVERFLOW
310 AC 15
311 AC 16          NOP   *&005                             SET ROUT START       4  2360  N L68
312 AC 17          SAR   POST                              ADDR IN Z02-Z04      4  2364  Q Z04
313 AC 18          LCA   AA1&004,ADAREA                                         7  2368  L B5V B6X
314 AC 19          A     NINT9,ADAREA                      EXECUTE ADD          7  2375  A B6Z B6X
315 AC 20          C     ADAREA,ADAN&004                   CK RESULT            7  2382  C B6X B6T
316 AC 21          BU    TYP1                              RESULT OF ADD        5  2389  B Q5Y /
317 AC 22                                                  IS INCORRECT
318 AC 23          BAV   *&005                             CK FOR OVERFLOW      5  2394  B M03 Z
319 AC 24          B     TYP1-031                          DID NOT GET OVFL     4  2399  B Q2X
320 AC 25          B     LOOPCK                            CK FOR LOOP          4  2403  B U39
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SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION

321 AC 26
322 AC 27
323 AC 28                          ROUTINE NO. 8
324 AC 29                          ADD 99 TO A1 AND CHECK
325 AC 30                          FOR 10 RESULT WITH OVERFLOW
326 AC 31
327 AC 32          NOP   *&005                                  SET ROUT START      4  2407  N M15
328 AC 33          SAR   POST                                   ADDR IN Z02-Z04     4  2411  Q Z04
329 AC 34          LCA   AA1&006,ADAREA                                             7  2415  L B5X B6X
330 AC 35          A     NINT9,ADAREA                           EXECUTE ADD         7  2422  A B6Z B6X
331 AC 36          C     ADAREA,ADAN&006                        CK RESULT           7  2429  C B6X B6V
332 AC 37          BU    TYP1                                   RESULT OF ADD       5  2436  B Q5Y /
333 AC 38                                                       IS INCORRECT
334 AC 39          BAV   *&005                                  CK FOR OVERFLOW     5  2441  B M50 Z
335 AC 40          B     TYP1-031                               DID NOT GET OVFL    4  2446  B Q2X
336 AC 41          B     LOOPCK                                 CK FOR LOOP         4  2450  B U39
337 AC 42          CS    0332                                   CLEAR               4  2454  / 332
338 AC 43          CS                                            PRINT AREA         1  2458  /
339 AC 44
340 AC 45                          ROUTINE NO. 9
341 AC 46                          PRINT 10 LINES AND
342 AC 47                          TEST BRANCH ON PRINTER BUSY
343 AC 48
344 AC 49          BCE   EX9,1305,P                             CK FOR PRINTER      8  2459  B M71 T05 P
345 AC 50          B     RN14                                   BYPASS PRT TESTS    4  2467  B R95
346 AC 51   EX9    NOP   *&005                                  SET ROUT. START     4  2471  N M79
347 AC 52          SAR   POST                                   ADDR IN Z02-Z04     4  2475  Q Z04
348 AC 53          BCE   *&012,1306,N                           CK FOR NUM CHAIN    8  2479  B M98 T06 N
349 AC 54          MCW   PRBSEG,0332                            MV DATA             7  2487  M B3V 332
350 AC 55          B     *&008                                                      4  2494  B N05
351 AC 56          MCW   PRBNSG,0332                            MV DATA             7  2498  M A0T 332
352 AC 57          SW    0201                                    TO PRINT AND       4  2505  , 201
353 AC 58          MCW   0332,0322                                SPREAD IT OUT     7  2509  M 332 322
354 AC 59          LCA   ZZZ,0089                               RESET XR 1          7  2516  L B4W 089
355 AC 60   PT2    LCA   ZZZZ,CYCNT                             RESET COUNTER       7  2523  L B4T B3Z
356 AC 61          W                                            PRINT LINE          1  2530  2
357 AC 62          BPB   CKBUSY                                 CK FOR PRINT BSY    5  2531  B Z6/ P
358 AC 63          C     CYCNT,ZZZZ                             CK CNTR             7  2536  C B3Z B4T
359 AC 64          BE    TYP1                                   PROG FAILED TO      5  2543  B Q5Y S
360 AC 65                                                       BR ON BUSY
361 AC 66          BIN   TYP1,#                                 CK FOR PRINT ERR    5  2548  B Q5Y #
362 AC 67          A     ONE,0089                               UP XR 1             7  2553  A A1U 089
363 AC 68          C     0089,Z10                               CK FOR 10 LINES     7  2560  C 089 &4V
364 AC 69          BU    PT2                                    PRINT NEXT LINE     5  2567  B N23 /
365 AC 70          B     LOOPCK                                 CK FOR LOOP         4  2572  B U39
366 AC 71          CS    0332                                   CLEAR               4  2576  / 332
367 AC 72          CS                                            PRINT AREA         1  2580  /
368 AC 73
369 AC 74                          ROUTINE NO. 10
370 AC 75                          PRINT 10 LINES AND TEST
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION

371 AC 76                          FOR SYSTEM INTERLOCK EXECUTING
372 AC 77                          BR ON PRINT ERROR BEFORE
373 AC 78                          BR ON PRINT BUSY
374 AC 79
375 AC 80          NOP   *&005                          SET ROUT START      4  2581  N N89
376 AC 81          SAR   POST                           ADDR IN Z02-Z04     4  2585  Q Z04
377 AC 82          BCE   *&012,1306,N                   CK FOR NUM CHAIN    8  2589  B 008 T06 N
378 AC 83          MCW   PRBSEG,0332                    MV DATA             7  2597  M B3V 332
379 AC 84          B     *&008                                            4  2604  B 015
380 AC 85          MCW   PRBNSG,0332                    MV DATA             7  2608  M A0T 332
381 AC 86          SW    0201                            TO PRINT AND       4  2615  , 201
382 AC 87          MCW   0332,0322                        SPREAD IT OUT     7  2619  M 332 322
383 AC 88          LCA   ZZZ,0089                       RESET XR 1          7  2626  L B4W 089
384 AC 89   PT3    LCA   ZZZZ,CYCNT                     RESET CNTR          7  2633  L B4T B3Z
385 AC 90          W                                    PRINT LINE          1  2640  2
386 AC 91          BIN   TYP1,*                         PRINT ERROR         5  2641  B Q5Y *
387 AC 92          BPB   TYP1                           PROG BRANCHED ON    5  2646  B Q5Y P
388 AC 93                                               BUSY BR ON PRT
389 AC 94                                               ERR DID NOT
390 AC 95                                               CAUSE INTERLOCK
391 AC 96          A     ONE,0089                       UP XR 1             7  2651  A A1U 089
392 AC 97          C     0089,Z10                       CK FOR 10 LINES     7  2658  C 089 &4V
393 AC 98          BU    PT3                            PRINT NEXT LINE     5  2665  B 033 /
394 AC 99          B     LOOPCK                         CK FOR LOOP         4  2670  B U39
395 AD 00          CS    0332                           CLEAR               4  2674  / 332
396 AD 01          CS                                    PRINT AREA         1  2678  /
397 AD 02
398 AD 03                          ROUTINE NO. 11
399 AD 04                          EXECUTE CARRIAGE CONTROL
400 AD 05                          OPS AND TEST FOR
401 AD 06                          PRINTER CARRIAGE BUSY
402 AD 07
403 AD 08          NOP   *&005                          SET ROUT. START     4  2679  N 087
404 AD 09          SAR   POST                           ADDR IN Z02-Z04     4  2683  Q Z04
405 AD 10          LCA   ZZZ,0089                       RESET XR 1          7  2687  L B4W 089
406 AD 11   PT4    LCA   ZZZZ,CYCNT                     RESET CNTR          7  2694  L B4T B3Z
407 AD 12          CC    L                                                  2  2701  F L
408 AD 13          BPCB  CKBUSY                         CK FOR BUSY         5  2703  B Z6/ R
409 AD 14          C     CYCNT,ZZZZ                     CK COUNTER          7  2708  C B3Z B4T
410 AD 15          BE    TYP1                           PROG DID NOT        5  2715  B Q5Y S
411 AD 16                                               BRANCH BUSY
412 AD 17                                               AFTER CARR SPACE
413 AD 18          A     ONE,0089                       UP XR 1             7  2720  A A1U 089
414 AD 19          C     0089,ZZ5                       CK FOR 5 SPACES     7  2727  C 089 B2V
415 AD 20          BU    PT4                            SPACE AGAIN         5  2734  B 094 /
416 AD 21          B     LOOPCK                         CK FOR LOOP         4  2739  B U39
417 AD 22
418 AD 23
419 AD 24                          ROUTINE NO 12
420 AD 25
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION

421 AD 26                        FORCE PRINTER ERROR
422 AD 27                        HALT TO DISABLE PRINT HAMMER
423 AD 28                        PRINT 10 LINES AND TEST
424 AD 29                        BRANCH ON PRINT ERROR
425 AD 30
426 AD 31          NOP   EXX12&009          SET ROUT. START      4  2743  N P72
427 AD 32          SAR   POST               ADDR IN Z02-Z04      4  2747  Q Z04
428 AD 33          BCE   EXX12,TAD4,1       CK FOR MANL TEST     8  2751  B P63 *04 1
429 AD 34          B     RN13               GO TO NEXT ROUT.     4  2759  B Q54
430 AD 35  EXX12   MCW   &TO,PRTHAM-031,W   PRINT MESSAGE        8  2763  M &TO &5V W
431 AD 36          H                        HALT TO DISABLE      1  2771  .
432 AD 37                                   PRINT HAMMER
433 AD 38          LCA   ZZZ,0089           RESET XR 1           7  2772  L B4W 089
434 AD 39          BCE   *&012,1306,N       CK FOR NUM CHAIN     8  2779  B P98 T06 N
435 AD 40          MCW   IMSEG,0332         MV IN IMAGE SEGM     7  2787  M A1T 332
436 AD 41          B     *&008                                   4  2794  B Q05
437 AD 42          MCW   PRBNSG,0332        MV DATA              7  2798  M AOT 332
438 AD 43          SW    0201               SET WM               4  2805  , Z01
439 AD 44          MCW   0332,0322          SPREAD RECORD        7  2809  M 332 322
440 AD 45  PT      W                        PRINT LINE           1  2816  2
441 AD 46          BIN   CKER,*             CK FOR PRINT ERR     5  2817  B Q26 *
442 AD 47          B     TYP1-031           FAILED TO BRANCH     4  2822  B Q2X
443 AD 48                                   ON PRINT ERROR
444 AD 49  CKER    BIN   TYP1,*             CK FOR RESET         5  2826  B Q5Y *
445 AD 50          A     ONE,0089           UP XR 1              7  2831  A A1U 089
446 AD 51          C     0089,Z10           CK FOR 10 LINES      7  2838  C 089 &4V
447 AD 52          BU    PT                 PRINT NEXT LINE      5  2845  B Q16 /
448 AD 53          B     LOOPCK             CK FOR LOOP          4  2850  B U39
449 AD 54
450 AD 55
451 AD 56                        ROUTINE NO. 13
452 AD 57
453 AD 58                        WITH PRINT HAMMER DISABLED
454 AD 59                        FROM PREVIOUS ROUTINE CHECK
455 AD 60                        FOR NO RESET OF PRINT ERROR
456 AD 61                        LATCH WITH BRANCH INSTR HAVING
457 AD 62                        REC MARK IN UNITS PSN OF ADDRESS
458 AD 63
459 AD 64  RN13    NOP   PT1                SET ROUT. START      4  2854  N Q99
460 AD 65          SAR   POST               ADDR IN Z02-Z04      4  2858  Q Z04
461 AD 66          BCE   EXX13,TAD4,1       CK FOR MANL TEST     8  2862  B Q74 *04 1
462 AD 67          B     RN14               BYPASS ROUTINE       4  2870  B R95
463 AD 68  EXX13   LCA   FRTHOU,0094         SAVE                 7  2874  L A1X 094
464 AD 69          LCA   SVLOC,0099           4000 AREA          7  2881  L A2V 099
465 AD 70          B     SVRES              SAVE 4000 AREA       4  2888  B R1W
466 AD 71          LCA   BRBK&004,4004      LOAD BR INSTR        7  2892  L E2X 00U
467 AD 72  PT1     LCA   ZZZ,0089           RESET XR 1           7  2899  L B4W 089
468 AD 73  PR1     W                        PRINT LINE           1  2906  2
469 AD 74          B     4000               BRANCH TO 4000       4  2907  B 00*
470 AD 75  BCK     BIN   CKER1,*            CK FOR PRINT ERR     5  2911  B R20 *
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SEQ PG LIN  LABEL  OP    OPERANDS                    SFX CT  LOCN  INSTRUCTION

471 AD 76          B     TYP1-031                    BRANCH INSTR        4  2916  B Q2X
472 AD 77                                            CAUSED PRT ERROR
473 AD 78                                            LATCH TO RESET
474 AD 79  CKER1   BIN   TYP1,*                      PREVIOUS BR ON      5  2920  B Q5Y *
475 AD 80                                            PRT ERR DID NOT
476 AD 81                                            RESET ERROR LAT
477 AD 82          A     ONE,0089                    UP XR 1             7  2925  A A1U 089
478 AD 83          C     0089,Z10                    CK FOR 10 LINES     7  2932  C 089 &4V
479 AD 84          BU    PR1                         PRINT NEXT LINE     5  2939  B R06 /
480 AD 85          B     LOOPCK                      CK FOR LOOP         4  2944  B U39
481 AD 86          LCA   FRTHOU,0099                 RESTORE             7  2948  L A1X 099
482 AD 87          LCA   SVLOC,0094                   4000               7  2955  L A2V 094
483 AD 88          CW    4000                        CLEAR WM            4  2962  ¤ 00*
484 AD 89          B     SVRES                         AREA              4  2966  B R1W
485 AD 90          LCA   PRBSEG-005,SAVA             RESTORE             7  2970  L B3* A2S
486 AD 91          CW    SAVA-004                     SAVE AREA          4  2977  ¤ A1Y
487 AD 92          MCW   %TO,RESHAM-031,W            TYPE MESSAGE        8  2981  M %TO A6X W
488 AD 93          H                                 HALT TO RESTORE     1  2989  .
489 AD 94                                            PRINT HAMMER
490 AD 95          CS    0332                        CLEAR               4  2990  / 332
491 AD 96          CS                                 PRINT AREA         1  2994  /
492 AD 97
493 AD 98
494 AD 99                      ROUTINE NO. 14
495 AE 00
496 AE 01                      PUNCH 10 CARDS TO BE USED
497 AE 02                      IN BR ON PUNCH ERROR TEST
498 AE 03                      READY THESE CARDS IN PUNCH
499 AE 04                      FEED AND FORCE BRANCH ON
500 AE 05                      PUNCH ERR BY PUNCHING INTO
501 AE 06                      PRE PUNCHED CARDS
502 AE 07
503 AE 08  RN14    BCE   EX8,1303,P                  CK FOR PUNCH        8  2995  B &07 T03 P
504 AE 09          B     TESTP                                           4  3003  B B54
505 AE 10  EX8     BCE   EX14,TAD4,1                 CK FOR MANUAL TS    8  3007  B &19 *04 1
506 AE 11          B     TESTP                                           4  3015  B B54
507 AE 12  EX14    NOP   PN14                       SET ROUT START      4  3019  N &70
508 AE 13          SAR   POST                       ADDR IN Z02-Z04     4  3023  Q Z04
509 AE 14          LCA   ZZZ,0089                                       7  3027  L B4W 089
510 AE 15          LCA   RDCOMP&003,0180            LOAD DATA           7  3034  L C4Z 180
511 AE 16  PNDK1   P                                 PUNCH               1  3041  4
512 AE 17          A     ONE,0089                    UP XR 1             7  3042  A A1U 089
513 AE 18          C     0089,Z1C                    PUNCH               7  3049  C 089 &4V
514 AE 19          BU    PNDK1                        10 CARDS           5  3056  B &41 /
515 AE 20          MCW   %TO,PNERMS-031,W            TYPE MESSAGE        8  3061  M %TO D2T W
516 AE 21          H                                 HALT TO READY       1  3069  .
517 AE 22                                            PUNCHED CARDS
518 AE 23                                            IN PUNCH HOPPER
519 AE 24  PN14    LCA   ZZZ,0089                    RESET XR 1          7  3070  L B4W 089
520 AE 25          CS    0180                        CLEAR PUNCH AREA    4  3077  / 180
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION

521 AE 26          P                                  CYCLE PUNCH        1  3081  4
522 AE 27   PNDK2  P                                  PUNCH              1  3082  4
523 AE 28          BIN   *&005,-                      CK FOR PUN ERROR   5  3083  B &92 -
524 AE 29          B     TYP1-031                     FAILED TO BRANCH   4  3088  B Q2X
525 AE 30                                             ON PUNCH ERROR
526 AE 31          BIN   TYP1,-                       CK FOR RESET       5  3092  B Q5Y -
527 AE 32          A     ONE,0089                     UP XR 1            7  3097  A A1U 089
528 AE 33          C     0089,ZZ5                     PUNCH              7  3104  C 089 B2V
529 AE 34          BU    PNDK2                         5 CARDS           5  3111  B &82 /
530 AE 35          B     LOOPCK                       CK FOR LOOP        4  3116  B U39
531 AE 36
532 AE 37
533 AE 38                          ROUTINE NO. 15
534 AE 39
535 AE 40                          PUNCH INTO PRE PUNCHED CARDS
536 AE 41                          AND TEST FOR NO RESET OF PUNCH
537 AE 42                          ERR LATCH WITH BRANCH INSTR
538 AE 43                          HAVING - IN UNITS PSN OF ADDRESS
539 AE 44
540 AE 45          NOP   *&005                        SET ROUT START     4  3120  N A28
541 AE 46          SAR   POST                         ADDR IN Z02-Z04    4  3124  Q Z04
542 AE 47          BCE   EX2,1257,0                   CK FOR 10K MEM     8  3128  B A61 S57 0
543 AE 48          LCA   ETHOU,0094                   SAVE               7  3136  L E2S 094
544 AE 49          LCA   SVLOC,0099                    8000              7  3143  L A2V 099
545 AE 50          B     SVRES                          AREA             4  3150  B R1W
546 AE 51          LCA   BRBK1&004,8004               LOAD BR INSTR      7  3154  L E3S 00M
547 AE 52   EX2    LCA   ZZZ,0089                     RESET XR 1         7  3161  L B4W 089
548 AE 53          P                                  PUNCH CARD         1  3168  4
549 AE 54          BCE   EX3,1257,0                   CK FOR 10K MEM     8  3169  B A90 S57 0
550 AE 55          B     8000                         GO TO 8000         4  3177  B 00-
551 AE 56   BCKX   BIN   *&005,-                      CK FOR PUN ERR     5  3181  B A90 -
552 AE 57          B     TYP1-031                     BR INST CAUSED     4  3186  B Q2X
553 AE 58                                             ERR LAT TO RESET
554 AE 59   EX3    A     ONE,0089                     UP XR 1            7  3190  A A1U 089
555 AE 60          C     0089,ZZ5                     PUNCH              7  3197  C 089 B2V
556 AE 61          BU    EX2&007                       5 CARDS           5  3204  B A68 /
557 AE 62          BCE   EN,1257,0                    CK FOR 10K MEM     8  3209  B B50 S57 0
558 AE 63          LCA   SVLOC,0094                   RESTORE            7  3217  L A2V 094
559 AE 64          LCA   ETHOU,0099                    8000              7  3224  L E2S 099
560 AE 65          CW    8000                         CLEAR WM           4  3231  ¤ 00-
561 AE 66          B     SVRES                          AREA             4  3235  B R1W
562 AE 67          LCA   PRBSEG-005,SAVA              RESTORE            7  3239  L B3# A2S
563 AE 68          CW    SAVA-004                      SAVE AREA         4  3246  ¤ A1Y
564 AE 69   EN     B     LOOPCK                       CK FOR LOOP        4  3250  B U39
565 AE 70
566 AE 71   TESTP  SW    0087,0092                                       7  3254  , 087 092
567 AE 72          NOP   RN16                                            4  3261  N D20
568 AE 73          SAR   0089                                            4  3265  Q 089
569 AE 74          NOP   DVLPM                                           4  3269  N P1T
570 AE 75          SAR   0094                                            4  3273  Q 094
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SEQ PG LIN  LABEL   OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION
571 AE 76   OPCK    BWZ   CKPERU,0000&X1,1                           8  3277  V C08 0#0 1
572 AE 77   GOO     MA    ZZ1,0089                                   7  3285  # &ZZ 089
573 AE 78           C     0089,0094                                  7  3292  C 089 094
574 AE 79           BU    OPCK                                       5  3299  B B77 /
575 AE 80           B     RESTPX                                     4  3304  B D02
576 AE 81   CKPERU  BCE   CKTT,0000&X1,M                            8  3308  B C36 0#0 M
577 AE 82           BCE   CKTT,0000&X1,L                            8  3316  B C36 0#0 L
578 AE 83           BCE   CKTT,0000&X1,U                            8  3324  B C36 0#0 U
579 AE 84           B     GOO                                        4  3332  B B85
580 AE 85   CKTT    C     0002&X1,TPINS1                             7  3336  C 0#2 R9V
581 AE 86           BE    CKN1                                       5  3343  B C64 S
582 AE 87           C     0002&X1,TPINS2                             7  3348  C 0#2 R9X
583 AE 88           BE    CKN1                                       5  3355  B C64 S
584 AE 89           B     GOO                                        4  3360  B B85
585 AE 90   CKN1    BCE   FIX1,0003&X1,1                            8  3364  B C80 0#3 1
586 AE 91   CKN2    BCE   FIX2,0003&X1,2                            8  3372  B C91 0#3 2
587 AE 92   FIX1    MN    RTX,0003&X1                                7  3380  D I9/ 0#3
588 AE 93           B     GOO                                        4  3387  B B85
589 AE 94   FIX2    MN    WTX,0003&X1                                7  3391  D I9S 0#3
590 AE 95           B     GOO                                        4  3398  B B85
591 AE 96   RESTPX  MN    RTX,CKN1&007                               7  3402  D I9/ C71
592 AE 97           MN    WTX,CKN2&007                               7  3409  D I9S C79
593 AE 98           B     RN16                                       4  3416  B D20
594 AE 99
595 AF 00                          ROUTINE NO. 16
596 AF 01                          CARD TO TAPE TEST
597 AF 02                          READ 26 CARDS AND WRITE
598 AF 03                          CARD DATA ON TAPE 1
599 AF 04                          BACKSPACE TP1 AND READ
600 AF 05                          RECORDS TO CHECK DATA WRITTEN
601 AF 06
602 AF 07   RN16    BCE   EX16,1301,R          CK FOR READER          8  3420  B D32 T01 R
603 AF 08           B     RN17                 BYPASS ROUTINE         4  3428  B E97
604 AF 09   EX16    NOP   *&005                SET ROUT. START        4  3432  N D40
605 AF 10           SAR   POST                 ADDR IN Z02-Z04        4  3436  Q Z04
606 AF 11           LCA   ZZZ,0089             RESET XR 1             7  3440  L B4W 089
607 AF 12           BLC   TYP1                 CK FOR LAST CARD       5  3447  B Q5Y A
608 AF 13                                      ERR TYPE HERE
609 AF 14                                      INDS FALSE EOF
610 AF 15           R                          READ CARD              1  3452  1
611 AF 16           BIN   TYP1,&               INVALID READ           5  3453  B Q5Y &
612 AF 17           LCA   GMWM,0025            SET GMWM               7  3458  L &9T 025
613 AF 18           BCE   *&005,1291,1         CK FOR TAPE            8  3465  B D77 S91 1
614 AF 19           B     ROK16                                       4  3473  B E74
615 AF 20           B     WTAP3                GO TO WRITE TAPE       4  3477  B D91
616 AF 21           CU    %U1,B                BACKSPACE              5  3481  U %U1 B
617 AF 22           CU    %U1,E                 AND SKIP              5  3486  U %U1 E
618 AF 23   WTAP3   MCW   %U1,0001,W            WRITE TAPE             8  3491  M %U1 001 W
619 AF 24           NOP   0000                 EXTRA INSTR            4  3499  N 000
620 AF 25           BEF   ENREEL               CK FOR EOR             5  3503  B P3/ K
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION

621 AF 26          BER   TPWRER                          CK FOR WR ERROR     5  3508  B M5X L
622 AF 27                                                ERR TYPE HERE
623 AF 28                                                INDS THAT 10
624 AF 29                                                TRYS USING BKSP-
625 AF 30                                                SKIP HAVE BEEN
626 AF 31                                                MADE TO WR REC
627 AF 32          LCA   ZZ,WRCNT                        RESET ERR CNTR      7  3513  L E3U E3W
628 AF 33          CU    %U1,B                           BACKSPACE REC       5  3520  U %U1 B
629 AF 34          CS    WKAREA&025                                          4  3525  / H2V
630 AF 35          MCW   %U1,WKAREA,R                    READ REC            8  3529  M %U1 H0# R
631 AF 36          NOP   0000                            EXTRA INSTR         4  3537  N 000
632 AF 37          BEF   EOF1                            CK FOR EOF  ERR     5  3541  B P5U K
633 AF 38                                                TYPE HERE INDS
634 AF 39                                                FALSE EOF
635 AF 40          BER   TPRDER                          CK FOR READ ERR     5  3546  B 00S L
636 AF 41                                                ERR TYPE HERE
637 AF 42                                                INDS THAT 10
638 AF 43                                                TRYS HAVE BEEN
639 AF 44                                                MADE TO READ REC
640 AF 45          LCA   ZZ,RDCNT                        RESET ERR CNTR      7  3551  L E3U E3Y
641 AF 46          C     WKAREA&023,0024                 CK                  7  3558  C H2T 024
642 AF 47          BE    ROK16                            RECORD             5  3565  B E74 S
643 AF 48          B     TYP1-031                        TP1 REC RD DOES     4  3570  B Q2X
644 AF 49                                                NOT COMP. WITH
645 AF 50                                                CARD REC READ
646 AF 51  ROK16   A     ONE,0089                        UP XR 1             7  3574  A A1U 089
647 AF 52          C     0089,Z26                        CK FOR 26 RECS      7  3581  C 089 E4/
648 AF 53          BU    EX16&015                        GET NEXT REC        5  3588  B D47 /
649 AF 54          B     LOOPCK                          CK FOR LOOP         4  3593  B U39
650 AF 55
651 AF 56
652 AF 57                          ROUTINE NO. 17
653 AF 58                          TAPE TO CARD TEST
654 AF 59                          WRITE 26 RECS ON TAPE 1
655 AF 60                          REWIND TAPE - READ AND
656 AF 61                          PUNCH THE 26 RECORDS
657 AF 62
658 AF 63  RN17    BCE   CKT2,1303,P                     CK FOR PUNCH        8  3597  B F09 T03 P
659 AF 64          B     RN18                            BYPASS ROUTINE      4  3605  B G07
660 AF 65  CKT2    BCE   EX17,1291,1                     CK FOR TAPE         8  3609  B F21 S91 1
661 AF 66          B     RN18                            BYPASS ROUTINE      4  3617  B G07
662 AF 67  EX17    B     PRETP1                          WRITE TP 1          4  3621  B L0Z
663 AF 68          NOP   *&005                           SET ROUT START      4  3625  N F33
664 AF 69          SAR   POST                            ADDR IN Z02-Z04     4  3629  Q Z04
665 AF 70          CU    %U1,R                           REWIND TAPE         5  3633  U %U1 R
666 AF 71          LCA   ZZZ,0089                        RESET XR 1          7  3638  L B4W 089
667 AF 72  NX17    CS    0180                            CLEAR PUNCH         4  3645  / 180
668 AF 73          MCW   %U1,0101,R                      READ TAPE REC       8  3649  M %U1 101 R
669 AF 74          NOP   0000                            EXTRA INSTR         4  3657  N 000
670 AF 75          BEF   EOF1                            CK FOR EOF          5  3661  B P5U K
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SEQ PG LIN  LABEL  OP    OPERANDS                                        SFX CT  LOCN  INSTRUCTION

671 AF 76                                                  ERR TYPE HERE
672 AF 77                                                  INDS FALSE EOF
673 AF 78          BER   TPRDER                            CK FOR READ ERR      5  3666  B 00S L
674 AF 79                                                  ERR TYPE HERE
675 AF 80                                                  INDS THAT 10
676 AF 81                                                  TRYS HAVE BEEN M
677 AF 82                                                  MADE TO READ REC
678 AF 83          LCA   ZZ,RDCNT                          RESET ERR CNTR       7  3671  L E3U E3Y
679 AF 84          P                                       PUNCH CARD           1  3678  4
680 AF 85          BIN   TYP1,-                            PUNCH ERR            5  3679  B Q5Y -
681 AF 86          A     ONE,0089                          UP XR 1              7  3684  A A1U 089
682 AF 87          C     0089,Z26                          CK FOR 26 RECS       7  3691  C 089 E4/
683 AF 88          BU    NX17                              READ NEXT REC        5  3698  B F45 /
684 AF 89          B     LOOPCK                            CK FOR LOOP          4  3703  B U39
685 AF 90
686 AF 91
687 AF 92                          ROUTINE NO. 18
688 AF 93                          TAPE TO PRINTER TEST
689 AF 94                          WRITE 26 RECS ON TAPE 1
690 AF 95                          REWIND TAPE - READ AND
691 AF 96                          PRINT THE 26 RECORDS
692 AF 97
693 AF 98  RN18    BCE   CKT3,1305,P                       CK FOR PRINTER       8  3707  B G19 T05 P
694 AF 99          B     RN19                              BYPASS ROUTINE       4  3715  B H41
695 AG 00  CKT3    BCE   EX18,1291,1                       CK FOR TAPES         8  3719  B G31 S91 1
696 AG 01          B     RN19                              BYPASS ROUTINE       4  3727  B H41
697 AG 02  EX18    B     PRETP1                            WRITE TP 1           4  3731  B L0Z
698 AG 03          NOP   *&005                             SET ROUT START       4  3735  N G43
699 AG 04          SAR   POST                              ADDR IN Z02-Z04      4  3739  Q Z04
700 AG 05          CU    %U1,R                             REWIND TAPE 1        5  3743  U %U1 R
701 AG 06          LCA   ZZZ,0089                          RESET XR 1           7  3748  L B4W 089
702 AG 07  NX18    CS    0299                              CLEAR PUNCH          4  3755  / 299
703 AG 08          MCW   %U1,0201,R                        READ TAPE REC        8  3759  M %U1 201 R
704 AG 09          NOP   0000                              EXTRA INSTR          4  3767  N 000
705 AG 10          BEF   EOF1                              CK FOR EOF           5  3771  B P5U K
706 AG 11                                                  ERR TYPE HERE
707 AG 12                                                  INDS FALSE EOF
708 AG 13          BER   TPRDER                            CK FOR READ ERR      5  3776  B 00S L
709 AG 14                                                  ERR TYPE HERE
710 AG 15                                                  INDS THAT 10
711 AG 16                                                  TRYS HAVE BEEN
712 AG 17                                                  MADE TO READ REC
713 AG 18          LCA   ZZ,RDCNT                          RESET ERR CNTR       7  3781  L E3U E3Y
714 AG 19          BCE   CKZN18,1306,N                     CK FOR NUM CHAIN     8  3788  B H01 T06 N
715 AG 20  PR18    W                                       PRINT                1  3796  2
716 AG 21          B     CK18                              GO TO CHECK          4  3797  B H13
717 AG 22  CKZN18  BWZ   PR18,0201,2                       CK FOR NO ZONE       8  3801  V G96 201 2
718 AG 23          B     CK18&005                          BYPASS RECORD        4  3809  B H18
719 AG 24  CK18    BIN   TYP1,‡                            PRINT ERROR          5  3813  B Q5Y ‡
720 AG 25          A     ONE,0089                          UP XR 1              7  3818  A A1U 089
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SEQ PG LIN  LABEL   OP    OPERANDS                          SFX CT  LOCN  INSTRUCTION

721 AG 26           C     0089,Z26                  CK FOR 26 RECS     7  3825  C 089 E4/
722 AG 27           BU    NX18                      READ NEXT REC      5  3832  B G55 /
723 AG 28           B     LOOPCK                    CK FOR LOOP        4  3837  B U39
724 AG 29
725 AG 30
726 AG 31                          ROUTINE NO. 19
727 AG 32
728 AG 33                          TAPE TO TAPE TEST
729 AG 34                          WRITE 26 TWENTY CHAR RECORDS
730 AG 35                          ON TAPE 1 - REWIND TAPE 1 AND
731 AG 36                          TRANSFER RECS TO TAPE 2
732 AG 37
733 AG 38   RN19    BCE   TESNUM,1291,1                 CK FOR TAPES       8  3841  B H53 S91 1
734 AG 39           B     RN20                      BYPASS TEST        4  3849  B 05T
735 AG 40   TESNUM  BCE   EX19,1292,1                 CK FOR 2 TAPES     8  3853  B H65 S92 1
736 AG 41           B     RN20                      BYPASS TEST        4  3861  B 05T
737 AG 42   EX19    B     PRETP1                    WRITE TAPE 1       4  3865  B L0Z
738 AG 43           NOP   *&005                     SET ROUT START     4  3869  N H77
739 AG 44           SAR   POST                      ADDR IN Z02-Z04    4  3873  Q Z04
740 AG 45           CU    %U1,R                     REWIND TAPE 1      5  3877  U %U1 R
741 AG 46           LCA   ZZZ,0089                  RESET XR 1         7  3882  L B4W 089
742 AG 47   NXR     LCA   GMWM,WKAREA&051           LOAD GMWM          7  3889  L &9T H5/
743 AG 48           CS    WKAREA&050                                   4  3896  / H5$
744 AG 49           MCW   %U1,WKAREA&021,R          READ RECORD        8  3900  M %U1 H2/ R
745 AG 50           SW    WKAREA&041                SET WM             4  3908  , H4/
746 AG 51           BEF   EOF1                      CK FOR EOF  ERR    5  3912  B P5U K
747 AG 52                                           TYPE HERE INDS
748 AG 53                                           FALSE EOF
749 AG 54           BER   TPRDER                    CK FOR RD ERROR    5  3917  B 00S L
750 AG 55                                           ERR TYPE HERE
751 AG 56                                           INDS THAT 10
752 AG 57                                           TRYS HAVE BEEN
753 AG 58                                           MADE TO READ REC
754 AG 59           LCA   ZZ,RDCNT                  RESET ERR CNTR     7  3922  L E3U E3Y
755 AG 60           B     WTAP2                     GO TO WRITE TP2    4  3929  B I43
756 AG 61           CU    %U2,B                     BACKSPACE          5  3933  U %U2 B
757 AG 62           CU    %U2,E                      & SKIP            5  3938  U %U2 E
758 AG 63   WTAP2   MCW   %U2,WKAREA&021,W          WRITE TAPE         8  3943  M %U2 H2/ W
759 AG 64           NOP   0000                      EXTRA INSTR        4  3951  N 000
760 AG 65           BEF   ENREEL                    CK FOR EOR         5  3955  B P3/ K
761 AG 66           BER   TPWRER                    CK FOR WRITE ERR   5  3960  B M5X L
762 AG 67                                           ERR TYPE HERE
763 AG 68                                           INDS THAT 10
764 AG 69                                           TRYS USING BKSP-
765 AG 70                                           SKIP HAVE BEEN
766 AG 71                                           MADE TO WR REC
767 AG 72           LCA   ZZ,WRCNT                  RESET ERR CNTR     7  3965  L E3U E3W
768 AG 73           CU    %U2,B                     BACKSPACE TP 2     5  3972  U %U2 B
769 AG 74           CS    WKAREA&020                CLEAR STORAGE      4  3977  / H2$
770 AG 75           MCW   %U2,WKAREA,R              READ RECORD        8  3981  M %U2 H0$ R
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SEQ PG LIN  LABEL  OP    OPERANDS                          SFX CT  LOCN  INSTRUCTION
771 AG 76          NOP   0000                              EXTRA INSTR       4  3989  N 000
772 AG 77          BEF   EOF1                              CK FOR EOF        5  3993  B P5U K
773 AG 78                                                  ERR TYPE HERE
774 AG 79                                                  INDS FALSE EOF
775 AG 80          BER   TPRDER                            CK FOR READ ERR   5  3998  B 00S L
776 AG 81                                                  ERR TYPE HERE
777 AG 82                                                  INDS THAT 10
778 AG 83                                                  TRYS HAVE BEEN
779 AG 84                                                  MADE TO READ REC
780 AG 85          LCA   ZZ,RDCNT                          RESET ERR CNTR    7  4003  L E3U E3Y
781 AG 86          SW    WKAREA                                              4  4010  , H0#
782 AG 87          C     WKAREA&040,WKAREA&019             COMPARE           7  4014  C H4# H1Z
783 AG 88          BE    GNXT                               RECORDS          5  4021  B 03# S
784 AG 89          B     TYP1-031                          REC READ FROM TP  4  4026  B Q2X
785 AG 90                                                  2 DOES NOT COMP.
786 AG 91                                                  WITH REC WRITTEN
787 AG 92                                                  ON TAPE 1
788 AG 93  GNXT    A     ONE,0089                          UP XR 1           7  4030  A A1U 089
789 AG 94          C     0089,Z26                          CK FOR 26 RECS    7  4037  C 089 E4/
790 AG 95          BU    NXR                               GET NEXT REC      5  4044  B H89 /
791 AG 96          B     LOOPCK                            CK FOR LOOP       4  4049  B U39
792 AG 97
793 AG 98                          ROUTINE NO. 20
794 AG 99                          ROUTINE TO WRITE 100 80 CHAR
795 AH 00                          RECORDS ON TAPE 1 TO BE USED
796 AH 01                          AS INPUT IN SCRAMBLE OVLP ROUTINES
797 AH 02
798 AH 03  RN20    BCE   GOG,1291,1                        TEST FOR TAPE     8  4053  B 06V S91 1
799 AH 04          B     SPP                               BYPASS ROUTINE    4  4061  B 15U
800 AH 05  GOG     NOP   *&005                             SET ROUT START    4  4065  N 07T
801 AH 06          SAR   POST                              ADDR IN Z02-Z04   4  4069  Q Z04
802 AH 07          CU    %U1,R                             REWIND TAPE       5  4073  U %U1 R
803 AH 08          B     WTTT                              GO TO WRITE TAPE  4  4078  B 09S
804 AH 09          CU    %U1,B                             BACKSPACE         5  4082  U %U1 B
805 AH 10          CU    %U1,E                              & SKIP           5  4087  U %U1 E
806 AH 11  WTTT    MCW   %U1,RDCOMP-076,W                  WRITE RECORD      8  4092  M %U1 B7# W
807 AH 12          NOP   0000                              EXTRA INSTR       4  4100  N 000
808 AH 13          BEF   WTMRW                             CK FOR EOR        5  4104  B 14# K
809 AH 14          BER   TPWRER                            CK FOR WRITE ERR  5  4109  B M5K L
810 AH 15                                                  ERR TYPE HERE
811 AH 16                                                  INDS THAT 10
812 AH 17                                                  TRYS USING BKSP-
813 AH 18                                                  SKIP HAVE BEEN
814 AH 19                                                  MADE TO WR REC
815 AH 20          LCA   ZZ,RDCNT                          RESET ERR CNTR    7  4114  L E3U E3Y
816 AH 21          A     ONE,0089                          CK FOR            7  4121  A A1U 089
817 AH 22          C     0089,ONHUND                        100 RECS         7  4128  C 089 E4U
818 AH 23          BU    WTTT                              WRITE NEXT REC    5  4135  B 09S /
819 AH 24  WTMRW   CU    %U1,M                             WRITE EOF         5  4140  U %U1 M
820 AH 25          CU    %U1,R                             REWIND TAPE       5  4145  U %U1 R
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SEQ PG LIN  LABEL  OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION

821 AH 26          B     LOOPCK                  CK FOR LOOP      4  4150  B U39
822 AH 27  SPP     BCE   NUMC2,1306,N           CK FOR NUM CHAIN 8  4154  B 17T T06 N
823 AH 28          LCA   RDCOMP&003,0280                        7  4162  L C4Z 280
824 AH 29          B     *&019                                  4  4169  B 19/
825 AH 30  NUMC2   MCW   PRBNSG,0280                           7  4173  M AOT 280
826 AH 31          SW    0201                                   4  4180  , 201
827 AH 32          MCW   0280,0270                              7  4184  M 280 270
828 AH 33          LCA   GMWM,0281                             7  4191  L &9T 281
829 AH 34          LCA   RDCOMP&003,0180     PRINT AREAS        7  4198  L C4Z 180
830 AH 35          LCA   GMWM,0181                            7  4205  L &9T 181
831 AH 36          LCA   RDCOMP&003,WKAREA&079 LOAD WRITE AREA 7  4212  L C4Z H7Z
832 AH 37          LCA   GMWM,WKAREA&080                      7  4219  L &9T H8*
833 AH 38          LCA   RDCOMP&003,0080                      7  4226  L C4Z 080
834 AH 39          LCA   GMWM,0081           LOAD GMWM        7  4233  L &9T 081
835 AH 40
836 AH 41
837 AH 42                      ROUTINE NO. 21
838 AH 43                      TEST BRANCH ON READ ERROR
839 AH 44                      WITH NORMAL READ INV CARD
840 AH 45                      FOLLOWED BY OVLP TAPE READ
841 AH 46                      AND THEN B%I¤&
842 AH 47
843 AH 48          BCE   EXAA,1301,R           CK FOR READER    8  4240  B 25S T01 R
844 AH 49          B     RN23                  BYPASS ROUTINE   4  4248  B 36V
845 AH 50  EXAA    NOP   *&005                 SET ROUT. START  4  4252  N 26*
846 AH 51          SAR   POST                  ADDR IN Z02-Z04  4  4256  Q Z04
847 AH 52          LCA   ZZZ,0089              RESET XR 1       7  4260  L B4W 089
848 AH 53          MCW   TPRINA,GORT&006       ALTER TP RD INST 7  4267  M &0* -6Y
849 AH 54  TRES2   SS    .                                      2  4274  K .
850 AH 55          R                           READ CARD        1  4276  1
851 AH 56          BCE   *&005,1291,1                           8  4277  B 28Z S91 1
852 AH 57          B     *&005                                  4  4285  B 29T
853 AH 58          B     TROX                  READ TAPE        4  4289  B -4W
854 AH 59          BIN   ERO2,&                CK FOR CD BD ERR 5  4293  B 30S &
855 AH 60          B     TYP1-031              FAILED TO BR ON  4  4298  B Q2X
856 AH 61                                      READ ERROR
857 AH 62  ERO2    B     UPX1                  UP XR 1          4  4302  B Z8W
858 AH 63          B     TRES2                 EXECUTE AGAIN    4  4306  B 27U
859 AH 64          B     LOOPCK                CK FOR LOOP      4  4310  B U39
860 AH 65
861 AH 66
862 AH 67                      ROUTINE NO. 22
863 AH 68                      TEST BRANCH ON READ ERROR
864 AH 69                      WITH OVLP READ INV CARD FOLLOWED
865 AH 70                      BY OVERLAP TAPE READ
866 AH 71                      AND THEN B%I¤&
867 AH 72
868 AH 73          NOP   *&005                 SET ROUT START   4  4314  N 32S
869 AH 74          SAR   POST                  ADDR IN Z02-Z04  4  4318  Q Z04
870 AH 75          LCA   ZZZ,0089              RESET XR 1       7  4322  L B4W 089
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION

871 AH 76          MCW   TPRINA,GORT&006                ALTER TP RD INST    7  4329  M &0# -6Y
872 AH 77   TRES1  B     CROX                           READ CARD           4  4336  B J1S
873 AH 78          B     TROX                           READ TAPE           4  4340  B -4W
874 AH 79          BIN   ERO1,&                         CK FOR CD RD ERR    5  4344  B 35T &
875 AH 80          B     TYP1-031                       FAILED TO BR ON     4  4349  B Q2X
876 AH 81                                               READ ERROR
877 AH 82   ERO1   B     UPX1                           UP XR 1             4  4353  B Z8W
878 AH 83          B     TRES1                          EXECUTE AGAIN       4  4357  B 33W
879 AH 84          B     LOOPCK                         CK FOR LOOP         4  4361  B U39
880 AH 85
881 AH 86
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SEQ PG LIN  LABEL  OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION

882 AH 88          JOB   1410/7010-1401 TOPSY COMPATIBILITY TEST
883 AH 90                      ROUTINE NO. 23
884 AH 91                      TEST OVERLAP TAPE WRITE
885 AH 92                      FOLLOWED BY OVERLAP TAPE READ
886 AH 93
887 AH 94  RN23    NOP   *&005                                   SET ROUT START    4  4365  N 37T
888 AH 95          SAR   POST                                    ADDR IN Z02-Z04   4  4369  Q Z04
889 AH 96          LCA   ZZZ,0089                                RESET XR 1        7  4373  L B4W 089
890 AH 97          MCW   CC2,GOCKTR&003                          ALTER CK INSTR    7  4380  M &1S K5#
891 AH 98          MCW   CC1,GORT&006                            ALTER TP RD INST  7  4387  M &0Z -6Y
892 AH 99          MCW   CC1,GOUT&006                            ALTER TP WR INST  7  4394  M &0Z J0/
893 AI 00          MCW   CC2,GOCKTW&019                                            7  4401  M &1S K1U
894 AI 01  TWTR    B     TWOX                                    GO TO WRITE TAPE  4  4408  B -7Z
895 AI 02          B     TROX                                    GO TO READ TAPE   4  4412  B -4W
896 AI 03          BER   TYP1                                    CK FOR TAPE ERR   5  4416  B Q5Y L
897 AI 04                                                        ERR TYPE HERE
898 AI 05                                                        WILL NORMALLY
899 AI 06                                                        IND TAPE RD ERR
900 AI 07                                                        THIS WILL BE TP
901 AI 08                                                        WR ERR IF READ
902 AI 09                                                        TP IS NOT AVAIL.
903 AI 10          B     CKTW                                    CK WRITE          4  4421  B J7Z
904 AI 11          B     TYP1-031                                REC WRITTEN DOES  4  4425  B Q2X
905 AI 12                                                        NOT COMPARE
906 AI 13          B     CKTR                                    CK READ           4  4429  B K3/
907 AI 14          B     TYP1-031                                INCORRECT READ    4  4433  B Q2X
908 AI 15          B     UPX1                                    UP XR 1           4  4437  B Z8W
909 AI 16          B     TWTR                                    EXECUTE AGAIN     4  4441  B 40Y
910 AI 17          B     LOOPCK                                  CK FOR LOOP       4  4445  B U39
911 AI 18
912 AI 19
913 AI 20                      ROUTINE NO. 24
914 AI 21                      TEST OVERLAP TAPE WRITE
915 AI 22                      FOLLOWED BY OVERLAP CARD READ
916 AI 23
917 AI 24          NOP   *&005                                   SET ROUT START    4  4449  N 45X
918 AI 25          SAR   POST                                    ADDR IN Z02-Z04   4  4453  Q Z04
919 AI 26          LCA   ZZZ,0089                                RESET XR 1        7  4457  L B4W 089
920 AI 27          MCW   TPRINA,GOUT&006                         ALTER TP WR INST  7  4464  M &0# J0/
921 AI 28          MCW   CC2,GOCKTW&019                                            7  4471  M &1S K1U
922 AI 29  TWCR    B     TWOX                                    WRITE TAPE        4  4478  B -7Z
923 AI 30          B     CROX                                    READ CARD         4  4482  B J1S
924 AI 31          BER   TYP1                                    TAPE WRITE ERR    5  4486  B Q5Y L
925 AI 32          BIN   TYP1,&                                  CD READ ERR       5  4491  B Q5Y &
926 AI 33          B     CKTW                                    CK WRITE          4  4496  B J7Z
927 AI 34          B     TYP1-031                                REC WRITTEN DOES  4  4500  B Q2X
928 AI 35                                                        NOT COMPARE
929 AI 36          B     CKCR                                    CK CARD READ      4  4504  B K7#
930 AI 37          B     TYP1-031                                INCORRECT READ    4  4508  B Q2X
931 AI 38          B     UPX1                                    UP XR 1           4  4512  B Z8W
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SEQ PG LIN  LABEL  OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION

932 AI 39          B     TWCR                                    EXECUTE AGAIN      4  4516  B 47Y
933 AI 40          B     LOOPCK                                  CK FOR LOOP        4  4520  B U39
934 AI 41
935 AI 42
936 AI 43                                ROUTINE NO. 25
937 AI 44                                TEST OVERLAP TAPE WRITE
938 AI 45                                FOLLOWED BY OVERLAP CARD PUNCH
939 AI 46
940 AI 47          NOP   *&005                                   SET ROUT START     4  4524  N 53S
941 AI 48          SAR   POST                                    ADDR IN Z02-Z04    4  4528  Q Z04
942 AI 49          LCA   ZZZ,0089                                RESET XR 1         7  4532  L B4W 089
943 AI 50          MCW   TPRINB,GOUT&006                         ALTER TP WR INST   7  4539  M &0T J0/
944 AI 51          MCW   TPOTB,GOCKTW&019                                           7  4546  M &1Y K1U
945 AI 52  TWPC    B     TWOX                                    WRITE TAPE         4  4553  B -7Z
946 AI 53          B     PCOX                                    PUNCH CARD         4  4557  B J3V
947 AI 54          BER   TYP1                                    TAPE WRITE ERR     5  4561  B Q5Y L
948 AI 55          BIN   TYP1,-                                  PUNCH ERROR        5  4566  B Q5Y -
949 AI 56          B     CKTW                                    CK WRITE           4  4571  B J7Z
950 AI 57          B     TYP1-031                                REC WRITTEN DOES   4  4575  B Q2X
951 AI 58                                                        NOT COMPARE
952 AI 59          B     UPX1                                    UP XR 1            4  4579  B Z8W
953 AI 60          B     TWPC                                    EXECUTE AGAIN      4  4583  B 55T
954 AI 61          B     LOOPCK                                  CK FOR LOOP        4  4587  B U39
955 AI 62
956 AI 63
957 AI 64                                ROUTINE NO. 26
958 AI 65                                TEST OVERLAP TAPE WRITE
959 AI 66                                FOLLOWED BY PRINT
960 AI 67
961 AI 68          NOP   *&005                                   SET ROUT START     4  4591  N 59Z
962 AI 69          SAR   POST                                    ADDR IN Z02-Z04    4  4595  Q Z04
963 AI 70          LCA   ZZZ,0089                                RESET XR 1         7  4599  L B4W 089
964 AI 71          MCW   TPRINC,GOUT&006                         ALTER TP WR INST   7  4606  M &0W J0/
965 AI 72          MCW   TPOTC,GOCKTW&019                                           7  4613  M &2/ K1U
966 AI 73  TWPF    B     TWOX                                    WRITE TAPE         4  4620  B -7Z
967 AI 74          B     PFOX                                    PRINT              4  4624  B J5Y
968 AI 75          BER   TYP1                                    TAPE WRITE ERR     5  4628  B Q5Y L
969 AI 76          BIN   TYP1,*                                  PRINT ERROR        5  4633  B Q5Y *
970 AI 77          B     CKTW                                    CK WRITE           4  4638  B J7Z
971 AI 78          B     TYP1-031                                REC WRITTEN DOES   4  4642  B Q2X
972 AI 79                                                        NOT COMPARE
973 AI 80          B     UPX1                                    UP XR 1            4  4646  B Z8W
974 AI 81          B     TWPF                                    EXECUTE AGAIN      4  4650  B 62*
975 AI 82          B     LOOPCK                                  CK FOR LOOP        4  4654  B U39
976 AI 83
977 AI 84
978 AI 85                                ROUTINE NO. 27
979 AI 86                                TEST OVERLAP TAPE WRITE
980 AI 87                                FOLLOWED BY OVERLAP TAPE WRITE
981 AI 88
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION

 982 AI 89          NOP   *&005                          SET ROUT START      4  4658  N 66W
 983 AI 90          SAR   POST                           ADDR IN Z02-Z04     4  4662  Q Z04
 984 AI 91          LCA   ZZZ,0089                       RESET XR 1          7  4666  L B4W 089
 985 AI 92          MCW   CC1,GOUT&006                   ALTER TP WR INST    7  4673  M &0Z J0/
 986 AI 93          MCW   CC2,GOCKTW&019                                     7  4680  M &1S K1U
 987 AI 94   TWTW   B     TWOX                           WRITE TAPE          4  4687  B -7Z
 988 AI 95          B     TWOX                           WRITE TAPE          4  4691  B -7Z
 989 AI 96          BER   TYP1                           TAPE WRITE ERR      5  4695  B Q5Y L
 990 AI 97          B     CKTW                           CK WRITE            4  4700  B J7Z
 991 AI 98          B     TYP1-031                       2ND REC WRITTEN     4  4704  B Q2X
 992 AI 99                                               DOES NOT COMPARE
 993 AJ 00          B     UPX1                           UP XR 1             4  4708  B Z8W
 994 AJ 01          B     TWTW                           EXECUTE AGAIN       4  4712  B 68X
 995 AJ 02          B     LOOPCK                         CK FOR LOOP         4  4716  B U39
 996 AJ 03
 997 AJ 04
 998 AJ 05                          ROUTINE NO. 28
 999 AJ 06                          TEST OVERLAP TAPE READ
1000 AJ 07                          FOLLOWED BY OVERLAP TAPE WRITE
1001 AJ 08
1002 AJ 09          NOP   *&005                          SET ROUT. START     4  4720  N 72Y
1003 AJ 10          SAR   POST                           ADDR IN Z02-Z04     4  4724  Q Z04
1004 AJ 11          LCA   ZZZ,0089                       RESET XR 1          7  4728  L B4W 089
1005 AJ 12          MCW   CC1,GORT&006                   ALTER TP RD INST    7  4735  M &0Z -6Y
1006 AJ 13          MCW   CC1,GOUT&006                   ALTER TP WR INST    7  4742  M &0Z J0/
1007 AJ 14          MCW   CC2,GOCKTR&003                 ALTER CK INSTR      7  4749  M &1S K5#
1008 AJ 15          MCW   CC2,GOCKTW&019                                     7  4756  M &1S K1U
1009 AJ 16   TRTW   B     TROX                           READ TAPE           4  4763  B -4W
1010 AJ 17          B     TWOX                           WRITE TAPE          4  4767  B -7Z
1011 AJ 18          BER   TYP1                           CK FOR TAPE ERR     5  4771  B Q5Y L
1012 AJ 19                                               ERR TYPE HERE
1013 AJ 20                                               WILL NORMALLY
1014 AJ 21                                               IND TP WR ERROR
1015 AJ 22                                               THIS WILL BE TP
1016 AJ 23                                               RD ERR IF WRITE
1017 AJ 24                                               TP IS NOT AVAIL
1018 AJ 25          B     CKTR                           CK READ             4  4776  B K3/
1019 AJ 26          B     TYP1-031                       INCORRECT READ      4  4780  B Q2X
1020 AJ 27          B     CKTW                           CK WRITE            4  4784  B J7Z
1021 AJ 28          B     TYP1-031                       REC WRITTEN DOES    4  4788  B Q2X
1022 AJ 29                                               NOT COMPARE
1023 AJ 30          B     UPX1                           UP XR 1             4  4792  B Z8W
1024 AJ 31          B     TRTW                           EXECUTE AGAIN       4  4796  B 76T
1025 AJ 32          B     LOOPCK                         CK FOR LOOP         4  4800  B U39
1026 AJ 33
1027 AJ 34
1028 AJ 35                          ROUTINE NO. 29
1029 AJ 36                          TEST OVERLAP TAPE READ
1030 AJ 37                          FOLLOWED BY OVERLAP CARD READ
1031 AJ 38
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SEQ PG LIN  LABEL  OP    OPERANDS                          SFX CT  LOCN  INSTRUCTION

1032 AJ 39         NOP   *&005                  SET ROUT. START    4  4804  N 81S
1033 AJ 40         SAR   POST                   ADDR IN Z02-Z04    4  4808  Q Z04
1034 AJ 41         LCA   ZZZ,0089               RESET XR 1         7  4812  L B4W 089
1035 AJ 42         MCW   TPRINA,GORT&006        ALTER TP RD INST   7  4819  M &0* -6Y
1036 AJ 43  TRCR   B     TROX                   READ TAPE          4  4826  B -4W
1037 AJ 44         B     CROX                   READ CARD          4  4830  B J1S
1038 AJ 45         BER   TYP1                   TAPE READ ERR      5  4834  B Q5Y L
1039 AJ 46         BIN   TYP1,&                 CD READ ERR        5  4839  B Q5Y &
1040 AJ 47         B     CKCR                   CK CD READ         4  4844  B K7*
1041 AJ 48         B     TYP1-031               INCORRECT CD RD    4  4848  B Q2X
1042 AJ 49         B     UPX1                   UP XR 1            4  4852  B Z8W
1043 AJ 50         B     TRCR                   EXECUTE AGAIN      4  4856  B 82W
1044 AJ 51         B     LOOPCK                 CK FOR LOOP        4  4860  B U39
1045 AJ 52
1046 AJ 53
1047 AJ 54                     ROUTINE NO. 30
1048 AJ 55                     TEST OVERLAP TAPE READ
1049 AJ 56                     FOLLOWED BY OVERLAP CARD PUNCH
1050 AJ 57         NOP   *&005                  SET ROUT. START    4  4864  N 87S
1051 AJ 58         SAR   POST                   ADDR IN Z02-Z04    4  4868  Q Z04
1052 AJ 59         LCA   ZZZ,0089               RESET XR 1         7  4872  L B4W 089
1053 AJ 60         MCW   TPRINB,GORT&006        ALTER TP RD INST   7  4879  M &0T -6Y
1054 AJ 61         MCW   TPOTB,GOCKTR&003       ALTER CK INSTR     7  4886  M &1Y K5*
1055 AJ 62  TRPC   B     TROX                   READ TAPE          4  4893  B -4W
1056 AJ 63         B     PCOX                   PUNCH CARD         4  4897  B J3V
1057 AJ 64         BER   TYP1                   TAPE READ ERR      5  4901  B Q5Y L
1058 AJ 65         B     CKTR                   CK TP READ         4  4906  B K3/
1059 AJ 66         B     TYP1-031               INCORRECT TP RD    4  4910  B Q2X
1060 AJ 67         B     UPX1                   UP XR 1            4  4914  B Z8W
1061 AJ 68         B     TRPC                   EXECUTE AGAIN      4  4918  B 89T
1062 AJ 69         B     LOOPCK                 CK FOR LOOP        4  4922  B U39
1063 AJ 70
1064 AJ 71
1065 AJ 72                     ROUTINE NO. 31
1066 AJ 73                     TEST OVERLAP TAPE READ
1067 AJ 74                     FOLLOWED BY PRINT
1068 AJ 75
1069 AJ 76         NOP   *&005                  SET ROUT. START    4  4926  N 93U
1070 AJ 77         SAR   POST                   ADDR IN Z02-Z04    4  4930  Q Z04
1071 AJ 78         LCA   ZZZ,0089               RESET XR 1         7  4934  L B4W 089
1072 AJ 79         BCE   NUMC1,1306,N           CK FOR NUM CHAIN   8  4941  B 96X T06 N
1073 AJ 80         MCW   TPRINC,GORT&006        ALTER TP RD INST   7  4949  M &0W -6Y
1074 AJ 81         MCW   TPOTC,GOCKTR&003       ALTER CK INSTR     7  4956  M &2/ K5*
1075 AJ 82         B     TRPF                                      4  4963  B 98/
1076 AJ 83  NUMC1  MCW   CC1,GORT&006           ALTER TP RD INST   7  4967  M &0Z -6Y
1077 AJ 84         MCW   CC2,GOCKTR&003         ALTER CK INSTR     7  4974  M &1S K5*
1078 AJ 85  TRPF   B     TROX                   READ TAPE          4  4981  B -4W
1079 AJ 86         B     PFOX                   PRINT              4  4985  B J5Y
1080 AJ 87         BER   TYP1                   TAPE READ ERR      5  4989  B Q5Y L
1081 AJ 88         B     CKTR                   CK TP READ         4  4994  B K3/
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SEQ PG LIN  LABEL  OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION

1082 AJ 89         B     TYP1-031                                INCORRECT TP RD      4  4998  B Q2X
1083 AJ 90         B     UPX1                                    UP XR 1              4  5002  B Z8W
1084 AJ 91         B     TRPF                                    EXECUTE AGAIN        4  5006  B 98/
1085 AJ 92         B     LOOPCK                                  CK FOR LOOP          4  5010  B U39
1086 AJ 93
1087 AJ 94
1088 AJ 95                           ROUTINE NO. 32
1089 AJ 96                           TEST OVERLAP TAPE READ
1090 AJ 97                           FOLLOWED BY OVERLAP TAPE READ
1091 AJ 98
1092 AJ 99         NOP   *&005                                   SET ROUT. START      4  5014  N *2S
1093 AK 00         SAR   POST                                    ADDR IN Z02-Z04      4  5018  Q Z04
1094 AK 01         LCA   ZZZ,0089                                RESET XR 1           7  5022  L B4W 089
1095 AK 02         MCW   CC1,GORT&006                            ALTER TP RD INST     7  5029  M &0Z -6Y
1096 AK 03         MCW   CC2,GOCKTR&003                          ALTER CK INSTR       7  5036  M &1S K5*
1097 AK 04  TRTR   B     TROX                                    READ TAPE            4  5043  B -4W
1098 AK 05         B     TROX                                    READ TAPE            4  5047  B -4W
1099 AK 06         BER   TYP1                                    RD ERR ON 2ND RD     5  5051  B Q5Y L
1100 AK 07         B     CKTR                                    CK READ              4  5056  B K3/
1101 AK 08         B     TYP1-031                                INCORRECT READ       4  5060  B Q2X
1102 AK 09                                                       ON 2ND TAPE READ
1103 AK 10         B     UPX1                                    UP XR 1              4  5064  B Z8W
1104 AK 11         B     TRTR                                    EXECUTE AGAIN        4  5068  B *4T
1105 AK 12         B     LOOPCK                                  CK FOR LOOP          4  5072  B U39
1106 AK 13
1107 AK 14
1108 AK 15                           ROUTINE NO. 33
1109 AK 16                           TEST OVERLAP CARD READ
1110 AK 17                           FOLLOWED BY OVERLAP TAPE WRITE
1111 AK 18
1112 AK 19         NOP   *&005                                   SET ROUT. START      4  5076  N *8U
1113 AK 20         SAR   POST                                    ADDR IN Z02-Z04      4  5080  Q Z04
1114 AK 21         MCW   TPRINA,GOUT&006                         ALTER TP WR INST     7  5084  M &0* J0/
1115 AK 22         MCW   TPOTA,GOCKTW&019                        ALTER CK INSTR       7  5091  M &1V K1U
1116 AK 23         LCA   ZZZ,0089                                RESET XR 1           7  5098  L B4W 089
1117 AK 24  CRTW   B     CROX                                    READ CARD            4  5105  B J1S
1118 AK 25         B     TWOX                                    WRITE TAPE           4  5109  B -7Z
1119 AK 26         BIN   TYP1,&                                  CD READ ERROR        5  5113  B Q5Y &
1120 AK 27         BER   TYP1                                    TP WRITE ERROR       5  5118  B Q5Y L
1121 AK 28         B     CKCR                                    CK CD READ           4  5123  B K7*
1122 AK 29         B     TYP1-031                                INCORRECT CD RD      4  5127  B Q2X
1123 AK 30         B     CKTW                                    CK TP WRITE          4  5131  B J7Z
1124 AK 31         B     TYP1-031                                REC WRITTEN DOES     4  5135  B Q2X
1125 AK 32                                                       NOT COMPARE
1126 AK 33         B     UPX1                                    UP XR 1              4  5139  B Z8W
1127 AK 34         B     CRTW                                    EXECUTE AGAIN        4  5143  B /0V
1128 AK 35         B     LOOPCK                                  CK FOR LOOP          4  5147  B U39
1129 AK 36
1130 AK 37
1131 AK 38                           ROUTINE NO. 34
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SEQ PG LIN  LABEL  OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION

1132 AK 39                          TEST OVERLAP CARD READ
1133 AK 40                          FOLLOWED BY OVERLAP TAPE READ
1134 AK 41
1135 AK 42          NOP   *&005                          SET ROUT. START     4  5151  N /5Z
1136 AK 43          SAR   POST                           ADDR IN Z02-Z04     4  5155  Q Z04
1137 AK 44          LCA   ZZZ,0089                       RESET XR 1          7  5159  L B4W 089
1138 AK 45          MCW   TPRINA,GORT&006                ALTER TP RD INST    7  5166  M &0# -6Y
1139 AK 46          MCW   TPOTA,GOCKTR&003               ALTER CK INSTR      7  5173  M &1V K5#
1140 AK 47  CRTR    B     CROX                           READ CARD           4  5180  B J1S
1141 AK 48          B     TROX                           READ TAPE           4  5184  B -4W
1142 AK 49          BIN   TYP1,&                         CD READ ERROR       5  5188  B Q5Y &
1143 AK 50          BER   TYP1                           TP READ ERROR       5  5193  B Q5Y L
1144 AK 51          B     CKTR                           CK TP READ          4  5198  B K3/
1145 AK 52          B     TYP1-031                       INCORRECT TP RD     4  5202  B Q2X
1146 AK 53          B     UPX1                           UP XR 1             4  5206  B Z8W
1147 AK 54          B     CRTR                           EXECUTE AGAIN       4  5210  B /8#
1148 AK 55          B     LOOPCK                         CK FOR LOOP         4  5214  B U39
1149 AK 56
1150 AK 57
1151 AK 58                          ROUTINE NO. 35
1152 AK 59                          TEST OVERLAP CARD READ
1153 AK 60                          FOLLOWED BY OVERLAP CARD PUNCH
1154 AK 61
1155 AK 62          NOP   *&005                          SET ROUT. START     4  5218  N S2W
1156 AK 63          SAR   POST                           ADDR IN Z02-Z04     4  5222  Q Z04
1157 AK 64          LCA   ZZZ,0089                       RESET XR 1          7  5226  L B4W 089
1158 AK 65  CRPC    B     CROX                           READ CARD           4  5233  B J1S
1159 AK 66          B     PCOX                           PUNCH CARD          4  5237  B J3V
1160 AK 67          BIN   TYP1,&                         CD READ ERR         5  5241  B Q5Y &
1161 AK 68          BIN   TYP1,-                         PO                  5  5246  B Q5Y -
1162 AK 69          BIN   TYP1,-                         PUNCH ERROR         5  5251  B Q5Y -
1163 AK 70          B     CKCR                           CK READ             4  5256  B K7#
1164 AK 71          B     TYP1-031                       INCORRECT CD RD     4  5260  B Q2X
1165 AK 72          B     UPX1                           UP XR 1             4  5264  B Z8W
1166 AK 73          B     CRPC                           EXECUTE AGAIN       4  5268  B S3T
1167 AK 74          B     LOOPCK                         CK FOR LOOP         4  5272  B U39
1168 AK 75
1169 AK 76
1170 AK 77                          ROUTINE NO. 36
1171 AK 78                          TEST OVERLAP CARD READ
1172 AK 79                          FOLLOWED BY PRINT
1173 AK 80
1174 AK 81          NOP   *&005                          SET ROUT. START     4  5276  N S8U
1175 AK 82          SAR   POST                           ADDR IN Z02-Z04     4  5280  Q Z04
1176 AK 83          LCA   ZZZ,0089                       RESET XR 1          7  5284  L B4W 089
1177 AK 84  CRPF    B     CROX                           READ CARD           4  5291  B J1S
1178 AK 85          B     PFOX                           PRINT               4  5295  B J5Y
1179 AK 86          BIN   TYP1,&                         CD RD ERROR         5  5299  B Q5Y &
1180 AK 87          BIN   TYP1,#                         PRINT ERROR         5  5304  B Q5Y #
1181 AK 88          B     CKCR                           CK CD READ          4  5309  B K7#
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SEQ PG LIN  LABEL  OP.   OPERANDS                                        SFX CT  LOCN  INSTRUCTION

1182 AK 89         B     TYP1-031                          INCORRECT CD RD     4  5313  B Q2X
1183 AK 90         B     UPX1                              UP XR 1             4  5317  B Z8W
1184 AK 91         B     CRPF                              EXECUTE AGAIN       4  5321  B S9/
1185 AK 92         B     LOOPCK                            CK FOR LOOP         4  5325  B U39
1186 AK 93
1187 AK 94
1188 AK 95                         ROUTINE NO. 37
1189 AK 96                         TEST OVERLAP CARD READ
1190 AK 97                         FOLLOWED BY OVERLAP CARD READ
1191 AK 98
1192 AK 99         NOP   *&005                             SET ROUT. START     4  5329  N T3X
1193 AL 00         SAR   POST                              ADDR IN Z02-Z04     4  5333  Q Z04
1194 AL 01         LCA   ZZZ,0089                          RESET XR 1          7  5337  L B4W 089
1195 AL 02  CRCR   B     CROX                              READ CARD           4  5344  B J1S
1196 AL 03         B     CROX                              READ CARD           4  5348  B J1S
1197 AL 04         BIN   TYP1,&                            RD ERR ON 2ND RD    5  5352  B Q5Y &
1198 AL 05         B     CKCR                              CK READ             4  5357  B K7#
1199 AL 06         B     TYP1-031                          INCORRECT READ      4  5361  B Q2X
1200 AL 07                                                 ON 2ND CARD READ
1201 AL 08         B     UPX1                              UP XR 1             4  5365  B Z8W
1202 AL 09         B     CRCR                              EXECUTE AGAIN       4  5369  B T4U
1203 AL 10         B     LOOPCK                            CK FOR LOOP         4  5373  B U39
1204 AL 11
1205 AL 12
1206 AL 13                         ROUTINE NO. 38
1207 AL 14                         TEST OVERLAP CARD PUNCH
1208 AL 15                         FOLLOWED BY OVERLAP TAPE WRITE
1209 AL 16
1210 AL 17         NOP   *&005                             SET ROUT. START     4  5377  N T8V
1211 AL 18         SAR   POST                              ADDR IN Z02-Z04     4  5381  Q Z04
1212 AL 19         LCA   ZZZ,0089                          RESET XR 1          7  5385  L B4W 089
1213 AL 20         MCW   TPOTB,GOCKTW&019                  ALTER CK INSTR      7  5392  M &1Y K1U
1214 AL 21         MCW   TPRINB,GOUT&006                   ALTER TP WR INST    7  5399  M &0T J0/
1215 AL 22  PCTW   B     PCOX                              PUNCH CARD          4  5406  B J3V
1216 AL 23         B     TWOX                              WRITE TAPE          4  5410  B -7Z
1217 AL 24         BIN   TYP1,-                            PUNCH ERROR         5  5414  B Q5Y -
1218 AL 25         BER   TYP1                              TAPE WRITE ERR      5  5419  B Q5Y L
1219 AL 26         B     CKTW                              CK TP WRITE         4  5424  B J7Z
1220 AL 27         B     TYP1-031                          REC WRITTEN DOES    4  5428  B Q2X
1221 AL 28                                                 NOT COMPARE
1222 AL 29         B     UPX1                              UP XR 1             4  5432  B Z8W
1223 AL 30         B     PCTW                              EXECUTE AGAIN       4  5436  B U0W
1224 AL 31         B     LOOPCK                            CK FOR LOOP         4  5440  B U39
1225 AL 32
1226 AL 33
1227 AL 34                         ROUTINE NO. 39
1228 AL 35                         TEST OVERLAP CARD PUNCH
1229 AL 36                         FOLLOWED BY OVERLAP TAPE READ
1230 AL 37
1231 AL 38         NOP   *&005                             SET ROUT. START     4  5444  N U5S
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SEQ PG LIN  LABEL  OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION
1232 AL 39         SAR   POST                    ADDR IN Z02-Z04   4  5448  Q Z04
1233 AL 40         LCA   ZZZ,0089                 RESET XR 1        7  5452  L B4W 089
1234 AL 41         MCW   TPRINB,GORT&006         ALTER TP RD INST  7  5459  M &0T -6Y
1235 AL 42         MCW   TPOTB,GOCKTR&003        ALTER CK INSTR    7  5466  M &1Y <5#
1236 AL 43  PCTR   B     PCOX                    PUNCH CARD        4  5473  B J3V
1237 AL 44         B     TROX                    READ TAPE         4  5477  B -4W
1238 AL 45         BIN   TYP1,-                  PUNCH ERROR       5  5481  B Q5Y -
1239 AL 46         BER   TYP1                    TAPE READ ERROR   5  5486  B Q5Y L
1240 AL 47         B     CKTR                    CK TP READ        4  5491  B K3/
1241 AL 48         B     TYP1-031                INCORRECT TP RD   4  5495  B Q2X
1242 AL 49         B     UPX1                    UP XR 1           4  5499  B Z8W
1243 AL 50         B     PCTR                    EXECUTE AGAIN     4  5503  B U7T
1244 AL 51         B     LOOPCK                  CK FOR LOOP       4  5507  B U39
1245 AL 52
1246 AL 53
1247 AL 54                     ROUTINE NO. 40
1248 AL 55                     TEST OVERLAP CARD PUNCH
1249 AL 56                     FOLLOWED BY OVERLAP CARD READ
1250 AL 57
1251 AL 58         NOP   *&005                   SET ROUT. START   4  5511  N V1Z
1252 AL 59         SAR   POST                    ADDR IN Z02-Z04   4  5515  Q Z04
1253 AL 60         LCA   ZZZ,0089                RESET XR 1        7  5519  L B4W 089
1254 AL 61  PCCR   B     PCOX                    PUNCH CARD        4  5526  B J3V
1255 AL 62         B     CROX                    READ CARD         4  5530  B J1S
1256 AL 63         BIN   TYP1,-                  PUNCH ERROR       5  5534  B Q5Y -
1257 AL 64         BIN   TYP1,&                  CD READ ERROR     5  5539  B Q5Y &
1258 AL 65         B     CKCR                    CK CD READ        4  5544  B K7#
1259 AL 66         B     TYP1-031                INCORRECT CD RD   4  5548  B Q2X
1260 AL 67         B     UPX1                    UP XR 1           4  5552  B Z8W
1261 AL 68         B     PCCR                    EXECUTE AGAIN     4  5556  B V2W
1262 AL 69         B     LOOPCK                  CK FOR LOOP       4  5560  B U39
1263 AL 70
1264 AL 71
1265 AL 72                     ROUTINE NO. 41
1266 AL 73                     TEST OVERLAP CARD PUNCH
1267 AL 74                     FOLLOWED BY PRINT
1268 AL 75
1269 AL 76         NOP   *&005                   SET ROUT. START   4  5564  N V7S
1270 AL 77         SAR   POST                    ADDR IN Z02-Z04   4  5568  Q Z04
1271 AL 78         LCA   ZZZ,0089                RESET XR 1        7  5572  L B4W 089
1272 AL 79  PCPF   B     PCOX                    PUNCH CARD        4  5579  B J3V
1273 AL 80         B     PFOX                    PRINT             4  5583  B J5Y
1274 AL 81         BIN   TYP1,-                  PUNCH ERROR       5  5587  B Q5Y -
1275 AL 82         BIN   TYP1,*                  PRINT ERROR       5  5592  B Q5Y *
1276 AL 83         B     UPX1                    UP XR 1           4  5597  B Z8W
1277 AL 84         B     PCPF                    EXECUTE AGAIN     4  5601  B V7Z
1278 AL 85         B     LOOPCK                  CK FOR LOOP       4  5605  B U39
1279 AL 86
1280 AL 87
1281 AL 88                     ROUTINE NO. 42
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SEQ PG LIN  LABEL  OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION

1282 AL 89                        TEST OVERLAP CARD PUNCH
1283 AL 90                        FOLLOWED BY OVERLAP CARD PUNCH
1284 AL 91
1285 AL 92         NOP   *&005                                   4  5609  N W1X
1286 AL 93         SAR   POST                                    4  5613  Q Z04
1287 AL 94         LCA   ZZZ,0089                               7  5617  L B4W 089
1288 AL 95  PCPC   B     PCOX                                    4  5624  B J3V
1289 AL 96         B     PCOX                                    4  5628  B J3V
1290 AL 97         BIN   TYP1,-                                  5  5632  B Q5Y -
1291 AL 98         B     UPX1                                    4  5637  B Z8W
1292 AL 99         B     PCPC                                    4  5641  B W2U
1293 AM 00         B     LOOPCK                                  4  5645  B U39
1294 AM 01
1295 AM 02
1296 AM 03                        ROUTINE NO. 43
1297 AM 04                        TEST PRINT
1298 AM 05                        FOLLOWED BY OVERLAP TAPE WRITE
1299 AM 06
1300 AM 07         NOP   *&005                                   4  5649  N W5X
1301 AM 08         SAR   POST                                    4  5653  Q Z04
1302 AM 09         LCA   ZZZ,0089                               7  5657  L B4W 089
1303 AM 10         MCW   TPRINC,GOUT&006                         7  5664  M &0W J0/
1304 AM 11         MCW   TPOTC,GOCKTW&019                        7  5671  M &2/ K1U
1305 AM 12  PFTW   B     PFOX                                    4  5678  B J5Y
1306 AM 13         B     TWOX                                    4  5682  B -7Z
1307 AM 14         BIN   TYP1,*                                  5  5686  B Q5Y *
1308 AM 15         BER   TYP1                                    5  5691  B Q5Y L
1309 AM 16         B     CKTW                                    4  5696  B J7Z
1310 AM 17         B     TYP1-031                                4  5700  B Q2X
1311 AM 18                                                           5704
1312 AM 19         B     UPX1                                    4  5708  B Z8W
1313 AM 20         B     PFTW                                    4  5712  B W7Y
1314 AM 21         B     LOOPCK                                  4  5716  B U39
1315 AM 22
1316 AM 23
1317 AM 24                        ROUTINE NO. 44
1318 AM 25                        TEST PRINT
1319 AM 26                        FOLLOWED BY OVERLAP TAPE READ
1320 AM 27
1321 AM 28         NOP   *&005                                   4  5716  N X2U
1322 AM 29         SAR   POST                                    4  5720  Q Z04
1323 AM 30         LCA   ZZZ,0089                               7  5724  L B4W 089
1324 AM 31         BCE   NUMC3,1306,N                            8  5731  B X5X T06 N
1325 AM 32         MCW   TPRINC,GORT&006                         7  5739  M &0W -6Y
1326 AM 33         MCW   TPOTC,GOCKTR&003                        7  5746  M &2/ K5*
1327 AM 34         B     PFTR                                    4  5753  B X7/
1328 AM 35  NUMC3  MCW   CC1,GORT&006                           7  5757  M &0Z -6Y
1329 AM 36         MCW   CC2,GOCKTR&003                         7  5764  M &1S K5*
1330 AM 37  PFTR   B     PFOX                                    4  5771  B J5Y
1331 AM 38         B     TROX                                    4  5775  B -4W
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SEQ PG LIN  LABEL  OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION

1332 AM 39         BIN   TYP1,*                  PRINT ERROR      5  5779  B Q5Y *
1333 AM 40         BER   TYP1                    TP READ ERROR    5  5784  B Q5Y L
1334 AM 41         B     CKTR                    CK TAPE READ     4  5789  B K3/
1335 AM 42         B     TYP1-031                INCORRECT TP RD  4  5793  B Q2X
1336 AM 43         B     UPX1                    UP XR 1          4  5797  B Z8W
1337 AM 44         B     PFTR                    EXECUTE AGAIN    4  5801  B X7/
1338 AM 45         B     LOOPCK                  CK FOR LOOP      4  5805  B U39
1339 AM 46
1340 AM 47
1341 AM 48                     ROUTINE NO. 45
1342 AM 49                     TEST PRINT
1343 AM 50                     FOLLOWED BY OVERLAP CARD READ
1344 AM 51
1345 AM 52         NOP   *&005                   SET ROUT. START  4  5809  N Y1X
1346 AM 53         SAR   POST                    ADDR IN Z02-Z04  4  5813  Q Z04
1347 AM 54         LCA   ZZZ,0089                RESET XR 1       7  5817  L B4W 089
1348 AM 55  PFCR   B     PFOX                    PRINT            4  5824  B J5Y
1349 AM 56         B     CROX                    READ CARD        4  5828  B J1S
1350 AM 57         BIN   TYP1,*                  PUNCH ERROR      5  5832  B Q5Y *
1351 AM 58         BIN   TYP1,&                  CD RD ERROR      5  5837  B Q5Y &
1352 AM 59         B     CKCR                    CK CD READ       4  5842  B K7*
1353 AM 60         B     TYP1-031                INCORRECT CD RD  4  5846  B Q2X
1354 AM 61         B     UPX1                    UP XR 1          4  5850  B Z8W
1355 AM 62         B     PFCR                    EXECUTE AGAIN    4  5854  B Y2U
1356 AM 63         B     LOOPCK                  CK FOR LOOP      4  5858  B U39
1357 AM 64
1358 AM 65
1359 AM 66                     ROUTINE NO. 46
1360 AM 67                     TEST PRINT
1361 AM 68                     FOLLOWED BY OVERLAP CARD PUNCH
1362 AM 69
1363 AM 70         NOP   *&005                   SET ROUT. START  4  5862  N Y7*
1364 AM 71         SAR   POST                    ADDR IN Z02-Z04  4  5866  Q Z04
1365 AM 72         LCA   ZZZ,0089                RESET XR 1       7  5870  L B4W 089
1366 AM 73  PFPC   B     PFOX                    PRINT            4  5877  B J5Y
1367 AM 74         B     PCOX                    PUNCH            4  5881  B J3V
1368 AM 75         BIN   TYP1,*                  PRINT ERROR      5  5885  B Q5Y *
1369 AM 76         BIN   TYP1,-                  PUNCH ERROR      5  5890  B Q5Y -
1370 AM 77         B     UPX1                    UP XR 1          4  5895  B Z8W
1371 AM 78         B     PFPC                    EXECUTE AGAIN    4  5899  B Y7X
1372 AM 79         SS    .                                        2  5903  K .
1373 AM 80         B     LOOPCK                  CK FOR LOOP      4  5905  B U39
1374 AM 81
1375 AM 82                     ROUTINE TO TYPE PASS AND TEST
1376 AM 83                     TAD3 FOR REPEAT  IF TAD3 IS 1
1377 AM 84                     HALT BEFORE RETURNING TO ROUTINE 1
1378 AM 85                     IF 0 TYPE COMP SW MESSAGE AND
1379 AM 86                     HALT BEFORE CALLING IN NEXT PROGRAM
1380 AM 87
1381 AM 88         MCW   %TO,PAS-003,W           TYPE PASS        8  5909  M %TO E4V W
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SEQ PG LIN  LABEL   OP    OPERANDS                    SFX CT  LOCN  INSTRUCTION

1382 AM 89          BCE   REPEAT,TAD3,1               TEST FOR REPEAT     8  5917  B Z5S *03 1
1383 AM 90          LCA   BIGM,0007                                       7  5925  L Z5/ 007
1384 AM 91          SW    0008                                            4  5932  . 008
1385 AM 92          MCW   %TO,MD1410-031,W           TYPE MESSAGE        8  5936  M %TO E5* .
1386 AM 93          H                                 HALT TO SET COMP    1  5944  .
1387 AM 94                                            SW TO 1410/7010
1388 AM 95  BIGM    DCW   @J00400 @                                       7  5951
1389 AM 96  REPEAT  NOP   2008                        SET FOR             4  5952  N -08
1390 AM 97          SAR   POST                         RESTART            4  5956  Q Z04
1391 AM 98          H                                 HALT  PRESS COMP    1  5960  .
1392 AM 99                                            RESET AND START
1393 AN 00                                            FOR NEXT PASS
1394 AN 01
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SEQ PG LIN  LABEL   OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION

1395 AN 03          JCB   1410/7010-1401 TOPSY COMPATIBILITY TEST
1396 AN 05  CKBUSY  SBR   CYCLEX&003                  SET EXIT          4  5961  H Z8S
1397 AN 06          A     ONE,CYCNT                   UP CYCNT BY 1     7  5965  A A1U B3Z
1398 AN 07          MA    BKCYC,CYCLEX&003            MOD ADDR          7  5972  # Z8V Z8S
1399 AN 08  CYCLEX  B     0000                        EXIT              4  5979  B 000
1400 AN 09  BKCYC   DCW   @I9E@                                         3  5985
1401 AN 10
1402 AN 11  UPX1    SBR   UPXEX&003                   SET EXIT          4  5986  H -1Z
1403 AN 12          A     ONE,0089                    UP XR 1           7  5990  A A1J 089
1404 AN 13          C     0089,ZZ5                    CK FOR 5          7  5997  C 089 B2V
1405 AN 14          BU    UPXEX                       GO TO EXIT        5  6004  B -1W /
1406 AN 15          MA    ZZ4,UPXEX&003               MODIFY ADDRESS    7  6009  # B4Z -1Z
1407 AN 16  UPXEX   B     0000                        EXIT              4  6016  B 000
1408 AN 17
1409 AN 18  EOFF    SBR   EOFFEX&003                  SET EXIT          4  6020  H -3S
1410 AN 19          CU    %U1,R                       REWIND TP 1       5  6024  U %U1 R
1411 AN 20  EOFFEX  B     0000                        EXIT              4  6029  B 000
1412 AN 21
1413 AN 22  EORR    SBR   EORREX&003                  SET EXIT          4  6033  H -4V
1414 AN 23          CU    %U2,R                       REWIND TP 2       5  6037  U %U2 R
1415 AN 24  EORREX  B     0000                        EXIT              4  6042  B 000
1416 AN 25
1417 AN 26
1418 AN 27  TROX    SBR   TROEX&003                   SET EXIT          4  6046  H -7Y
1419 AN 28          BCE   GORT,1291,1                 CK FOR TAPE       8  6050  B -6S S91 1
1420 AN 29          B     TROEX                       BYPASS READ       4  6058  B -7V
1421 AN 30  GORT    MCW   $$,WKAREA,R                 READ TAPE         8  6062  M @U1 H0# R
1422 AN 31          BEF   EOFF                        CK FOR EOF        5  6070  B -2# K
1423 AN 32  TROEX   B     0000                        EXIT              4  6075  B 000
1424 AN 33
1425 AN 34
1426 AN 35  TWOX    SBR   TWOEX&003                   SET EXIT          4  6079  H J1/
1427 AN 36          BCE   GOUT,1292,1                 CK FOR TAPE       8  6083  B -9V S92 1
1428 AN 37          B     TWOEX                       BYPASS WRITE      4  6091  B J0Y
1429 AN 38  GOUT    MCW   $$,WKAREA,W                 WRITE TAPE        8  6095  M @U2 H0# W
1430 AN 39          BEF   EORR                        CK FOR EOR        5  6103  B -3T K
1431 AN 40  TWOEX   B     0000                        EXIT              4  6108  B 000
1432 AN 41
1433 AN 42
1434 AN 43  CROX    SBR   CROEX&003                   SET EXIT          4  6112  H J3U
1435 AN 44          BCE   GORC,1301,R                 CK FOR READER     8  6116  B J2Y T01 R
1436 AN 45          B     CROEX                       BYPASS READ       4  6124  B J3/
1437 AN 46  GORC    SS    P                                             2  6128  K P
1438 AN 47          R                                 READ CARD         1  6130  1
1439 AN 48  CROEX   B     0000                        EXIT              4  6131  B 000
1440 AN 49
1441 AN 50
1442 AN 51  PCOX    SBR   PCOEX&003                   SET EXIT          4  6135  H J5X
1443 AN 52          BCE   GOPC,1303,P                 CK FOR PUNCH      8  6139  B J5/ T03 P
1444 AN 53          B     PCOEX                       BYPASS PUNCH      4  6147  B J5U
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SEQ PG LIN  LABEL  OP   OPERANDS                          SFX CT  LOCN  INSTRUCTION

1445 AN 54  GOPC   SS                                        2  6151  K
1446 AN 55         P                          PUNCH CARD     1  6153  4
1447 AN 56  PCOEX  B    0000                  EXIT           4  6154  B 000
1448 AN 57
1449 AN 58
1450 AN 59  PFOX   SBR  PFOEX&003             SET EXIT       4  6158  H J7Y
1451 AN 60         BCE  GOPF,1305,P           CK FOR PRINTER 8  6162  B J7U T05 P
1452 AN 61         B    PFOEX                 BYPASS PRINT   4  6170  B J7V
1453 AN 62  GOPF   W                          PRINT LINE     1  6174  2
1454 AN 63  PFOEX  B    0000                  EXIT           4  6175  B 000
1455 AN 64
1456 AN 65
1457 AN 66  CKTW   SBR  CKTWEX&003            SET EXIT       4  6179  H K3‡
1458 AN 67         BCE  GOCKTW,1292,1         CK FOR WRITE TP2 8 6183  B J9V S92 1
1459 AN 68         B    CKTWEX-007            BYPASS WR CHECK 4 6191  B K2‡
1460 AN 69  GOCKTW CU   %U2,B                 BACKSPACE TAPE 5  6195  U %U2 B
1461 AN 70         MCW  %U2,WKAREA&100,R      READ REC       8  6200  M %U2 IO‡ R
1462 AN 71         C    WKAREA&179,WKAREA&079 CK REC         7  6208  C I7Z H7Z
1463 AN 72         BU   CKTWEX                WRITTEN        5  6215  B K2X /
1464 AN 73         MA   ZZ4,CKTWEX&003        MODIFY EXIT    7  6220  # B4Z K3‡
1465 AN 74  CKTWEX B    0000                  EXIT           4  6227  B 000
1466 AN 75  CKTR   SBR  CKTREX&003            SET EXIT       4  6231  H K6Z
1467 AN 76         BCE  GOCKTR,1291,1         CK FOR TAPE    8  6235  B K4X S91 1
1468 AN 77         B    CKTREX-007            BYPASS CHECK   4  6243  B K5Z
1469 AN 78  GOCKTR C    WKAREA&079,RDCOMP&003 CK REC         7  6247  C H7Z C4Z
1470 AN 79         BU   CKTREX                 READ          5  6254  B K6W /
1471 AN 80         MA   ZZ4,CKTREX&003        MODIFY EXIT    7  6259  # B4Z K6Z
1472 AN 81  CKTREX B    0000                  EXIT           4  6266  B 000
1473 AN 82
1474 AN 83
1475 AN 84  CKCR   SBR  CKCREX&003            SET EXIT       4  6270  H L0Y
1476 AN 85         BCE  GOCKCR,1301,R         CK FOR READER  8  6274  B K8W T01 R
1477 AN 86         B    CKCREX-007            BYPASS EXIT    4  6282  B K9Y
1478 AN 87  GOCKCR C    0080,RDCOMP&003       CK CARD        7  6286  C 080 C4Z
1479 AN 88         BU   CKCREX                 READ          5  6293  B L0V /
1480 AN 89         MA   ZZ4,CKCREX&003        MODIFY EXIT    7  6298  # B4Z L0Y
1481 AN 90  CKCREX B    0000                  EXIT           4  6305  B 000
1482 AN 91
1483 AN 92
1484 AN 93                    ROUTINE TO WRITE TAPE 1
1485 AN 94                    FOR USE AS INPUT WITH TEST
1486 AN 95                    ROUTINES CALLING FOR TAPE INPUT
1487 AN 96
1488 AN 97
1489 AN 98  PRETP1 SBR  PRETEX&003            SET EXIT       4  6309  H M3X
1490 AN 99         NOP  *&005                 SET ROUT START 4  6313  N L2/
1491 AO 00         SAR  0084                  ADDR IN 82-84  4  6317  Q 084
1492 AO 01         LCA  ZZZ,0089              RESET XR 1     7  6321  L B4W 089
1493 AO 02         CU   %U1,R                 REWIND TAPE 1  5  6328  U %U1 R
1494 AO 03  NXA    CS   WKAREA&019            CLEAR WR AREA  4  6333  / H1Z
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SEQ PG LIN  LABEL   OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION

1495 AO 04          SW    WKAREA                          SET WM            4  6337  , H0#
1496 AO 05          MCW   RDCOMP-071&X1,WKAREA&019        SET RECORD        7  6341  M BXV H1Z
1497 AO 06          MCW   WKAREA&019,WKAREA&018            FOR WRITING      7  6348  M H1Z H1Y
1498 AO 07          LCA   GMWM,WKAREA&020                 LOAD GM WM        7  6355  L &9T H2#
1499 AO 08          B     WTAPA                           GO TO WRITE TAPE  4  6362  B L7W
1500 AO 09          CU    %U1,B                           BACKSPACE         5  6366  U %U1 B
1501 AO 10          CU    %U1,E                            & SKIP           5  6371  U %U1 E
1502 AO 11  WTAPA   MCW   %U1,WKAREA,W                    WRITE RECORD      8  6376  M %U1 H0# W
1503 AO 12          NOP   0000                            EXTRA INSTR       4  6384  N 000
1504 AO 13          BEF   ENREEL                          CK FOR EOR        5  6388  B P3/ K
1505 AO 14          BER   TPWRER                          CK FOR WRITE ERR  5  6393  B M5X L
1506 AO 15                                                ERR TYPE HERE
1507 AO 16                                                INDS THAT 10
1508 AO 17                                                TRYS USING BKSP-
1509 AO 18                                                SKIP HAVE BEEN
1510 AO 19                                                MADE TO WR REC
1511 AO 20          LCA   ZZ,WRCNT                        RESET ERR CNTR    7  6398  L E3U E3W
1512 AO 21          A     ONE,0089                        UP XR 1           7  6405  A A1U 089
1513 AO 22          C     0089,Z26                        CK FOR 26 RECS    7  6412  C 089 E4/
1514 AO 23          BU    NXA                             WR NEXT REC       5  6419  B L3T /
1515 AO 24          CU    %U1,M                           WRITE EOF         5  6424  U %U1 M
1516 AO 25          CU    %U1,R                           REWIND TAPE       5  6429  U %U1 R
1517 AO 26  PRETEX  B     0000                            ROUTINE EXIT      4  6434  B 000
1518 AO 27
1519 AO 28
1520 AO 29                          TAPE WRITE ERROR ROUTINE
1521 AO 30                          THIS ROUTINE IS ENTERED WHENEVER
1522 AO 31                          A TAPE WRITE ERROR IS
1523 AO 32                          ENCOUNTERED WITHIN TEST ROUTINE
1524 AO 33
1525 AO 34          SBR   TWREX&003                       SET EXIT AND      4  6438  H N7W
1526 AO 35          SBR   REDA&003                         REDUCE INSTR     4  6442  H N1U
1527 AO 36          LCA   BRANCH,MODIFY                   SET SW TO BR      7  6446  L F1U N4U
1528 AO 37          B     *&009                                             4  6453  B M6V
1529 AO 38  TPWRER  SBR   TWREX&003                       SET ROUTINE EXIT  4  6457  H N7W
1530 AO 39          SBR   REDA&003                        SET REDUCE INSTR  4  6461  H N1U
1531 AO 40          BIN   ALTER,Q                         CK FOR INQUIRY    5  6465  B U68 Q
1532 AO 41          A     ONE,TWRCNT                      ADD 1             7  6470  A A1U F1Z
1533 AO 42          A     ONE,WRCNT                        TO ERROR CNTRS   7  6477  A A1U E3W
1534 AO 43          C     WRCNT,TEN                       CK FOR 10 TRYS    7  6484  C E3W F2/
1535 AO 44          BU    MODIFY                          NOT 10 TRY AGAIN  5  6491  B N4U /
1536 AO 45          LCA   ZZ,WRCNT                        RESET ERR CNTR    7  6496  L E3U E3W
1537 AO 46          BCE   MODIFY,TAD0,1                   BYPASS ERR IND    8  6503  B N4U #00 1
1538 AO 47  REDA    SW    0000                            REDUCE            4  6511  , 000
1539 AO 48          CW                                     ADDRESS          1  6515  ¤
1540 AO 49          CW                                      AND             1  6516  ¤
1541 AO 50          CW                                       STORE          1  6517  ¤
1542 AO 51          CW                                         IN           1  6518  ¤
1543 AO 52          SAR   ERRLO                                ERRLO        4  6519  Q F3U
1544 AO 53          MCW   %T0,ERRLO-012,W                 TYPE ERR LOC      8  6523  M %T0 F2S W
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SEQ PG LIN  LABEL   OP    OPERANDS                    SFX CT  LOCN  INSTRUCTION

1545 A0 54          BCE   ERHA,TAD2,1                 CK FOR ERR HALT      8  6531  B N4T ¢02 1
1546 A0 55          B     MODIFY                                           4  6539  B N4U
1547 A0 56  ERHA    H                                 ERROR HALT           1  6543  .
1548 A0 57  MODIFY  NOP   OVLPMD                      BR-NOP SW  THIS       4  6544  N N5Z
1549 A0 58                                            WILL BE A BR FOR
1550 A0 59                                            TP OPS IN OVLP
1551 A0 60          MA    BK32,TWREX&003              DEC ADDR BY 32       7  6548  # N7Z N7W
1552 A0 61          B     TWREX                       GO TO EXIT           4  6555  B N7T
1553 A0 62  OVLPMD  LCA   NOP,MODIFY                 SET SW TO NOP        7  6559  L F1V N4U
1554 A0 63          MA    BK56,TWREX&003              DEC ADDR BY 56       7  6566  # N8S N7W
1555 A0 64  TWREX   B     0000                        ROUTINE EXIT         4  6573  B 000
1556 A0 65
1557 A0 66  BK32    DCW   @16H@                                            3  6579
1558 A0 67  BK56    DCW   @14D@                                            3  6582
1559 A0 68
1560 A0 69
1561 A0 70                      TAPE READ ERROR ROUTINE
1562 A0 71                      THIS ROUTINE IS ENTERED WHENEVER
1563 A0 72                      A TAPE READ ERROR IS
1564 A0 73                      ENCOUNTERED WITHIN TEST ROUTINE
1565 A0 74
1566 A0 75          SBR   TRREX&003                   SET EXIT AND         4  6583  H 09S
1567 A0 76          SBR   REDAD&003                    REDUCE INSTR        4  6587  H 05Z
1568 A0 77          LCA   BRANCH,MODIF                SET SW TO BR         7  6591  L F1U 09T
1569 A0 78          B     *&009                                            4  6598  B 01¢
1570 A0 79  TPRDER  SBR   TRREX&003                   SET ROUTINE EXIT     4  6602  H 09S
1571 A0 80          SBR   REDAD&003                   SET REDUCE INSTR     4  6606  H 05Z
1572 A0 81          BIN   ALTER,Q                     CK FOR INQUIRY       5  6610  B U68 Q
1573 A0 82          A     ONE,TRDCNT                  ADD 1                7  6615  A A1U F5T
1574 A0 83          A     ONE,RDCNT                    TO ERROR CNTRS      7  6622  A A1U E3Y
1575 A0 84          C     RDCNT,TEN                   CK FOR 10 TRYS       7  6629  C E3Y F2/
1576 A0 85          BU    MODIF                       NOT 10 TRY AGAIN     5  6636  B 09T /
1577 A0 86          LCA   ZZ,RDCNT                    RESET ERR CNTR       7  6641  L E3U E3Y
1578 A0 87          BCE   TRREX,TAD0,1                BYPASS ERR IND       8  6648  B 08Z ¢00 1
1579 A0 88  REDAD   SW    0000                        REDUCE               4  6656  , 000
1580 A0 89          CW                                 ADDRESS             1  6660  ¤
1581 A0 90          CW                                   AND               1  6661  ¤
1582 A0 91          CW                                     STORE           1  6662  ¤
1583 A0 92          CW                                       IN            1  6663  ¤
1584 A0 93          SAR   ERRL                                 ERRL        4  6664  Q F4Y
1585 A0 94          MCW   ZTO,ERRL-012,W               TYPE ERR LOC         8  6668  M ZTO F3W W
1586 A0 95          BCE   ERH,TAD2,1                  CK FOR ERR HALT      8  6676  B 08Y ¢02 1
1587 A0 96          B     TRREX                       GO TO EXIT           4  6684  B 08Z
1588 A0 97  ERH     H                                 ERROR HALT           1  6688  .
1589 A0 98  TRREX   B     0000                        ROUTINE EXIT         4  6689  B 000
1590 A0 99  MODIF   CU    ZU1,8                       BACKSPACE TAPE       5  6693  U ZU1 8
1591 AP 00          NOP   OVLPM                       BR-NOP SW  THIS       4  6698  N P1T
1592 AP 01                                            WILL BE A BR FOR
1593 AP 02                                            TP OPS IN OVLP
1594 AP 03          MA    BK26,TRREX&003              DEC ADDR BY 26       7  6702  # F5W 09S
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 SEQ PG LIN  LABEL   OP    OPERANDS                                SFX CT  LOCN  INSTRUCTION

1595 AP 04           B     TRREX                                   GO TO EXIT      4  6709  B 08Z
1596 AP 05   OVLPM   LCA   NOP,MODIF&005                          SET SW TO NOP   7  6713  L F1V 09Y
1597 AP 06           MA    BK50,TRREX&003                          DEC ADDR BY 43  7  6720  # F5Z 09S
1598 AP 07           B     TRREX                                   GO TO EXIT      4  6727  B 08Z
1599 AP 08
1600 AP 09
1601 AP 10                       TAPE END OF REEL ROUTINE
1602 AP 11                       THIS ROUTINE IS ENTERED WHENEVER
1603 AP 12                       END OF REEL IS ENCOUNTERED
1604 AP 13                       DURING TAPE WRITE OPERATION
1605 AP 14
1606 AP 15   ENREEL SBR   ENREX&003                               SET ROUTINE EXIT  4  6731  H P5T
1607 AP 16           LCA   NOP,EOFSW                               SET EOF SW      7  6735  L F1V P6S
1608 AP 17           MCW   %TO,REELEN-010,W                      TYPE MESSAGE    8  6742  M %TO F6# W
1609 AP 18   ENREX   B     0000                                    ROUTINE EXIT    4  6750  B 000
1610 AP 19
1611 AP 20
1612 AP 21                       TAPE END OF FILE ROUTINE
1613 AP 22                       THIS ROUTINE IS ENTERED WHENEVER
1614 AP 23                       END OF REEL OR END OF FILE
1615 AP 24                       IS ENCOUNTERED DURING A
1616 AP 25                       TAPE READ OPERATION
1617 AP 26
1618 AP 27   EOF1    SBR   EOFEX&003                               SET ROUTINE EXIT  4  6754  H Q2W
1619 AP 28           SBR   INDEOF&003                              SET REDUCE INSTR  4  6758  H P8V
1620 AP 29   EOFSW   B     INDEOF                                  THIS WILL BE A    4  6762  B P8S
1621 AP 30                                                       BR TO IND ERR IF
1622 AP 31                                                       EOR WAS NOT
1623 AP 32                                                       ENCTRD ON WRITE
1624 AP 33           CU    %U1,R                                   REWIND TAPE       5  6766  U %U1 R
1625 AP 34           LCA   BRANCH,EOFSW                            RESTORE SW      7  6771  L F1U P6S
1626 AP 35           B     0001                                    RETRY ROUTINE   4  6778  B 001
1627 AP 36   INDEOF  BCE   EOFEX,TAD0,1                           BYPASS ERR IND  8  6782  B Q2T #00 1
1628 AP 37           SW    0000                                    REDUCE          4  6790  , 000
1629 AP 38           CW                                             ADDRESS       1  6794  ¤
1630 AP 39           CW                                              AND          1  6795  ¤
1631 AP 40           CW                                               STORE       1  6796  ¤
1632 AP 41           CW                                                 IN        1  6797  ¤
1633 AP 42           SAR   EOFIN                                      EOFIN       4  6798  Q F8X
1634 AP 43           MCW   %TO,EOFIN-015,W                       WRITE MESSAGE   8  6802  M %TO F7S W
1635 AP 44           BCE   EOFH,TAD2,1                           CK FOR ERR HALT 8  6810  B Q2S #02 1
1636 AP 45           B     EOFEX                                   GO TO EXIT      4  6818  B Q2T
1637 AP 46   EOFH    H                                            ERROR HALT      1  6822  -
1638 AP 47   EOFEX   B     0000                                    ROUTINE EXIT    4  6823  B 000
1639 AP 48                       ERROR ROUTINE
1640 AP 49                       THIS ROUTINE IS ENTERED WHEN AN ERROR
1641 AP 50                       IS ENCOUNTERED WITHIN TEST ROUTINE
1642 AP 51                       TEST TADO
1643 AP 52                       IF 1 BYPASS ERR IND AND CK INQUIRY
1644 AP 53                       IF 0 TYPE ERROR ADDRESS AND TEST
```

```
SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION

1645 AP 54                          TAD2  IF 1 HALT BEFORE INQUIRY TEST
1646 AP 55                          IF 0 PROCEED TO TEST FOR INQUIRY
1647 AP 56
1648 AP 57          SBR   TPEXIT&003                        SET ROUTINE EXIT     4  6827  H R1V
1649 AP 58          SBR   REDD&003                          SET REDUCE INSTR     4  6831  H Q4W
1650 AP 59          BCE   LPC,TAD0,1                        BYPASS ERR IND       8  6835  B ROX #00 1
1651 AP 60  REDD    SW    0000                              REDUCE ADDRESS       4  6843  , 000
1652 AP 61          CW                                       TO INDICATE         1  6847  ¤
1653 AP 62          CW                                        ERROR              1  6848  ¤
1654 AP 63          CW                                         LOCATION          1  6849  ¤
1655 AP 64          SAR   ERRLOC                            STORE FOR TYPING     4  6850  Q U66
1656 AP 65          B     TYPER                             GO TO TYPE           4  6854  B Q8W
1657 AP 66  TYP1    SBR   TPEXIT&003                        SET ROUTINE EXIT     4  6858  H R1V
1658 AP 67          SBR   REDADD&003                        SET REDUCE INSTR     4  6862  H Q7X
1659 AP 68          BCE   LPC,TAD0,1                        BYPASS ERR IND       8  6866  B ROX #00 1
1660 AP 69  REDADD  SW    0000                              REDUCE ADDRESS       4  6874  , 000
1661 AP 70          CW                                       TO INDICATE         1  6878  ¤
1662 AP 71          CW                                        ERROR              1  6879  ¤
1663 AP 72          CW                                         LOCATION          1  6880  ¤
1664 AP 73          CW                                                           1  6881  ¤
1665 AP 74          SAR   ERRLOC                            STORE FOR TYPING     4  6882  Q U66
1666 AP 75  TYPER   MCW   %T0,ERRLOC-006,W                  TYPE ERROR LOC       8  6886  M %T0 U60 W
1667 AP 76          BCE   ERHALT,TAD2,1                     CK FOR ERR HALT      8  6894  B ROW #02 1
1668 AP 77          B     LPC                               CK FOR INQ.          4  6902  B ROX
1669 AP 78  ERHALT  H                                       ERROR HALT           1  6906  .
1670 AP 79  LPC     BIN   ALTER,Q                           CK FOR INQUIRY       5  6907  B U68 Q
1671 AP 80  TPEXIT  B     0000                              ROUTINE EXIT         4  6912  B 000
1672 AP 81
1673 AP 82
1674 AP 83
1675 AP 84                          ROUTINES TO SAVE AND RESTORE
1676 AP 85                          STORAGE AREAS TO BE REPLACED
1677 AP 86                          WITH UNCOND. BR INSTRS USED
1678 AP 87                          WITH CERTAIN TEST ROUTINES
1679 AP 88
1680 AP 89  SVRES   SBR   SVRSEX&003                        SET EXIT             4  6916  H R8V
1681 AP 90          LCA   ZZZ,0089                          RESET XR 1           7  6920  L B4W 089
1682 AP 91  MVIT    MN    0000&X2,0000&X3                   MOVE NUM BITS        7  6927  D 0-0 0&0
1683 AP 92          MZ    0000&X2,0000&X3                   MOVE ZN BITS         7  6934  Y 0-0 0&0
1684 AP 93          BWZ   WM,0000&X2,1                      CK FOR WM            8  6941  V R8W 0-0 1
1685 AP 94  UPXR    A     ONE,0089                          UP                   7  6949  A A1U 089
1686 AP 95          MA    ZZ1,0094                                               7  6956  # &2Z 094
1687 AP 96          MA    ZZ1,0099                                               7  6963  # &2Z 099
1688 AP 97          C     0089,ZZ5                          CK FOR 5 MOVES       7  6970  C 089 B2V
1689 AP 98          BU    MVIT                              MOVE NEXT DIGIT      5  6977  B R2X /
1690 AP 99  SVRSEX  B     0000                              ROUTINE EXIT         4  6982  B 000
1691 AQ 00  WM      SW    0000&X3                           SET WM               4  6986  , 0&0
1692 AQ 01          B     UPXR                              UP XRS               4  6990  B R4Z
```

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SEQ PG LIN  LABEL   OP    OPERANDS                                  SFX CT  LOCN  INSTRUCTION
1693 AQ 03          JOB   1410/7010-1401 TOPSY COMPATIBILITY TEST
1694 AQ 05  TPINS1  DCW   @%U@                                        2  6995
1695 AQ 06  TPINS2  DCW   @@U@                                        2  6997
1696 AQ 07  TPRINA  DCW   @001@                                       3  7000
1697 AQ 08  TPRINB  DCW   @101@                                       3  7003
1698 AQ 09  TPRINC  DCW   @201@                                       3  7006
1699 AQ 10  CC1     DSA   &WKAREA                                     3  7009  H0#
1700 AQ 11  CC2     DSA   &WKAREA&079                                 3  7012  H7Z
1701 AQ 12  TPOTA   DSA   &0080                                       3  7015  080
1702 AQ 13  TPOTB   DSA   &0180                                       3  7018  180
1703 AQ 14  TPOTC   DSA   &0280                                       3  7021  280
1704 AQ 15  RESTA   B     1901                                        4  7022  B Z01
1705 AQ 16          DC    @ @                                         1  7026
1706 AQ 17  POST    EQU   1904                                           1904
1707 AQ 18          EQU   1905                                           1905
1708 AQ 18  1905    DCW   @8000 @                                     5  1905
1709 AQ 19  ZZ1     DCW   @001@                                       3  7029
1710 AQ 20  CMS     DCW   @NBNCNDNE@                                  8  7037
1711 AQ 21  ZER3    DCW   @000@                                       3  7040
1712 AQ 22  CHTEST  DCW   @ @                                         1  7041
1713 AQ 23  TWO     DCW   @2@                                         1  7042
1714 AQ 24  Z10     DCW   @010@                                       3  7045
1715 AQ 25  TSBR    DCW   @XXX@                                       3  7048
1716 AQ 26  XXX     DCW   @XXX@                                       3  7051
1717 AQ 27  TSBRAN  DSA   &TSBR                                       3  7054  &4Y
1718 AQ 28  PRTHAM  DCW   @DISABLE 1403 PRINT HAMMER  PRESS@         32  7086
1719 AQ 29          DC    @ START@                                    6  7092
1720 AQ 30  GMWM    DCW   @#@                                         1  7093
1721 AQ 31  PRBNSG  DCW   @0123456789@                               10  7103
1722 AQ 32  IMSEG   DCW   @PRTERRTEST@                               10  7113
1723 AQ 33  ONE     DCW   @1@                                         1  7114
1724 AQ 34  FRTHOU  DCW   @00#@                                       3  7117
1725 AQ 35  SAVA    DC    @     @                                     5  7122
1726 AQ 36  SVLOC   DSA   &SAVA-004                                   3  7125  A1Y
1727 AQ 37  RESCK   DCW   @SET CK CONTROL SW TO NORMAL  PRE@         32  7157
1728 AQ 38          DC    @SS START@                                  8  7165
1729 AQ 39          DCW   @#@                                         1  7166
1730 AQ 40  RESHAM  DCW   @RESTORE 1403 PRINT HAMMER TO NOR@         32  7198
1731 AQ 41          DC    @MAL STATUS  PRESS START@                  23  7221
1732 AQ 42          DCW   @#@                                         1  7222
1733 AQ 43  ZZ5     DCW   @005@                                       3  7225
1734 AQ 44  PRBSEG  DCW   @PRBUSYTEST@                               10  7235
1735 AQ 45  CYCNT   DCW   @0000@                                      4  7239
1736 AQ 46  ZZZZ    DCW   @0000@                                      4  7243
1737 AQ 47  ZZZ     DCW   @000@                                       3  7246
1738 AQ 48  ZZ4     DCW   @004@                                       3  7249
1739 AQ 49  AA1     DCW   @11@                                        2  7251
1740 AQ 50          DCW   @/1@                                        2  7253
1741 AQ 51          DCW   @J1@                                        2  7255
1742 AQ 52          DCW   @A1@                                        2  7257
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SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION
1743	AQ	53	ADAN	DCW	@/0@		2	7259	
1744	AQ	54		DCW	@J0@		2	7261	
1745	AQ	55		DCW	@A0@		2	7263	
1746	AQ	56		DCW	@10@		2	7265	
1747	AQ	57	ADAREA	DCW	@ @		2	7267	
1748	AQ	58	NINT9	DCW	@99@		2	7269	
1749	AQ	59		DCW	@BZ01 FGHIJKLMNOPQRSTUVWXYZ012345@		32	7301	
1750	AQ	60		DC	@6789.¤(<‡&$*,;Δ-/,%=¹//#@:>√&-‡ A@		32	7333	
1751	AQ	61	RDCOMP	DC	@BCDEFGHIJKLMN@		13	7346	
1752	AQ	62		DC	@OPQ@		3	7349	
1753	AQ	63		DCW	@‡@		1	7350	
1754	AQ	64	PROCMS	DCW	@ALTER LOC 7800 TO NO BITS SET C@		32	7382	
1755	AQ	65		DC	@K CONTROL SW TO RESTART AND PRES@		32	7414	
1756	AQ	66		DC	@S START@		7	7421	
1757	AQ	67		DCW	@‡@		1	7422	
1758	AQ	68	PNERMS	DCW	@READY 10 CARDS JUST PUNCHED IN P@		32	7454	
1759	AQ	69		DC	@UNCH 9 EDGE FIRST FACE DOWN FOLL@		32	7486	
1760	AQ	70		DC	@OWED BY BLANK CARDS PRESS START@		32	7518	
1761	AQ	71		DCW	@‡@		1	7519	
1762	AQ	72	ETHOU	DCW	@00-@		3	7522	
1763	AQ	73	BRBK	B	BCK		4	7523	B R11
1764	AQ	74		DC	@ @		1	7527	
1765	AQ	75	BRBK1	B	BCKX		4	7528	B A81
1766	AQ	76		DC	@ @		1	7532	
1767	AQ	77	ZZ	DCW	@00@		2	7534	
1768	AQ	78	WRCNT	DCW	@00@		2	7536	
1769	AQ	79	WKAREA	EQU	7800			7800	
1770	AQ	80	RDCNT	DCW	@ @		2	7538	
1771	AQ	81	Z26	DCW	@026@		3	7541	
1772	AQ	82	ONHUND	DCW	@100@		3	7544	
1773	AQ	83	PAS	DCW	@PASS@		4	7548	
1774	AQ	84		DCW	@‡@		1	7549	
1775	AQ	85	MD1410	DCW	@SET COMPATIBILITY SW TO 1410/701@		32	7581	
1776	AQ	86		DC	@0 PRESS COMPUTER RESET & START@		31	7612	
1777	AQ	87		DCW	@‡@		1	7613	
1778	AQ	88	BRANCH	DCW	@B@		1	7614	
1779	AQ	89	NOP	DCW	@N@		1	7615	
1780	AQ	90	TWRCNT	DCW	@0000@		4	7619	
1781	AQ	91	TEN	DCW	@10@		2	7621	
1782	AQ	92	ERRLO	DCW	@TP WR ERR @		13	7634	
1783	AQ	93		DCW	@‡@		1	7635	
1784	AQ	94	ERRL	DCW	@TP RD ERR @		13	7648	
1785	AQ	95		DCW	@‡@		1	7649	
1786	AQ	96	TRDCNT	DCW	@0000@		4	7653	
1787	AQ	97	BK26	DCW	@I7D@		3	7656	
1788	AQ	98	BK50	DCW	@I5&@		3	7659	
1789	AQ	99	REELEN	DCW	@END OF REEL@		11	7670	
1790	AR	00		DCW	@‡@		1	7671	
1791	AR	01	EOFIN	DCW	@FALSE TP EOF @		16	7687	
1792	AR	02		DCW	@‡@		1	7688	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION
1793	AR	03	RTX	EQU	7991			7991	
1794	AR	03	7991	DCW	a a		1	7991	
1795	AR	04	WTX	EQU	7992			7992	
1796	AR	04	7992	DCW	a a		1	7992	

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SEQ PG LIN  LABEL  OP   OPERANDS                                  SFX CT  LOCN  INSTRUCTION

1797 AR 06         JOB  1410/7010-1401 TOPSY COMPATIBILITY TEST
1798 AR 08         ORG  8000                                                   8000
1799 AR 09
1800 AR 10                        1410 ROUTINE TO SET UP POST
1801 AR 11                        RESTART,TYPE PROGRAM ID AND
1802 AR 12                        SET UP INSTRUCTIONS
1803 AR 13
1804 AR 14         DCW  @D0802800004X@                                 12  8011
1805 AR 15         DCW  @,00005@                                        6  8017
1806 AR 16         DCW  @J08029 @                                       7  8024
1807 AR 17         DCW  @B-08@                                          4  8028
1808 AR 18         DCW  @M%T001250W@                                   10  8038
1809 AR 19         DCW  @R08029‡@                                       7  8045
1810 AR 20         DCW  @M%T008167W@                                   10  8055
1811 AR 21         DCW  @R08046‡@                                       7  8062
1812 AR 22         DCW  @M%T008185W@                                   10  8072
1813 AR 23         DCW  @R08063‡@                                       7  8079
1814 AR 24         DCW  @N%T008208W@                                   10  8089
1815 AR 25         DCW  @N08080‡@                                       7  8096
1816 AR 26         DCW  @M%T008138W@                                   10  8106
1817 AR 27         DCW  @R08097‡@                                       7  8113
1818 AR 28         DCW  @M%T008228W@                                   10  8123
1819 AR 29         DCW  @R08114‡@                                       7  8130
1820 AR 30         DCW  @J08240 @                                       7  8137
1821 AR 31         DCW  @SET COMPATIBILITY SW TO 1401@                 28  8165
1822 AR 32         DCW  @‡@                                             1  8166
1823 AR 33         DCW  @SET SENSE SW A ON@                            17  8183
1824 AR 34         DCW  @‡@                                             1  8184
1825 AR 35         DCW  @SET I/O CK STOP SW OFF@                       22  8206
1826 AR 36         DCW  @‡@                                             1  8207
1827 AR 37         DCW  @READY ALL I/O UNITS@                          19  8226
1828 AR 38         DCW  @‡@                                             1  8227
1829 AR 39         DCW  @PRESS START@                                  11  8238
1830 AR 40         DCW  @‡@                                             1  8239
1831 AR 41         DCW  @D0802800084X@                                 12  8251
1832 AR 42         DCW  @,00085@                                        6  8257
1833 AR 43         DCW  @J02007 @                                       7  8264
1834 AR 44         DCW  @.@                                             1  8265
1835 AR 45         ORG  8500                                                   8500
1836 AR 46         DCW  @B085190130IR@                                 12  8511
1837 AR 47         DCW  @J08569 @                                       7  8518
1838 AR 48         DCW  @M%1909000R@                                   10  8528
1839 AR 49         DCW  @R085192@                                       7  8535
1840 AR 50         DCW  @R08543‡@                                       7  8542
1841 AR 51         DCW  @R085571@                                       7  8549
1842 AR 52         DCW  @J08569 @                                       7  8556
1843 AR 53         DCW  @D090020130I3@                                 12  8568
1844 AR 54         DCW  @B0858801303P@                                 12  8580
1845 AR 55         DCW  @J08638 @                                       7  8587
1846 AR 56         DCW  @M%4909000W@                                   10  8597
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SEQ PG LIN  LABEL  OP   OPERANDS                    SFX CT  LOCN  INSTRUCTION
1847 AR 57         DCW  @R085882@                      7  8604
1848 AR 58         DCW  @R08612‡@                     7  8611
1849 AR 59         DCW  @R086261@                     7  8618
1850 AR 60         DCW  @J08638 @                     7  8625
1851 AR 61         DCW  @D090020130330@              12  8637
1852 AR 62         DCW  @B0865701305P@               12  8649
1853 AR 63         DCW  @J08699 @                     7  8656
1854 AR 64         DCW  @F1@                          2  8658
1855 AR 65         DCW  @R086572@                     7  8665
1856 AR 66         DCW  @R08673‡@                     7  8672
1857 AR 67         DCW  @R086871@                     7  8679
1858 AR 68         DCW  @J08699 @                     7  8686
1859 AR 69         DCW  @D090020130530@              12  8698
1860 AR 70         DCW  @N@                           1  8699
1861 AR 71         DCW  @D087100799110@              12  8711
1862 AR 72         DCW  @B087430129110@              12  8723
1863 AR 73         DCW  @B089190129210@              12  8735
1864 AR 74         DCW  @J08000 @                     7  8742
1865 AR 75         DCW  @D079910875810@              12  8754
1866 AR 76         DCW  @U%U R@                       5  8759
1867 AR 77         DCW  @R087552@                     7  8766
1868 AR 78         DCW  @R08774‡@                     7  8773
1869 AR 79         DCW  @R087881@                     7  8780
1870 AR 80         DCW  @J08938 @                     7  8787
1871 AR 81         DCW  @A08710079910@               11  8798
1872 AR 82         DCW  @J08813Z@                     7  8805
1873 AR 83         DCW  @J08743 @                     7  8812
1874 AR 84         DCW  @D090020129130@              12  8824
1875 AR 85         DCW  @D090020129230@              12  8836
1876 AR 86         DCW  @J08000 @                     7  8843
1877 AR 87         DCW  @D079910799210@              12  8855
1878 AR 88         DCW  @A08710079920@               11  8866
1879 AR 89         DCW  @J08825Z@                     7  8873
1880 AR 90         DCW  @D079920888910@              12  8885
1881 AR 91         DCW  @U%U R@                       5  8890
1882 AR 92         DCW  @R088862@                     7  8897
1883 AR 93         DCW  @R08905*@                     7  8904
1884 AR 94         DCW  @R088561@                     7  8911
1885 AR 95         DCW  @J08000 @                     7  8918
1886 AR 96         DCW  @D079910799210@              12  8930
1887 AR 97         DCW  @J08874 @                     7  8937
1888 AR 98         DCW  @B088440129210@              12  8949
1889 AR 99         DCW  @J08000 @                     7  8956
1890 AS 00         DCW  @.@                           1  8957
1891 AS 01         ORG  9000                                    9000
1892 AS 02         DC   @ @                           1  9000
1893 AS 03         DCW  @‡@                           1  9001
1894 AS 04         DC   @ @                           1  9002
1895 AS 05         END  START                                   / -00 080
```