PERKIN-ELMER

COMMON RS-232 INTERFACE

Offline Test Program

Consists of:

Program Description	06-127M95R10A15
Program Listing	06-127M96R10A13
Patch Information	R11 Change Package

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R11 PATCH INFORMATION
FOR COMMON RS-232 INTERFACE
Offline Test Program

To increase the delay time of the DELADD option, to prevent the test connector from causing two I/O interrupts when only one is expected by the test, and to prevent Test C from failing when a DIOS is at address 20 , insert the following patch:

PATCH CHANGES

LOCATION	OLD HEX	NEW HEX	
1AD8	91C4	91C5	SLLS R13,5
174A	DI00	4300	B,09CE
174C	37F8	09CE	
20F0	C8C0	4180	BAL,R8,9EC
20F2	210E	09EC	
25C6	C8C0	4180	BAL,R8,9F6
25C8	40F0	09F6	
276C	4150	4300	B 9A0
276E	33C6	09A0	

ADDITIONS

LOCATION	NEW HEX	
09A0	41F0	BAL,RF,3454
09A2	3454	
09A4	4150	BAL,R5,33C6
09A6	33C6	
09A8	4300	B,2770
09AA	2770	
09CE	4810	LH R1,1846
09D0	1846	
09D2	C510	CLAI R1,1298
09D4	1298	
09D6	2187	BTFS,8,7
09D8	C510	CLAI,R1,12AC
09DA	12AC	
09DC	2384	BFFS,8,4
09DE	D100	STM R0,3778
09E0	3778	
09E2	2303	BFFS 0,3

```
09E4    D100    STM,R0,37F8
09E6    37F8
09E8    4300    B 174E
09EA    174E
09EC    41F0    BAL,R15,3466
09EE    3466
09F0    C8C0    LNI,R12,210E
09F2    210E
09F4    0308    BR,R8
09F6    41F0    BAL,R15,3466
09F8    3466
09FA    C8C0    LNI, R12,40F0
09FC    40F0
09FE    0308    BR,R8
```

This patch to be incorporated in object labeled 06-127R10.1 on Multimedia Packages.

COMMON RS-232 INTERFACE OFF LINE TEST PROGRAM DESCRIPTION

1. GENERAL

Related documents:

Test Program Listing	06-127M91R10A13
Test Program Paper Tape	06-127M17R10

Test Programs to be run prior to loading this test:

Appropriate Processor Test
Appropriate Memory Test
Appropriate Terminal Test

2. PURPOSE OF TEST

This program tests all available features of the various programmable Perkin-Elmer RS-232 interfaces, such as the Communications Multiplexors (COMM MUX), the Programmable Asynchronous Line System (PALS), and the Programmable Asynchronous Single Line Adapter (PASLA), using two adjacent lines in place of the switched telephone network. Every combination of character format (character size, bit speed, etc.) is tested. The program operates in the half-duplex (HDX) or full-duplex (FDX) mode.

The clock and bit configuration is selected for appropriate tests.

A brief description of each test is provided in Table 1.

TABLE 1 TESTS FOR MODE 0 AND MODE 1

MODE 0 (HDX)	MODE 1 (FDX)	FUNCTION
1	1	False sync test
2	2	Test input lines from data set
3	3	Test output lines to data set
4	4	Test disable interrupt function
5	5	Test queueing of interrupts
6	N.A.	Test hardware disarm function
7	C	Test interrupt sources
8	D	Receive message interrupt mode
9	F	Receive message status mode
A	D	Transmit message interrupt mode
B	E	Transmit message status mode
F	F	Test transmit line break function
10	10	Test fault detection; parity error, framing error, overflow
11	11	Test Echoplex (EPX) function
12	N.A	Test turn line to receive while transmitting character

3. MINIMUM HARDWARE REQUIRED

Processor: Model 6/16, 8/16, or SERIES SIXTEEN Processor
Model 7/32, 8/32, or Perkin-Elmer 3200 Processor

Minimum Memory: 16 kb
Console Input Device (Refer to Appendix A, particularly Note 5)
List Device (See Appendix A, particularly Note 5)
Object Input Device or Multimedia Loader

PALS 35-410 ALMC Printed Circuit Board
35-411 PALM Printed Circuit Board
28-009 PALM Test Connector
PALS Chassis

PASLA 2 35-457 Printed Circuit Boards
28-014 PASLA Test Cable (for 2 PASLAs)

2-LINE COMM MUX 35-701 Printed Circuit Board
17-463 COMM MUX Cable
17-514 Test Cable (for 2 lines)

8-LINE COMM MUX 35-702 Printed Circuit Board
17-463 COMM MUX Cable
17-514 Test Cable (for 2 lines)

4. REQUIREMENTS OF MACHINE UNDER TEST

This program assumes that the appropriate processor, memory, and terminal test have been run without detecting an error.

Device Addresses

The RS-232 Interface should be strapped for device addresses of X'20' and X'22'. If they are different, the device address options must be entered. (Refer to Appendices A and B.)

Test connector 28-009 must be equipped (for PALS) as shown in Figure 1.

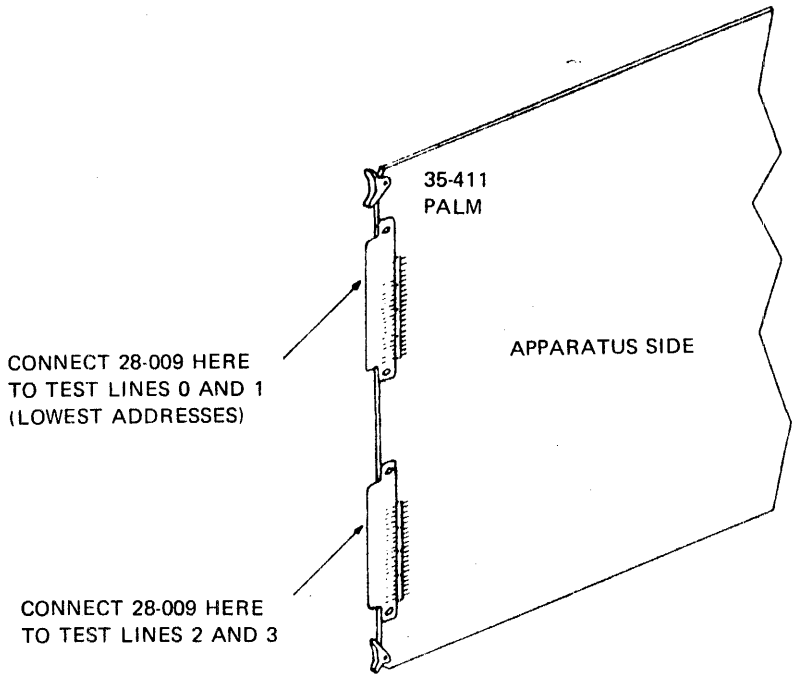

Figure 1 Test Connector Locator

5. LOADING PROCFDURE

5.1 Test Tape Format

The test program paper tape is an absolute, nonzoned object tape (M17) with front-end bootloader and occupies approximately 16 kb.

5.2 Normal Loading Procedure

Manually enter the X'50' sequence, shown below, into memory:

LOCATION	CONTENTS	
X'30'	X'0000'	Illegal instruction
X'32'	X'0000'	New PSW
X'34'	X'0000'	
X'36'	X'0050'	
X'50'	X'D500'	Autoload instruction
X'52'	X'00CF'	Final address = '00CF'
X'54'	X'4300'	Branch to
X'56'	X'0080'	Address '0080'
		Object Input Specification
X'78'	X'0294'	For TTY
X'78'	X'0399'	For HSPTR
X'78'	X'1399'	For HSPTR/P

Execute at address X'30'. To load the program using the multimedia loader or the floppy diagnostic loader, refer to the appropriate loader program description.

6. PROGRAM EXECUTION

Refer to Appendix A and set up the addresses for the console input device and the list device.

Address memory location X'A00' for a 32-bit processor.
Address memory location X'A04' for a 16-bit processor.

Start program execution. Observe the following title is output to the list device (if list device is switched on after start of program, a delay occurs):

COMMON RS-232 INTERFACE OFF LINE TEST 06-127R10

7. OPERATION PROCEDURES

7.1 Normal Testing

When the test tape loading is complete and the test cable is attached, execute the test at X'A00' for a 32-bit processor or at X'A04' for a 16-bit processor. Observe the test title printed on the list device.

7.2 Half-Duplex Testing

If the interface is strapped for half-duplex mode, the following must be run to complete the test:

1. MODE 0
2. TEST (Defaulted Tests are 1,2,3,4,5,6,7,8,9,A,B,F,10,11,12)
3. PAIRS 1
4. TDEVN 20
5. CDEVN 22
6. RUN

Refer to Appendix D for expected results.

7.3 Full-Duplex Testing

If the interface is strapped for full-duplex, the following must be run to complete the test:

1. MODE 1
2. TEST (Defaulted Tests are 1,2,3,4,5,C,D,E,F,10,11)
3. PAIRS 1
4. TDEVN 20
5. CDEVN 22
6. RUN

NOTE

MODE must be changed prior to TEST option to ensure the correct tests are selected.

Refer to Appendix D for expected results.

8. OPTIONAL TESTING

Normally, if all default values are in effect, the test runs through all full-duplex tests on the two lines X'20' and X'22'. If the user wants to loop on an individual test, the options LOOP or CONTIN can satisfy this objective.

When executing Tests 8, A, or D, the option CLOCK can help to pinpoint any errors that appear. By specifying one or any combination of clocks, the different baud rates available to that system can be tested.

When executing Tests 7, 9, B, C, D, F, 10, 11, or 12, use the option PARA to specify the character format and clock for that test. (Refer to Table C-1 for appropriate values.)

The PAIRS option calls for TDEVN to be set up for the first address in the series to be tested. This option modifies TDEVN and CDEVN at the end of each test phase. The current addresses are logged on the list device as:

```
"NEW LINE ADDRESSES UNDER TEST"
"TDEVN = XXX"
"CDEVN = YYY"
```

where: XXX and YYY are the addresses before executing that phase. The option enables the user to test every possible address combination for each interface. Therefore, all or any part of the system can be tested by using the various options.

9. ERROR PROCEDURES

If an error is detected, the current test is aborted and an error message is printed on the list device, which gives a test number, error number, and other pertinent information. (Refer to Appendix E for a list of error messages.)

Certain sections of this test enable the user to loop on a particular error. The option LPERR activates the looping on that section of test. (Refer to the Program Listing for specific areas where looping is effective.)

For intermittent errors with the LPERR option active, the program loops until it passes. To force it to loop with or without errors, inspect the contents of TESTAD at the time of the error and change the point of error to an unconditional branch to TESTAD.

10. OVERNIGHT TESTING

Overnight testing is allowed by turning the console off-line while the test is running. When the console is returned to the on-line condition, the program prints its statistics after a delay (provided to let CRT warm up). If the console is not returned to the on-line condition before X'7FFF' passes are executed, the processor halts and resumes execution only upon depressing the RUN (or EXE) key.

APPENDIX A
USER DEVICE DEFINITION

The halfword labeled IO has the default value for the ASCII Programmer's Console on a PASLA (refer to the listing). This device is used as the operator's command console and as the list device. If a different arrangement is desired, change location IO as follows:

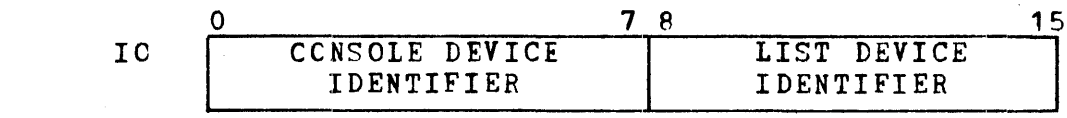

Table A-1 describes the console and list device identifiers that are used in this test program.

TABLE A-1 LIST OF DEVICE IDENTIFIERS

DEVICE IDENTIFIER	EXPLANATION
CONSOLE	
X'01'	Video display terminal (CRT, Model 550, Model 1100, Model 1200) on a PASLA/PALM/COMM MUX interface strapped for FDX and highest baud rate
X'02'	TTY, video display terminal, or Carousel 15/30 on a current loop interface
X'04'	Carousel 300 on a PASLA/PALM/COMM MUX interface strapped for FDX and highest baud rate
X'05'	TTY, CRT, or Carousel 15/30 on a microbus adapter
X'00', '03' X'06'-'FF'	Reserved, defaults to X'01'

TABLE A-1 LIST OF DEVICE IDENTIFIERS (Continued)

DEVICE IDENTIFIER	EXPLANATION
LIST	
X'01'	Video display terminal (CRT, Model 550, Model 1100, Model 1200) on a PASLA/PALM/COMM MUX interface strapped for FDX and highest baud rate
X'02'	TTY, video display terminal, or Carousel 15/30 on a current loop interface
X'03'	Line printer
X'04'	Carousel 300 on a PASLA/PALM/COMM MUX interface strapped for FDX and highest baud rate
X'05'	TTY, CRT, or Carousel 15/30 on a microbus adapter
X'00' X'06' - 'FF'	Reserved, defaults to X'01'

NOTES

1. The Teletype or current loop interface, if used, should be strapped for the device address of X'02'. If it is different, the fullword labeled CLIFADR must be changed accordingly. (Refer to the listing.)

2. The Carousel, terminals 550, 1100, 1200, or CRT, if used on PASLA/PALM/COMM MUX interface, should be strapped for the device addresses of X'10' and X'11' for receiving and transmitting sides respectively. If it is different, the fullword labeled PASLADR (for terminal) or C300ADR (fcr Carousel) must be changed accordingly. (Refer to the listing.)

3. The Micro-I/O Bus, if used, should be strapped for device address X'C0'. If the address is different, the fullword labeled MICROBUS must be changed accordingly. (Refer to the listing.)

4. The line printer, if used, should be strapped for device address X'62'. If the address is different, the halfword labeled LPADR must be changed accordingly. (Refer to the listing.)

5. The console/list device addresses MUST NOT CONFLICT with the RS-232 Interface addresses under test.

APPENDIX B
OPTION/COMMAND INPUT STRUCTURE

An asterisk (*) output to the list device indicates that the program is awaiting an option input. Any option can be typed in from the console input device, followed by a space and the desired hexadecimal value. The TEST option, which accepts arguments separated by commas, is an exception. A carriage return (CR) is issued to terminate every option/command input. An invalid option/command or value causes a question mark (?) followed by a carriage return (CR), line feed (LF), and an asterisk (*) to occur.

The operator then inputs the information in the following format:

*OPTION DATA

OPTION can be a maximum of six characters. The options for this program are listed and explained in Appendix C.

A space must separate the data input and the option input. The data input, with the exception of TEST and RUN, can be up to four hexadecimal characters terminated by a carriage return (CR). The TEST input data is a sequence separated by commas. The last character input is followed by a carriage return; for example, if Tests 1, 2, C, and 10 are tc be run, input:

*TEST 1,2,C,10 CR

The RUN option has no option associated with it. The space following the RUN input executes the program.

The TEST option must also be input after the MODE option if the MODE is to be different from the default value. The program checks the test data to ensure that a test called for can be run in the mode selected. This check is performed immediately before the execution of each selected test. An incorrect test selection results in a message logged on the list device.

CAUTION

IF THE MODE IS CHANGED, THE OPERATOR MUST ENSURE THAT ONLY THE PROPER TESTS ARE SELECTED, IF OTHER THAN DEFAULT TESTS.

APPENDIX C
OPTICNS TABLE

OPTION	DEFAULT VALUE	DESCRIPTION
TEST	HDX- 1,2,3,4,5,6,7, 8,9,A,B,F,10,11,12 FDX- 1,2,3,4,5,C,D, E,F,10,11	Selects the test or tests to be executed.
TDEVN	X'20'	Specifies the hexadecimal value of the device address of the TEST line receive side.
CDEVN	X'22'	Specifies the hexadecimal value of the device address of the CNTL line receive side.
MODE	1	Indicates mode of operation of interface under test. 0=half duplex 1=full duplex
PARA	0	Defines CLOCK, number of bits, number of STOP bits and PARITY for appropriate test. (Refer to Table C-1 for option values.)
PAIRS	X'0' (See Note)	Specifies multiple lines are to be tested; e.g., if two lines are in the system with contiguous addresses, the program runs the tests specified by the test option, TDEVN and CDEVN. It then increments the device addresses and continues until all combinations of addresses for the two lines are tested. 1. Option input is hexadecimal number of line pairs. 2. Test connector must be on each interface.

OPTION	DEFAULT VALUE	DESCRIPTION
CONTIN	0	Enables the user to run all tests selected continuously until the BREAK key returns the program to the command mode.
CLOCK	ABCD (See Note)	Specifies which clocks are desired to be tested in Tests 8, A, and D.
LPERR	0	This option allows the program to loop on specific errors for inspection using a scope. (Applicable to tests 7,8,9, A,B,C,D,E,10, and 11.)
LOOP	0	Determines the number of times each test is to be executed.
NOMSG	0	Determines whether all messages will be printed or if only error messages will be printed. 0=all messages 1=error messages only
INTLEV	0	This option specifies the interrupt level of the interface. One hexadecimal digit value is accepted.
OPTION		As soon as this command is entered, all options with their current values are printed on the console.

NOTE

When testing a PASLA system, restrict CLOCK option to 'AB'.

PARA uses a two-character input that specifies the character format. Assume the two-character input is 'XY' as indicated in Table C-1.

TABLE C-1 PARA OPTION ENTRIES

X	BIT SPEED *	NO. DATA BITS	Y	NO. STOP BITS	PARITY
0	0	5	0	1	NONE
1	0	6	2	1	NONE
2	0	7	4	1	ODD
3	0	8	6	1	EVEN
4	1	5	8	2	NONE
5	1	6	A	2	NONE
6	1	7	C	2	ODD
7	1	8	E	2	EVEN
8	2	5			
9	2	6			
A	2	7			
B	2	8			
C	3	5			
D	3	6			
E	3	7			
F	3	8			

* Bit speeds 0-3 correspond to CLKA-CLKD respectively.

APPENDIX D
EXPECTED RESULTS TABLE

COMMON RS-232 INTERFACE OFF LINE TEST 06-127R10

```
*MODE 0
*TEST
*TDEVN 20
*CDEVN 22
*RUN

TEST 01
NO ERROR

TEST 02
NO ERROR

TEST 03
NO ERROR

TEST 04
NO ERROR

TEST 05
NO ERROR

TEST 06
NO ERROR

TEST 07
NO ERROR

TEST 08
NO ERROR

TEST 09
NO ERROR

TEST 0A
NO ERROR

TEST 0B
NO ERRCR

TEST 0F
NO ERROR

TEST 10
NO ERROR

TEST 11
NO ERROR

TEST 12
NO ERROR

END OF TEST
*
```

APPENDIX E
ERROR MESSAGES

TEST NUMBER THAT ERROR CAN OCCUR IN	ERROR NUMBER	DEFINITION	H=HDX F=FDX B=Both
1	01	Status request is performed on TEST RCV line with a false SYNC as resulting status.	B
2	02	RING inputs to TEST line active but status of TEST RCV line incorrect	B
2	03	RING inputs to TEST line active, but status of TEST SND line incorrect	B
2	04	DSRDY, CAR, RCR inputs to TEST line active; status of TEST SND line incorrect	B
2	05	DSRDY, CAR, RCR inputs to TEST line active; status of TEST RCV line incorrect	B
2	06	DSRDY, CAR, RCR, CL2S inputs to TEST line active; status of TEST RCV line incorrect	B
2	07	DSRDY, CAR, RCR, CL2S inputs to TEST line active; status of TEST SND line incorrect	B
3	08	RING input to CNTL line active; status of CNTL RCV line incorrect	B
3	09	RING input to CNTL line active; status of CNTL SND line incorrect	B
3	10	DSRDY, CAR, RCR inputs to CNTL line active; status of CNTL SND line incorrect	B
3	11	DSRDY, CAR, RCR inputs to CNTL line active; status of CNTL RCV line incorrect	B

TEST NUMBER THAT ERROR CAN OCCUR IN	ERROR NUMBER	DEFINITION	H=HDX F=FDX B=Both
3	12	DSRDY, CAR, RCR, CL2S inputs to CNTL line active; status of CNTL RCV line incorrect	B
3	13	DSRDY, CAR, RCR, CL2S inputs to CNTL line active; status of CNTL SND line incorrect	B
4	14	Interrupt occurs while TEST line is in disabled mode. ($\overline{RCR}$ and $\overline{CL2S}$ interrupts are generated.)	B
5	15	Transition of RCR to $\overline{RCR}$ interrupt not queued on TEST RCV line	B
5	16	Transition of RCR to $\overline{RCR}$ interrupt queued on TEST RCV line but interrupt address incorrect	B
5	17	Transition of RCR to $\overline{RCR}$ interrupt queued on TEST RCV line but status incorrect	B
5	18	Acknowledge of interrupt on TEST line did not clear interrupt flip-flop.	B
5	19	Transition of CL2S to $\overline{CL2S}$ interrupt not queued on TEST SND line	B
5	20	Transition of CL2S to $\overline{CL2S}$ interrupt queued but interrupt address incorrect	B
5	21	Transition of CL2S to $\overline{CL2S}$ interrupt queued but status incorrect	B
6	22	Transition of CL2S to $\overline{CL2S}$ interrupt not disarmed while TEST line was in RCV mode	H
6	23	Transition of $\overline{CAR}$ to CAR interrupt not disarmed while TEST line was in SND mode	H
7,C	24	Transition of $\overline{CAR}$ to CAR did not generate interrupt on TEST RCV line.	B

TEST NUMBER THAT ERROR CAN OCCUR IN	ERROR NUMBER	DEFINITION	H=HDX F=FDX B=Both
7,C	25	Transition of $\overline{CAR}$ to CAR generated an interrupt on TEST RCV line but interrupt address incorrect.	B
7,C	26	Transition of $\overline{CAR}$ to CAR generated an interrupt on TEST RCV line but TEST RCV status incorrect.	B
7,C	27	Transition of CAR/DSRDY to $\overline{CAR/DSRDY}$ did not generate interrupt on TEST RCV line.	B
7,C	28	Transition of CAR/DSRDY to $\overline{CAR/DSRDY}$ generated interrupt on TEST RCV line but interrupt address incorrect.	B
7,C	29	Transition of CAR/DSRDY to $\overline{CAR/DSRDY}$ generated interrupt on TEST RCV line but status incorrect.	B
7,C	30	Transition of RCR/$\overline{RING}$ to $\overline{RCR}$/RING did not generate interrupt on TEST RCV line.	B
7,C	31	Transition of RCR/$\overline{RING}$ to $\overline{RCR}$/RING generated interrupt on TEST RCV line but address incorrect.	B
7,C	32	Transition of RCR/$\overline{RING}$ to $\overline{RCR}$/RING generated interrupt on TEST RCV line but status incorrect.	B
7,C	33	Transition of $\overline{RCR}$ to RCR did not generate an interrupt on TEST RCV line.	B
7,C	34	Transition of RCR to $\overline{RCR}$ generated an interrupt on TEST RCV line but interrupt address incorrect.	B
7,C	35	Transition of $\overline{RCR}$ to RCR generated an interrupt on TEST RCV line but status incorrect.	B
7,8 C,D, 10	36	Character transmitted from CNTL to TEST line but did not get a receive character interrupt on TEST RCV line.	B

TEST NUMBER THAT ERROR CAN OCCUR IN	ERROR NUMBER	DEFINITION	H=HDX F=FDX B=Both
7,8 C,D	37	Received character generated an interrupt on TEST RCV line but interrupt address incorrect.	B
7,8 C,D	38	Received character generated an interrupt on TEST RCV line but status incorrect.	B
7	39	Transition of RCR/$\overline{\text{RING}}$ to $\overline{\text{RCR}}$/RING did not generate an interrupt on TEST SND line.	H
7	40	Transition of RCR/$\overline{\text{RING}}$ to $\overline{\text{RCR}}$/RING generated an interrupt on TEST SND line but address incorrect.	H
7	41	Transition of RCR/$\overline{\text{RING}}$ to $\overline{\text{RCR}}$/RING generated an interrupt on TEST SND line but status incorrect.	H
7,A,C	42	Transition of BSY to $\overline{\text{BSY}}$ did not generate an interrupt on TEST SND line.	B
7,A,C	43	Transition of BSY to $\overline{\text{BSY}}$ generated an interrupt on TEST SND line but interrupt address incorrect.	B
7,A,C	44	Transition of BSY to $\overline{\text{BSY}}$ generated an interrupt on TEST SND line but status incorrect.	B
7,C	45	Transition of CL2S to $\overline{\text{CL2S}}$ did not generate an interrupt on TEST SND line.	B
7,C	46	Transition of CL2S to $\overline{\text{CL2S}}$ generated an interrupt on TEST SND line but interrupt address incorrect.	B
7,C	47	Transition of CL2S to $\overline{\text{CL2S}}$ generated an interrupt on TEST SND line but status incorrect.	B
C	48	RING generated an interrupt on SND side of TEST line.	F

TEST NUMBER THAT ERROR CAN OCCUR IN	ERROR NUMBER	DEFINITION	H=HDX F=FDX B=Both
8,9 D,E	49	Data mismatch on message read from TEST RCV line occurred.	B
9,E,10	50	Character transmitted from CNTL line to TEST RCV line but BSY status bit did not get reset on receipt of character.	B
9,E	51	BSY status bit on TEST RCV line correct upon receipt of character but the remainder of status incorrect	B
A,B, D,E	52	Data mismatch on message read from CNTL line occurred.	B
A,B, E,F, 12	53	BSY status bit on TEST SND line incorrect when ready to transmit character	B
B,E	54	Status word on TEST SND line incorrect when ready to transmit character	B
F	55	Status of CNTL RCV line incorrect upon assembly of Line Break character	B
F	56	Status of CNTL RCV line correct for Line Break character but data character not 0	B
F	57	On subsequent character after Line Break, CNTL RCV status did not recover.	B
F	58	CNTL RCV line did not receive correct character after Line Break.	B
10	59	TEST RCV status incorrect upon receipt of character with incorrect parity	B
10	60	Receipt of Line Break character in TEST RCV line produced incorrect status and/or incorrect data.	B

TEST NUMBER THAT ERROR CAN OCCUR IN	ERROR NUMBER	DEFINITION	H=HDX F=FDX B=Both
10	61	TEST RCV line did not recover on character following the Line Break character (either status did not recover or data character was incorrect).	B
10	62	TEST RCV line received two characters without reading the first, but status was incorrect (OV status should be set).	B
10	63	The overflow character was not in the read buffer when read.	B
10	64	After overflow character was read from the TEST RCV line, the next character assembled did not reset the error status.	B
11	65	With TEST line in echoplex mode a character is received at CNTL RCV side; status is incorrect.	B
11	66	Characters received by CNTL RCV line in Echoplex mode not correct	B
D,E	67	CNTL SND status incorrect when ready to transmit character	F
	68	Not used	
12	69	TEST line failed to maintain RQ2S active after being put in RCV mode while data transfer from TEST line was being carried out.	H
7,C,D, E,10,11	70	CNTL SND Busy status bit incorrect when ready to transmit character	B
7,C,D, E,F, 10,12	71	CNTL RCV Busy status bit incorrect when character assembled	B
D	72	Transition of BSY to BSY on TEST SND line did not generate an interrupt.	F

TEST NUMBER THAT ERROR CAN OCCUR IN	ERROR NUMBER	DEFINITION	H=HDX F=FDX B=Both
D	73	Transition of BSY to BSY on TEST SND line caused interrupt, but address incorrect.	F
D	74	Transition of BSY to BSY on TEST SND line caused interrupt, but status incorrect.	F
D	75	CNTL RCV status not correct when character received	B
7	76	BSY status bit on TEST SND line set while no character transfer in progress	H

APPENDIX F
ERROR MESSAGE PRINTOUT

All test program error messages are preceded by:

ERROR TTNN

where:

TT = Hexadecimal test number where the failure was detected.

NN = Error number. See Appendix E for error number explanation.

The following are supplementary printouts that occur after the above:

FUNCTION	MESSAGE
Interrupt device address incorrect	INT DEV ADDR=CCC SHOULD BE =DDD
Interface status* incorrect	XY**STATUS=CC SHOULD BE =FF
Interrupt occurred that should not have	INT DEV ADDR=GGG
Status or character error on data transmission test	BAUD J BITS# K STP L PAR M (character format)
Data mismatch	CHAR WAS=MM SHOULD BE =PP
TOTAL gives the number of times the selected test modules were run after the console input device was turned off. TOTERR gives the number of errors detected.	TOTAL TOTERR XXXX YYYY

FUNCTION	MESSAGE
TT - gives number of test modules in which the interrupt occurred. F - indicates spurious interrupts. N - 1 for arithmetic (32-bit) fixed-point arithmetic (16-bit) fault interrupt. - 2 for illegal instruction interrupt. - 3 for machine malfunction interrupt. - 5 for relocation/protection (32-bit)/floating-point divide fault (16 bit) interrupt. - 7 for format fault interrupt. PPPP - PSW at the time of interrupt LLLL - LOC at the time of interrupt	ERROR TTFN PSW PPPP LOC LLLL
TT = as stated previously DDD = address of the device that unexpectedly interrupted SS = status of that device PPPP = as stated previously LLLL = as stated previously	ERROR TTF4 DEV DDD STA SS PSW PPPP LOC LLLL
TT = as stated previously DDD = address of device under test from which an interrupt is expected SS = as stated previously PPPP = as stated previously LLLL = as stated previously	ERROR TTF6 DEV DDD STA SS PSW PPPP LOC LLLL INTERRUPTED IN LEVEL N

FUNCTION	MESSAGE
N = The wrong interrupt level in which the device under test interrupted. The correct interrupt level is specified by the INTLEV option.	ERROR TTF6 DEV DDD STA SS PSW PPPP LOC LLLL INTERRUPTED IN LEVEL N

* On status error involving data transmission, a character printout is included; ignore it.

** X=T for TEST line or C for CNTL line; Y=R for RCV side or S for SND side.

Example: XY=CR means CNTL RVC status incorrect.

PROG= RS232 ASSEMBLED BY CAL 03-066R08-00 (32-BIT)

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                                1  RS232    PROG  COMMON RS-232 INTERFACE OFF LINE TEST  06-127R10A13        RST00010
                                2           WIDTH 120                                                        RST00020
                                3           TARGT 16                                                         RST00030
                                4           CROSS                                                            RST00040
                                5  ********************************************************************      RST00050
                                6  *                                                                  *      RST00060
                                7  * COPYRIGHT PERKIN-ELMER  DECEMBER 1980                           *      RST00070
                                8  *                                                                  *      RST00080
                                9  * COMMON RS-232 INTERFACE OFF LINE TEST PROGRAM                   *      RST00090
                               10  *                                                                  *      RST00100
                               11  * THIS PROGRAM TEST THE OPERATION OF THE PROGRAMMABLE              *      RST00110
                               12  * ASYNCHRONOUS LINE INTERFACES USING TWO ADJACENT LINES            *      RST00120
                               13  * IN PLACE OF SWITCHED TELEPHONE LINES                            *      RST00130
                               14  *                                                                  *      RST00140
                               15  * THE PROGRAM TEST FULL DUPLEX OPERATION (SIMULATING A             *      RST00150
                               16  * 103A DATA SET)OR HALF DUPLEX OPERATION (SIMULATING A 202        *      RST00160
                               17  * DATA SET). ALL AVAILABLE FEATURES OF THE LINES ARE TESTED.       *      RST00170
                               18  *                                                                  *      RST00180
                               19  * THE PROGRAM REQUIRES EITHER 7/16 BASIC OR EQUIVALENT            *      RST00190
                               20  * PROCESSOR, OR 7/32 OR EQUIVALENT PROCESSOR WITH AT              *      RST00200
                               21  * LEAST 16K BYTES OF MEMORY                                       *      RST00210
                               22  *                                                                  *      RST00220
                               23  * THE PROGRAM CONSISTS OF A TOTAL OF X'12' TESTS, X'D' HALF       *      RST00230
                               24  * DUPLEX AND X'A' FULLDUPLEX TESTS WHERE SOME TESTS ARE           *      RST00240
                               25  * COMMON BETWEEN THE TWO MODES.                                   *      RST00250
                               26  *                                                                  *      RST00260
                               27  * TEST 1 (HDX/FDX)                                                *      RST00270
                               28  * FALSE SYNC TEST                                                 *      RST00280
                               29  *                                                                  *      RST00290
                               30  * TEST 2 (HDX/FDX)                                                *      RST00300
                               31  * DATA SET INPUT LINES TEST                                       *      RST00310
                               32  *                                                                  *      RST00320
                               33  * TEST 3 (HDX/FDX)                                                *      RST00330
                               34  * DATA SET OUTPUT LINES TEST                                      *      RST00340
                               35  *                                                                  *      RST00350
                               36  * TEST 4 (HDX/FDX)                                                *      RST00360
                               37  * DISABLE INTERRUPT TEST                                          *      RST00370
                               38  *                                                                  *      RST00380
                               39  * TEST 5 (HDX/FDX)                                                *      RST00390
                               40  * INTERRUPT QUEUE TEST                                            *      RST00400
                               41  *                                                                  *      RST00410
                               42  * TEST 6 (HDX)                                                    *      RST00420
                               43  * HARDWARE DISARM TEST                                            *      RST00430
                               44  *                                                                  *      RST00440
                               45  * TEST 7 (HDX)                                                    *      RST00450
                               46  * INTERRUPT SOURCE TEST                                           *      RST00460
                               47  *                                                                  *      RST00470
                               48  * TEST 8 (HDX)                                                    *      RST00480
                               49  * READ MESSAGE WITH INTERRUPTS TEST                               *      RST00490
                               50  *                                                                  *      RST00500
                               51  * TEST 9 (HDX)                                                    RST00510
                               52  * READ MESSAGE WITH SENSE STATUS LOOPS TEST                        RST00520
                               53  *                                                                  RST00530
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                        54  * TEST A (HDX)                                                 *          RST00540
                        55  * TRANSMIT MESSAGE WITH INTERRUPTS TEST                        *          RST00550
                        56  *                                                              *          RST00560
                        57  * TEST B (HDX)                                                 *          RST00570
                        58  * TRANSMIT MESSAGE WITH SENSE STATUS LOOPS TEST               *          RST00580
                        59  *                                                              *          RST00590
                        60  * TEST C (FDX)                                                 *          RST00600
                        61  * INTERRUPT SOURCES TEST                                       *          RST00610
                        62  *                                                              *          RST00620
                        63  * TEST D (FDX)                                                 *          RST00630
                        64  * RECEIVE/SEND MESSAGE WITH INTERRUPT TEST                     *          RST00640
                        65  *                                                              *          RST00650
                        66  * TEST E (FDX)                                                 *          RST00660
                        67  * RECEIVE/SEND MESSAGE WITH SENSE STATUS LOOPS TEST           *          RST00670
                        68  *                                                              *          RST00680
                        69  * TEST F (HDX/FDX)                                            *          RST00690
                        70  * TRANSMIT LINE BREAK FUNCTION OF THE TEST LINE TEST          *          RST00700
                        71  *                                                              *          RST00710
                        72  * TEST 10 (HDX/FDX)                                           *          RST00720
                        73  * FAULT DETECTION TEST (PARITY,LINE BREAK, AND OVERFLOW)      *          RST00730
                        74  *                                                              *          RST00740
                        75  * TEST 11 (HDX/FDX)                                           *          RST00750
                        76  * ECHOPLEX TEST                                               *          RST00760
                        77  *                                                              *          RST00770
                        78  * TEST 12 (HDX)                                               *          RST00780
                        79  * REVERSE LINE WHILE TRANSMITTING TEST                        *          RST00790
                        80  *                                                              *          RST00800
                        81  * ANY COMBINATION OF THESE TESTS CAN BE SELECTED AS A         *          RST00810
                        82  * STRING AND CAN BE LOOPED ON OR RUN CONTINUOUSLY.           *          RST00820
                        83  *                                                              *          RST00830
                        84  ****************************************************************          RST00840
0000 0002               85  CLDEV    EQU   2                                                        RST00850
0000 0003               86  DSDEV    EQU   3                                                        RST00860
0000 0003               87  RDDEV    EQU   3                                                        RST00870
0000 0004               88  WRDEV    EQU   4                                                        RST00880
0000 0005               89  RTN      EQU   5                                                        RST00890
0000 0006               90  RTN2     EQU   6                                                        RST00900
0000 0007               91  DEV      EQU   7                                                        RST00910
0000 0007               92  PAR      EQU   7                                                        RST00920
0000 0008               93  STAT     EQU   8                                                        RST00930
0000 0008               94  RTN3     EQU   8                                                        RST00940
0000 0009               95  SAVER    EQU   9                                                        RST00950
0000 000A               96  ERR2     EQU   10                                                       RST00960
0000 000B               97  DATAR    EQU   11                                                       RST00970
0000 000C               98  TEMP     EQU   12                                                       RST00980
0000 000D               99  CHAR     EQU   13                                                       RST00990
0000 000E              100  RTN4     EQU   14                                                       RST01000
0000 000F              101  CNT2     EQU   15                                                       RST01010
0000 0000              102  R0       EQU   0                                                        RST01020
0000 0001              103  R1       EQU   1                                                        RST01030
0000 0002              104  R2       EQU   2                                                        RST01040
0000 0003              105  R3       EQU   3                                                        RST01050
0000 0004              106  R4       EQU   4                                                        RST01060
0000 0005              107  R5       EQU   5                                                        RST01070
0000 0006              108  R6       EQU   6                                                        RST01080
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                0000 0007          109  R7       EQU   7                                                        RST01090
                0000 0008          110  R8       EQU   8                                                        RST01100
                0000 0009          111  R9       EQU   9                                                        RST01110
                0000 000A          112  R10      EQU   10                                                       RST01120
                0000 000B          113  R11      EQU   11                                                       RST01130
                0000 000C          114  R12      EQU   12                                                       RST01140
                0000 000D          115  R13      EQU   13                                                       RST01150
                0000 000E          116  R14      EQU   14                                                       RST01160
                0000 000E          117  RET      EQU   14                                                       RST01170
                0000 000F          118  R15      EQU   15                                                       RST01180
                0000 000F          119  LINK     EQU   15                                                       RST01190
                                   120  *                                                                       RST01200
                                   121  *  BOOTLOADER WITH CHKSUM                                               RST01210
                                   122  *                                                                       RST01220
0000R                              123           ORG   X'80'                                                     RST01230
0080   2421                        124           LIS   R2,1                                                      RST01240
0082   2303                        125           BS    BOOT                                                      RST01250
0084   3800                        126           DC    Z(PSWSAVE+X'FF'&X'FF00')                                  RST01260
0086   3808                        127           DC    Z(PSWSAVE+X'FF'&X'FF00'+8)                                RST01270
                                   128  *                                S32/3200 PPF PSW AND REG SAVE          RST01280
0088   C810 0A00                   129  BOOT     LHI   R1,ORIGIN1       R1 = ADR( FIRST BYTE OF TEST PROG )    RST01290
008C   C830 3702                   130           LHI   R3,LNZB+1         R3 = ADR( LAST NON-ZERO BYTE )         RST01300
0090   4030 0022                   131           STH   R3,X'22'          REGISTER SAVE POINTER(16-BIT M/C)      RST01310
0094   2731                        132           SIS   R3,1                                                      RST01320
0096   C860 0000                   133  MN       LHI   R6,0              R6 = CHKSUM BYTE = X'MN'               RST01330
009A   D340 0078                   134           LB    R4,X'78'          INPUT DEV ADR                          RST01340
009E   DE40 0079                   135           OC    R4,X'79'                                                 RST01350
00A2   9D45                        136  LEADER   SSR   R4,R5                                                   RST01360
00A4   2091                        137           BTBS  9,1               DU,BSY                                 RST01370
00A6   9B45                        138           RDR   R4,R5                                                    RST01380
00A8   0855                        139           LDAR  R5,R5                                                    RST01390
00AA   2234                        140           BZS   LEADER            IGNORE LEADER                          RST01400
00AC   D251 0000                   141  LOAD     STB   R5,0(R1)          STORE 1ST NON-ZERO & SUBSEQUENT BYTE   RST01410
00B0   D351 0000                   142           LB    R5,0(R1)          RELOAD DATA BYTE TO                    RST01420
00B4   0765                        143           XAR   R6,R5             GENERATE CHKSUM                        RST01430
00B6   9481                        144           EXBR  R8,R1                                                    RST01440
00B8   9828                        145           WHR   R2,R8             DISPLAY MEMORY ADDRESS                 RST01450
00BA   9D45                        146           SSR   R4,R5                                                    RST01460
00BC   2091                        147           BTBS  9,1               DU,BSY                                 RST01470
00BE   9B45                        148           RDR   R4,R5                                                    RST01480
00C0   C110 00AC                   149           BXLE  R1,LOAD           LOAD TILL LAST BYTE                    RST01490
00C4   9486                        150           EXBR  R8,R6                                                    RST01500
00C6   9828                        151           WHR   R2,R8             FINAL CHKSUM                           RST01510
00C8   2478                        152  LDWT     LIS   R7,8                                                     RST01520
00CA   917C                        153           SLLS  R7,12             R7 = X'8000'                           RST01530
00CC   9557                        154           EPSR  R5,R7             HALT PROCESSOR.                        RST01540
00CE   2203                        155           BS    LDWT                                                     RST01550
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00D0                          157          ORG   X'A00'                                                    RST01570
0A00  4300 0A30               158  ORIGIN1 B     START1          START HERE FOR 32-BIT PROCESSOR           RST01580
0A04  4300 0A46               159  ORIGIN2 B     START2          START HERE FOR 16-BIT PROCESSOR           RST01590
0A08  4300 0A60               160  ORIGIN3 B     START3          SPECIAL 32-BIT PROCESSOR START            RST01600
0A0C  4300 0A64               161  ORIGIN4 B     START4          SPECIAL 16-BIT PROCESSOR START            RST01610
                              162  *                                                                         RST01620
                              163  *-----------------------------                                           RST01630
                              164  *   TEST CONSTANTS                          *                           RST01640
                              165  *                                                                         RST01650
0A10  0202 see back           166  IO      DC    X'0202'         I/O DEVICE(S) IDENTIFIER                  RST01660
0A12  1011                    167  PASLADR DC    X'1011'         PASLA/PALM READ/WRITE ADDRESSES           RST01670
0A14  0202                    168  CLIFADR DC    X'0202'         CURRENT LOOP INTERFACE R/W ADDRESSES      RST01680
0A16  6262                    169  LPADR   DC    X'6262'         LINE PRINTER ADDRESS                      RST01690
0A18  1011                    170  C300ADR DC    X'1011'         CAROUSEL 300/PASLA ADDRESSES              RST01700
0A1A  C0C0                    171  MICROBUS DC   X'C0C0'         MICROBUS ADDRESS                          RST01710
0A1C  0000                    172          DCX   0               PROVISION FOR SPECIAL DEVICE              RST01720
                              173  *                                                                         RST01730
                              174  * IO =   0101  FOR CRT ON PASLA                                          RST01740
                              175  *        0202  FOR TELETYPE, CAROUSEL 15/30                            RST01750
                              176  *        XX03  FOR LINE PRINTER                                         RST01760
                              177  *        0404  FOR CAROUSEL 300                                         RST01770
                              178  *        0505  FOR MICROBUS                                             RST01780
                              179  *                                                                         RST01790
0A1E  0200                    180  TIME    DC    X'200'          CONSTANT                                  RST01800
0A20  0000                    181          DCX   0               RESERVED                                  RST01810
0A22  70F0                    182  PSW     DCX   70F0            PSW USED IN PROGRAM                       RST01820
0A24  30F0                    183  PSW2    DCX   30F0            PSW USED IN EXEC                          RST01830
0A26  0000                    184          DCX   0               RESERVED                                  RST01840
0A28  0000                    185          DCX   0               RESERVED                                  RST01850
0A2A  0000                    186          DCX   0               RESERVED                                  RST01860
0A2C  0000                    187          DCX   0               RESERVED                                  RST01870
0A2E  8800                    188  $CON    DCX   8800            BREAKPOINT INSTRUCTION                    RST01880
                              189  *-----------------------------                                           RST01890
                              190  *                                                                         RST01900
0A30  2410                    191  START1  LIS   R1,0                                                      RST01910
0A32  4010 0030               192          STH   R1,X'30'        DISABLE INT AT PROCESSOR LEVEL            RST01920
0A36  4820 0A24               193          LH    R2,PSW2                                                   RST01930
0A3A  4020 0032               194          STH   R2,X'32'        SELECT REG SET 15                         RST01940
0A3E  2521                    195          LCS   R2,1                                                      RST01950
0A40  4020 183A               196          STH   R2,MOD32        SET MODEL 32 PROCESSOR FLAG               RST01960
0A44  2306                    197          BS    ST                                                        RST01970
0A46  2410                    198  START2  LIS   R1,0                                                      RST01980
0A48  4010 183A               199          STH   R1,MOD32        RESET MOD 32 PROCESSOR FLAG               RST01990
0A4C  4810 0A24               200          LH    R1,PSW2                                                   RST02000
0A50  C820 0A68               201  ST      LHI   R2,START                                                  RST02010
0A54  4010 0034               202          STH   R1,X'34'                                                  RST02020
0A58  4020 0036               203          STH   R2,X'36'        II INT NEW PSW LOC                        RST02030
0A5C  0000                    204          DCX   0               TAKE AN ILLEGAL INSTRUCTION INT           RST02040
0A5E  2200                    205          BS    *               HALT IF II NOT TAKEN                      RST02050
                              206  *                                                                         RST02060
0A60  4300 0A30               207  START3  B     START1          INSERT SPECIAL ROUTINE HERE               RST02070
0A64  4300 0A46               208  START4  B     START2          INSERT SPECIAL ROUTINE HERE               RST02080
                              209  *                                                                         RST02090
0A68  D310 0A10               210  START   LB    R1,IO           GET I/O IDENTIFIERS                       RST02100
0A6C  D320 0A11               211          LB    R2,IO+1                                                   RST02110
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0A70  2436           212          LIS   R3,6          IDENTIFIER CAN BE 1,2,3,4,5          RST02120
0A72  0513           213          CLAR  R1,R3                                                RST02130
0A74  2182           214          BLS   IO.OK1        BRANCH IF KB IDENTIFIER OK           RST02140
0A76  2412           215          LIS   R1,2          OTHERWISE FORCE IT TO BE TTY         RST02150
0A78  0523           216  IO.OK1  CLAR  R2,R3                                                RST02160
0A7A  2182           217          BLS   IO.OK2        SAME TEST FOR LIST DEVICE            RST02170
0A7C  2422           218          LIS   R2,2                                                 RST02180
0A7E  D210 0A10      219  IO.OK2  STB   R1,IO         REESTABLISH VALUES                   RST02190
0A82  D220 0A11      220          STB   R2,IO+1                                              RST02200
0A86  D362 186E      221          LB    R6,CONRQ2S(R2)                                       RST02210
0A8A  4060 1852      222          STH   R6,PASFLG2    SET PASLA FLAG (LIST DEVICE)         RST02220
0A8E  0866           223          LDAR  R6,R6                                                RST02230
0A90  2336           224          BZS   IO.OK3        SKIP IF NOT PASLA                    RST02240
0A92  9121           225          SLHLS R2,1                                                 RST02250
0A94  D302 0A11      226          LB    R0,IO+1(R2)                                          RST02260
0A98  DE02 1862      227          OC    R0,CON2ND(R2) ISSUE 2ND COMMAND (TO LIST DEVICE)   RST02270
                     228  *                                                                   RST02280
0A9C  41F0 1526      229  IO.OK3  BAL   LINK,SETKB    ESTABLISH KEYBOARD DEVICE (& IOSAVE) RST02290
0AA0  9310           230          LBR   R1,R0         (R1) = 1,2,4,5 ; (R0 = KBIDENT)      RST02300
0AA2  9111           231          SLHLS R1,1          (R1) = 2,4,6,A                       RST02310
0AA4  4831 0A10      232          LH    R3,IO(R1)                                            RST02320
0AA8  4030 1854      233          STH   R3,CONADR     SET UP CONSOLE DEVICE ADDRESS        RST02330
0AAC  4821 1856      234          LH    R2,CONRD(R1)                                         RST02340
0AB0  4020 1856      235          STH   R2,CONRD      SET UP R/W COMMANDS                  RST02350
0AB4  4821 1862      236          LH    R2,CON2ND(R1)                                        RST02360
0AB8  4020 1862      237          STH   R2,CON2ND     2ND CMD; ENABLE READ CMD             RST02370
0ABC  9011           238          SRHLS R1,1                                                 RST02380
0ABE  D341 186E      239          LB    R4,CONRQ2S(R1)                                       RST02390
0AC2  D240 186E      240          STB   R4,CONRQ2S    CONSOLE REQUEST TO SEND              RST02400
0AC6  4040 1850      241          STH   R4,PASFLG     SET PASLA FLAG (CONSOLE)             RST02410
0ACA  9333           242          LBR   R3,R3         MASK CONSOLE ADDRESS TO 8 BITS       RST02420
0ACC  0844           243          LDAR  R4,R4                                                RST02430
0ACE  2333           244          BZS   IO.OK4        SKIP 2ND OC IF NOT PASLA DEVICE      RST02440
0AD0  9422           245          EXBR  R2,R2                                                RST02450
0AD2  9E32           246          OCR   R3,R2         ISSUE 2ND COMMAND (TO CONSOLE)       RST02460
0AD4  DE30 1856      247  IO.OK4  OC    R3,CONRD      PUT CONSOLE IN READ MODE             RST02470
0AD8  9B3F           248          RDR   R3,R15        READ A DUMMY CHARACTER (SET BUSY)    RST02480
                     249  *                                                                   RST02490
0ADA  41F0 1584      250          BAL   LINK,LCORE    SET UP LOW CORE                      RST02500
0ADE  2400           251          LIS   R0,0                                                 RST02510
0AE0  4000 187E      252          STH   R0,WASDU      RESET 'DEVICE UNAVAILABLE' FLAGS     RST02520
0AE4  4000 1880      253          STH   R0,WASDU1                                            RST02530
0AE8  41F0 138C      254          BAL   LINK,CRLF                                            RST02540
0AEC  C850 35B6      255          LHI   R5,TITLE                                             RST02550
0AF0  41F0 1304      256          BAL   R15,PRINT     PRINT TEST PROGRAM TITLE             RST02560
                     257  *-----------------------------                                     RST02570
                     258  *  KEYBOARD INPUT ROUTINE                                         RST02580
                     259  *                                                                   RST02590
0AF4  41F0 138C      260  OPTIN   BAL   LINK,CRLF     CR,LF TO LIST DEVICE                 RST02600
                     261  *                                                                   RST02610
0AF8  4820 0A24      262  OPTIN1  LH    R2,PSW2                                              RST02620
0AFC  9512           263          EPSR  R1,R2         NO INT. REG SET 15                   RST02630
0AFE  41F0 1526      264          BAL   LINK,SETKB    ESTABLISH CONSOLE                    RST02640
0B02  D340 1938      265          LB    R4,AMSG       OUTPUT AN * TO INDICATE              RST02650
0B06  41F0 139A      266          BAL   LINK,OUTCHR   COMMAND MODE ESTABLISHED             RST02660
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0B0A 2541          267          LCS   R4,1              X'FF'                                  RST02670
0B0C 41F0 139A     268          BAL   LINK,OUTCHR                                            RST02680
0B10 C8C0 1456     269          LHI   R12,QUESTN        SET UP R12 FOR ERR ROUTINE             RST02690
0B14 C800 2020     270          LHI   R0,X'2020'        BLANK OUT COMMAND BUFFER               RST02700
0B18 4000 3726     271          STH   R0,OPTBUF         WHICH WILL CONTAIN OPTION .            RST02710
0B1C 4000 3728     272          STH   R0,OPTBUF+2       NAME                                   RST02720
0B20 4000 372A     273          STH   R0,OPTBUF+4                                              RST02730
0B24 2410          274          LIS   R1,0              CLEAR OPTBUF INDEX                     RST02740
0B26 41F0 1428     275 RDCHR    BAL   R15,GETCHR        GET A CHAR IN R4                       RST02750
0B2A C540 0060     276          CLHI  R4,X'60'          UPPER CASE ALPHA ?                     RST02760
0B2E 2183          277          BLS   RDCHARO           BRANCH IF NO.                          RST02770
0B30 CB40 0020     278          SHI   R4,X'20'          CONVERT TO LOWER CASE                  RST02780
0B34 C540 0023     279 RDCHARO  CLHI  R4,X'23'          IS IT # ?                              RST02790
0B38 4330 0AF4     280          BE    OPTIN                                                    RST02800
0B3C C540 005F     281          CLHI  R4,X'5F'          LEFT ARROW, UNDERLINE OR DELETE ?      RST02810
0B40 2334          282          BES   RDCHAR1                                                  RST02820
0B42 C540 0008     283          CLHI  R4,X'08'          BACK SPACE ?                           RST02830
0B46 2139          284          BNES  RDCHR1            NO, BRANCH                             RST02840
0B48 2711          285 RDCHAR1  SIS   R1,1               YES, DECREMENT INDEX                   RST02850
0B4A 021C          286          BMR   R12               BUFFER UNDERFLOW; PRINT '?'            RST02860
0B4C C800 0020     287          LHI   R0,X'20'                                                 RST02870
0B50 D201 3726     288          STB   R0,OPTBUF(R1)                                            RST02880
0B54 4300 0B26     289          B     RDCHR                                                    RST02890
0B58 C540 000D     290 RDCHR1   CLHI  R4,X'0D'          IS IT CR ?                             RST02900
0B5C 233C          291          BES   LOOKUP            YES, TRY MATCH                         RST02910
0B5E C540 0020     292          CLHI  R4,X'20'          IS IT A BLANK?                         RST02920
0B62 2339          293          BES   LOOKUP            YES, TRY MATCH                         RST02930
0B64 C510 0006     294          CLHI  R1,6              7 CHARACTERS INPUT ?                   RST02940
0B68 038C          295          BNLR  R12               IF YES, ERROR                          RST02950
0B6A D241 3726     296          STB   R4,OPTBUF(R1)     STORE CURRENT BYTE                     RST02960
0B6E 2611          297          AIS   R1,1              BUMP BUFFER INDEX                      RST02970
0B70 4300 0B26     298          B     RDCHR             READ NEXT CHARACTER                    RST02980
                   299 *--------------------------------                                       RST02990
                   300 *  OPTION MATCH ROUTINE                                                 RST03000
                   301 *                                                                       RST03010
0B74 C810 193A     302 LOOKUP   LHI   R1,OPT            LOAD ADDRESS OF OPTION TABLE           RST03020
0B78 2430          303 LOOK1    LIS   R3,0              CLEAR BUFFER INDEX                     RST03030
0B7A 0861          304          LDAR  R6,R1             SET OPTION WORD INDEX                  RST03040
0B7C 4856 0000     305 LOOK2    LH    R5,0(R6)                                                 RST03050
0B80 021C          306          BMR   R12               IF MINUS, THEN NO MATCH = ERROR        RST03060
0B82 4553 3726     307          CLH   R5,OPTBUF(R3)     COMPARE TO OPTBUF HW                   RST03070
0B86 2333          308          BES   LOOK3                                                    RST03080
0B88 261C          309          AIS   R1,12                                                    RST03090
0B8A 2209          310          BS    LOOK1                                                    RST03100
0B8C 2632          311 LOOK3    AIS   R3,2              TRY NEXT HW                            RST03110
0B8E 2662          312          AIS   R6,2                                                     RST03120
0B90 C530 0006     313          CLHI  R3,6              3 MATCHING HW FOUND ?                  RST03130
0B94 208C          314          BLS   LOOK2                                                    RST03140
                   315 *                                                                       RST03150
0B96 C510 19D6     316          CLHI  R1,RUN            RUN COMMAND ?                          RST03160
0B9A 4330 0D9A     317          BE    RUNIT                                                    RST03170
0B9E C510 19E2     318          CLHI  R1,CON            CON COMMAND ?                          RST03180
0BA2 4330 0A2E     319          BE    SCON              YES, BRANCH TO BREAKPOINT              RST03190
0BA6 C510 19CA     320          CLHI  R1,OPTION         OPTION CMD ?                           RST03200
0BAA 4230 0CBC     321          BNE   LOOK4             NO, LOOK FURTHER                       RST03210
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                          322 *-----------------------------                                                  RST03220
                          323 *  TO PROCESS INPUT COMMAND 'OPTION'                                           RST03230
                          324 *                                                                              RST03240
0BAE   C540 000D          325          CLHI  R4,X'0D'          CR ?                                        RST03250
0BB2   233C               326          BES   OPTEXX            YES, BRANCH                                 RST03260
0BB4   41E0 124E          327          BAL   R14,CPTVAL        NO, GET OPTION DEV. PRINTOUT NUM.           RST03270
0BB8   C560 0006          328          CLHI  R6,6              IS DEVICE NUMBER VALID ?                    RST03280
0BBC   2387               329          BNLS  OPTEXX            NO, BRANCH                                  RST03290
0BBE   C840 000A          330          LHI   R4,X'0A'          YES, LOAD AN LF CHARACTER                   RST03300
0BC2   41F0 139A          331          BAL   LINK,OUTCHR       WRITE IT TO THE CONSOLE                     RST03310
0BC6   D260 372D          332          STB   R6,IOSAVE+1       CHANGE THE LIST DEVICE                      RST03320
0BCA   4820 19D2          333 OPTEXX   LH    R2,OPTION+8       CHECK FOR SPECIAL ROUTINE                   RST03330
0BCE   0232               334          BNZR  R2                LINK TO ROUTINE                             RST03340
                          335 *                                                                              RST03350
0BD0   C830 193A          336 OPTRTN   LHI   R3,TEST           RETURN HERE                                 RST03360
0BD4   C8E0 0C5A          337          LHI   R14,OPTCMD8                                                     RST03370
0BD8   41F0 138C          338          BAL   LINK,CRLF                                                       RST03380
0BDC   2420               339 OPTCMD   LIS   R2,0               RESET COUNTER                               RST03390
0BDE   D342 193A          340 OPTCMD1  LB    R4,OPT(R2)        TO PRINT TEST                               RST03400
0BE2   41F0 139A          341          BAL   LINK,OUTCHR                                                     RST03410
0BE6   2621               342          AIS   R2,1                                                            RST03420
0BE8   C520 0006          343          CLHI  R2,6                                                            RST03430
0BEC   2087               344          BLS   OPTCMD1                                                         RST03440
0BEE   C840 0020          345          LHI   R4,C' '                                                         RST03450
0BF2   41F0 139A          346          BAL   LINK,OUTCHR       OUTPUT 1 SPACE                              RST03460
0BF6   2450               347          LIS   R5,0              TO PRINT SELECTED TEST NUMBERS              RST03470
0BF8   4050 1838          348          STH   R5,FIRST                                                        RST03480
0BFC   4823 0006          349          LH    R2,6(R3)          FIRST TEST WORD                             RST03490
0C00   2440               350 OPTCMD2  LIS   R4,0               START WITH TEST 0                           RST03500
0C02   4040 000C          351          STH   R4,TEMP                                                         RST03510
0C06   9121               352 OPTCMD3  SLHLS R2,1                                                            RST03520
0C08   4380 0C3A          353          BNC   OPTCMD7                                                         RST03530
0C0C   4040 000C          354 OPTCMD4  STH   R4,TEMP           OPTION VALUE FOUND.                         RST03540
0C10   4800 1838          355          LH    R0,FIRST          IS IT FIRST ?                               RST03550
0C14   2335               356          BZS   OPTCMD5                                                         RST03560
0C16   C840 002C          357          LHI   R4,C','           NO, OUTPUT COMMA                            RST03570
0C1A   41F0 139A          358          BAL   LINK,OUTCHR                                                     RST03580
0C1E   40F0 1838          359 OPTCMD5  STH   LINK,FIRST                                                      RST03590
0C22   0855               360          LDAR  R5,R5             TEST VALUE FROM SECOND HW                   RST03600
0C24   2335               361          BZS   OPTCMD6           NO                                          RST03610
0C26   C840 0031          362          LHI   R4,C'1'           YES,OUTPUT '1'                              RST03620
0C2A   41F0 139A          363          BAL   LINK,OUTCHR                                                     RST03630
0C2E   4840 000C          364 OPTCMD6  LH    R4,TEMP           RESTORE R4                                  RST03640
0C32   D344 18A2          365          LB    R4,HEXTAB(R4)     CONVERT                                     RST03650
0C36   41F0 139A          366          BAL   LINK,OUTCHR       OUTPUT 0-F                                  RST03660
0C3A   4840 000C          367 OPTCMD7  LH    R4,TEMP           RESTORE                                     RST03670
0C3E   2641               368          AIS   R4,1              INCREMENT TEST #                            RST03680
0C40   4040 000C          369          STH   R4,TEMP                                                         RST03690
0C44   C540 0010          370          CLHI  R4,16                                                           RST03700
0C48   4280 0C06          371          BL    OPTCMD3                                                         RST03710
0C4C   0855               372 OPTCMD71 LDAR  R5,R5             DONE ?                                      RST03720
0C4E   023E               373          BNZR  R14                                                             RST03730
0C50   4823 0008          374          LH    R2,8(R3)          SECOND TEST WORD                            RST03740
0C54   2451               375          LIS   R5,1              R5 = 1 FOR SECOND TEST HW                   RST03750
0C56   4300 0C00          376          B     OPTCMD2                                                         RST03760
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                                377  *---------------------------------                                    RST03770
                                378  *  TO OUTPUT OTHER OPTION NAMES & VALUES                             RST03780
                                379  *                                                                    RST03790
0C5A   41F0 138C                380  OPTCMD8   BAL   LINK,CRLF                                           RST03800
0C5E   2461                     381            LIS   R6,1              SET LINE COUNTER                   RST03810
0C60   C820 1946                382            LHI   R2,OPT+12         R2 POINTS TO THE NAME              RST03820
0C64   2436                     383  OPTCMD9   LIS   R3,6                                                RST03830
0C66   D342 0000                384  OPTCMD10  LB    R4,0(R2)                                            RST03840
0C6A   41F0 139A                385            BAL   LINK,OUTCHR       OUTPUT OPTION NAME CHAR            RST03850
0C6E   2621                     386            AIS   R2,1                                                RST03860
0C70   2731                     387            SIS   R3,1              6 CHARACTERS OUTPUT ?              RST03870
0C72   2026                     388            BPS   OPTCMD10          NO,LOOP                            RST03880
0C74   C840 0020                389            LHI   R4,C' '                                             RST03890
0C78   41F0 139A                390            BAL   LINK,OUTCHR       OUTPUT ONE SPACE                   RST03900
0C7C   4852 0000                391            LH    R5,0(R2)          R5 = OPTION VALUE                  RST03910
0C80   2404                     392            LIS   R0,4                                                RST03920
0C82   41F0 12B2                393            BAL   LINK,R5HEX        WRITE OPTION VALUE IN HEX (4 DIGITS) RST03930
0C86   D300 0A10                394            LB    R0,IO                                               RST03940
0C8A   2701                     395            SIS   R0,1              CONSOLE = CRT ?                    RST03950
0C8C   213D                     396            BNZS  OPTCMD12          BRANCH: NO.                        RST03960
0C8E   2661                     397            AIS   R6,1              INCREMENT LINE COUNTER.            RST03970
0C90   C560 0014                398            CLHI  R6,20             PAGE FULL ?                        RST03980
0C94   2189                     399            BLS   OPTCMD12          NO                                 RST03990
0C96   2460                     400            LIS   R6,0              INITIALIZE LINE COUNT              RST04000
0C98   41F0 1428                401  OPTCMD11  BAL   LINK,GETCHR                                          RST04010
0C9C   274D                     402            SIS   R4,13             CR ?                               RST04020
0C9E   4330 0AF4                403            BZ    OPTIN             TO ACCEPT NEXT COMMAND             RST04030
0CA2   2643                     404            AIS   R4,3              LF ?                               RST04040
0CA4   2036                     405            BNZS  OPTCMD11          IF YES, PRINT NEXT PAGE            RST04050
0CA6   41F0 138C                406  OPTCMD12  BAL   LINK,CRLF                                           RST04060
0CAA   41F0 1470                407            BAL   LINK,TSTBRK       EXIT IF 'BREAK' PRESSED.           RST04070
0CAE   2626                     408            AIS   R2,6                                                RST04080
0CB0   C520 19CA                409            CLHI  R2,OPTEND2        ALL PRINTING OPTIONS DONE ?        RST04090
0CB4   4280 0C64                410            BL    OPTCMD9           NO,LOOP FOR NEXT ONE               RST04100
0CB8   4300 0AF8                411            B     OPTIN1            TO ACCEPT NEXT COMMAND             RST04110
                                412  *-----------------------------                                       RST04120
0CBC   C510 193A                413  LOOK4     CLHI  R1,TEST           'TEST' OPTION ?                    RST04130
0CC0   4330 0D28                414            BE    TESTOP                                              RST04140
                                415  *                                                                    RST04150
                                416  *  TO PROCESS COMMANDS OTHER THAN 'TEST', 'OPTION'.                   RST04160
                                417  *                                                                    RST04170
0CC4   274D                     418            SIS   R4,13             OPT FOLLOWED BY CR ?               RST04180
0CC6   033C                     419            BZR   R12               YES, ERROR                         RST04190
0CC8   41E0 124E                420            BAL   R14,OPTVAL        GET OPTION VALUE IN R6             RST04200
0CCC   274D                     421            SIS   R4,13             TERMINATED BY CR ?                 RST04210
0CCE   023C                     422            BNZR  R12               IF NO, BRANCH                      RST04220
0CD0   48E1 0008                423            LH    R14,8(R1)         GET OPTION CHECK ROUTINE ADDRESS   RST04230
0CD4   2332                     424            BZS   LOOK5                                               RST04240
0CD6   01FE                     425            BALR  R15,R14           LINK OPTION CHECK ROUTINE          RST04250
                                426  *                                 RETURN HERE                        RST04260
0CD8   4061 0006                427  LOOK5     STH   R6,6(R1)          STORE OPTION VALUE                 RST04270
0CDC   4300 0AF4                428            B     OPTIN             TO ACCEPT NEXT COMMAND             RST04280
                                429  *                                                                    RST04290
0CE0   C360 FFFE                430  ZERONE    THI   R6,X'FFFE'        IGNORE LSB                         RST04300
0CE4   033F                     431            BZR   R15               OKAY                               RST04310
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0CE6  030C            432          BR    R12              ERROR RETURN                          RST04320
                      433  *                                                                     RST04330
0CE8  C560 0400       434  ADR     CLHI  R6,X'400'        (R6) = 10 BIT DEVICE ADDRESS          RST04340
0CEC  028F            435          BLR   R15              RETURN TO LOOK5                       RST04350
0CEE  030C            436          BR    R12                                                    RST04360
                      437  *                                                                     RST04370
0CF0  C560 000F       438  LEVEL   CLHI  R6,15            (R6) = INTERRUPT LEVEL HEX DIGIT      RST04380
0CF4  028F            439          BLR   R15              RETURN TO LOOK5                       RST04390
0CF6  030C            440          BR    R12                                                    RST04400
                      441  *                                                                     RST04410
0CF8  0876            442  CLKCHK  LHR   R7,R6           LOAD INTO WORK REGISTER           *   RST04420
0CFA  033C            443          BZR   R12              ZERO INPUT GO TO QUESTION MARK    *   RST04430
0CFC  0886            444          LHR   R8,R6            *                                     RST04440
0CFE  9064            445  SET2    SRLS  R6,4             SHIFT OVER TO CHECK DIGIT         *   RST04450
0D00  C470 000F       446          NHI   R7,X'F'          AND OFF LOWER DIGIT               *   RST04460
0D04  277A            447          SIS   R7,10            SUBTRACT 10                       *   RST04470
0D06  028C            448          BLR   R12              THROW OUT 0-9 INPUTS              *   RST04480
0D08  C570 0004       449          CLHI  R7,4             TEST FOR A,B,C, OR D              *   RST04490
0D0C  038C            450          BNLR  R12              BAD GO TO QUESTION                *   RST04500
0D0E  0876            451          LHR   R7,R6            LOAD NEW INPUT                    *   RST04510
0D10  4230 0CFE       452          BNZ   SET2             GO AGAIN                          *   RST04520
0D14  0868            453          LHR   R6,R8            *                                     RST04530
0D16  030F            454          BR    R15              RETURN                            *   RST04540
                      455  *                                                                  *   RST04550
      0000 0D18       456  PAIRCHK EQU   *                *                                     RST04560
0D18  C560 0018       457          CLHI  R6,X'18'         CHECK FOR VALID # OF PAIRS        *   RST04570
0D1C  028F            458          BLR   R15              IF VALID RETURN                   *   RST04580
0D1E  030C            459          BR    R12              IF NO GOOD PUT OUT ?              *   RST04590
                      460  *                                                                  *   RST04600
      0000 0D20       461  PARACHK EQU   *                *                                     RST04610
0D20  C360 FF01       462          THI   R6,X'FF01'       TEST FOR VALID DATA               *   RST04620
0D24  023C            463          BNZR  R12              IF NOT VALID GO TO ?              *   RST04630
0D26  030F            464          BR    R15              IF GOOD RETURN                    *   RST04640
                      465  *------------------------------                                     RST04650
                      466  *  TEST OPTION PROCESS ROUTINE                                      RST04660
                      467  *                                                                     RST04670
0D28  274D            468  TESTOP  SIS   R4,13           'TEST' FOLLOWED BY (CR) ?             RST04680
0D2A  4230 0D5C       469          BNZ   TSTOP1                                                 RST04690
0D2E  48C0 1964       470          LH    TEMP,MODE+6      IS FDX MODE SELECTED?             *   RST04700
0D32  233B            471          BZS   TSTOP            NO,LOAD HDX DEFAULT TESTS         *   RST04710
0D34  4800 36A8       472          LH    R0,FDXTESTS      YES FDX MODE FIRST WORD           *   RST04720
0D38  4000 1940       473          STH   R0,TEST+6        *                                     RST04730
0D3C  4800 36AA       474          LH    R0,FDXTESTS+2    SECOND WORD                       *   RST04740
0D40  4000 1942       475          STH   R0,TEST+8        *                                     RST04750
0D44  4300 0AF4       476          B     OPTIN            TO ACCEPT NEXT COMMAND            *   RST04760
0D48  4800 36A4       477  TSTOP   LH    R0,DEFTESTS      HDX MODE                              RST04770
0D4C  4000 1940       478          STH   R0,TEST+6        FIRST TEST WORD                       RST04780
0D50  4800 36A6       479          LH    R0,DEFTESTS+2    ALL DEFAULT TESTS IN PROGRAM          RST04790
0D54  4000 1942       480          STH   R0,TEST+8        SECOND TEST WORD                      RST04800
0D58  4300 0AF4       481          B     OPTIN            TO ACCEPT NEXT COMMAND                RST04810
                      482  *                                                                     RST04820
0D5C  4850 3510       483  TSTOP1  LH    R5,MAXTST                                              RST04830
0D60  2470            484          LIS   R7,0             TEST BIT ACCUMULATORS                 RST04840
0D62  2480            485          LIS   R8,0                                                   RST04850
0D64  41E0 124E       486  TSTOP2  BAL   R14,OPTVAL       GET OPTION VALUE IN R6                RST04860
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0D68  0556           487          CLAR  R5,R6                                          RST04870
0D6A  028C           488          BLR   R12            ERROR: INVALID TEST NUMBER     RST04880
0D6C  0866           489          LHR   R6,R6          IF TEST 0 SELECTED,         *  RST04890
0D6E  033C           490          BZR   R12            THROW OUT                   *  RST04900
0D70  C560 0010      491          CLHI  R6,16          R6 < 16 ?                      RST04910
0D74  2385           492          BNLS  TSTOP3         NO                             RST04920
0D76  41E0 128A      493          BAL   R14,UNARY      GET UNARY OPERAND IN R3        RST04930
0D7A  0673           494          OAR   R7,R3          SET CURRENT BIT                RST04940
0D7C  2306           495          BS    TSTOP4                                        RST04950
0D7E  CB60 0010      496  TSTOP3  SHI   R6,16          R6 = 0-F                       RST04960
0D82  41E0 128A      497          BAL   R14,UNARY                                     RST04970
0D86  0683           498          OAR   R8,R3          SET CURRENT BIT                RST04980
0D88  274D           499  TSTOP4  SIS   R4,13          TERMINATED BY CR ?             RST04990
0D8A  4230 0D64      500          BNZ   TSTOP2                                        RST05000
0D8E  4070 1940      501          STH   R7,TEST+6      STORE VALID SELECTED TESTS     RST05010
0D92  4080 1942      502          STH   R8,TEST+8                                     RST05020
0D96  4300 0AF4      503          B     OPTIN          TO ACCEPT NEXT COMMAND         RST05030
                     504  *-----------------------------                              RST05040
                     505  *                                                           RST05050
0D9A  41F0 138C      506  RUNIT   BAL   LINK,CRLF                                    RST05060
0D9E  24F0           507          LIS   R15,0                                         RST05070
0DA0  40F0 187E      508          STH   R15,WASDU      RESET DU FLAGS                 RST05080
0DA4  40F0 1880      509          STH   R15,WASDU1                                    RST05090
0DA8  240F           510          LIS   R0,15          TO FIND HIGHEST SELECTED TEST  NO.  RST05100
0DAA  4810 1942      511          LH    R1,TEST+8      CHECK SECOND TEST HW           RST05110
0DAE  9011           512  KEEP1   SRLS  R1,1                                         RST05120
0DB0  218B           513          BCS   FOUND1         R0 = F-0                       RST05130
0DB2  2701           514          SIS   R0,1                                         RST05140
0DB4  2213           515          BNMS  KEEP1          TRY NEXT DIGIT                 RST05150
0DB6  240F           516          LIS   R0,15          INITIALIZE AGAIN               RST05160
0DB8  4810 1940      517          LH    R1,TEST+6      CHECK FIRST TEST HW            RST05170
0DBC  9011           518  KEEP2   SRLS  R1,1                                         RST05180
0DBE  2186           519          BCS   FOUND2         R0 = F-0 = TEST #              RST05190
0DC0  2701           520          SIS   R0,1                                         RST05200
0DC2  2213           521          BNMS  KEEP2          LOOP                           RST05210
0DC4  030C           522          BR    R12            TEST NOT SELECTED              RST05220
0DC6  CA00 0010      523  FOUND1  AHI   R0,16         ADJUST TEST # FOR SECOND HW    RST05230
0DCA  4000 187C      524  FOUND2  STH   R0,SELTST     HIGHEST SELECTED TEST NUMBER   RST05240
0DCE  4800 0A10      525          LH    R0,IC                                        RST05250
0DD2  4000 372C      526          STH   R0,IOSAVE      RESTORE USER'S I/O CHOICE      RST05260
0DD6  41F0 138C      527          BAL   LINK,CRLF                                     RST05270
0DDA  41E0 1A08      528          BAL   RTN4,INIT      LINK USER INITIALIZATION ROUTINE  *  RST05280
                     529  *                                                           RST05290
0DDE  41F0 1584      530          BAL   LINK,LCORE     SET UP LOW CORE                *  RST05300
                     531  *                                                           RST05310
                     532  *  START SELECTION FROM TEST 0                             RST05320
                     533  *                                                           RST05330
0DE2  2400           534  KEEP3   LIS   R0,0                                         RST05340
0DE4  4000 1886      535          STH   R0,BTESTNO     RESET BINARY TEST NUMBER       RST05350
0DE8  4000 188A      536          STH   R0,NEXTST      RESET NEXT TEST #              RST05360
                     537  *                                                           RST05370
                     538  *  TO FIND THE NEXT SELECTED TEST.                         RST05380
                     539  *                                                           RST05390
0DEC  4820 188A      540  KEEP4   LH    R2,NEXTST      GET NEXT TEST #                RST05400
0DF0  2408           541  KEEP41  LIS   R0,8                                         RST05410
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0DF2  910C            542          SLHLS R0,12              R0 = X'8000'                          RST05420
0DF4  CC02 0000       543          SRHL  R0,0(R2)           R0 = NEXT TEST BIT                    RST05430
0DF8  C520 0010       544          CLHI  R2,X'10'           NEXT TEST < 16                        RST05440
0DFC  2185            545          BLS   KEEP42                                                   RST05450
0DFE  4400 1942       546          NH    R0,TEST+8          LOOK AT TEST HW 2                     RST05460
0E02  2137            547          BNZS  KEEP5                                                    RST05470
0E04  2304            548          BS    KEEP43                                                   RST05480
0E06  4400 1940       549  KEEP42  NH    R0,TEST+6          LOOK AT TEST HW 1                     RST05490
0E0A  2133            550          BNZS  KEEP5                                                    RST05500
0E0C  2621            551  KEEP43  AIS   R2,1                                                    RST05510
0E0E  220F            552          BS    KEEP41             LOOP FOR NEXT TEST #                  RST05520
0E10  4020 1886       553  KEEP5   STH   R2,BTESTNO         CURRENT TEST #                        RST05530
0E14  0812            554          LDAR  R1,R2              R1 = TEST # IN BINARY                 RST05540
0E16  2621            555          AIS   R2,1                                                     RST05550
0E18  4020 188A       556          STH   R2,NEXTST                                                RST05560
0E1C  2402            557          LIS   R0,2               SET DIGITS TO PRINT = 2               RST05570
0E1E  C820 18B8       558          LHI   R2,MTESTNO         R2 = A(MTESTNO)                       RST05580
0E22  41F0 12DC       559          BAL   LINK,HEXASC        STORE TEST # IN ASCII @ MTESTNO       RST05590
0E26  4820 18B8       560          LH    R2,MTESTNO                                               RST05600
0E2A  4020 18C2       561          STH   R2,ETESTNO         STORE TEST # IN ASCII @ ETESTNO       RST05610
0E2E  41F0 1470       562          BAL   LINK,TSTBRK        TEST BREAK                            RST05620
0E32  C850 18B2       563          LHI   R5,TSTMSG                                                RST05630
0E36  41F0 1304       564          BAL   LINK,PRINT         PRINT 'TEST NN'                       RST05640
0E3A  2400            565          LIS   R0,0                                                     RST05650
0E3C  4000 187A       566          STH   R0,NOERR           RESET ERROR FLAG                      RST05660
0E40  4000 1888       567          STH   R0,COUNT           RESET COUNT                           RST05670
0E44  4820 1886       568  KEEP6   LH    R2,BTESTNO         R2 = TEST #                           RST05680
0E48  9121            569          SLLS  R2,LADC                                                  RST05690
0E4A  4812 34EA       570          LDA   R1,TESTS(R2)                                             RST05700
0E4E  0301            571          BR    R1                 GO TO TEST MODULE                     RST05710
                      572  *-----------------------------                                         RST05720
                      573  *                                                                      RST05730
                      574  *  TEST MODULE END ROUTINE                                             RST05740
                      575  *                                                                      RST05750
0E50  4810 0A24       576  TSTEND  LH    R1,PSW2                                                  RST05760
0E54  9501            577          EPSR  R0,R1              DISABLE INT @ PROCESSOR LEVEL         RST05770
0E56  48C0 1970       578          LH    TEMP,PARA+6        *                                     RST05780
0E5A  D2C0 3694       579          STB   TEMP,CMD2SET       *                                     RST05790
0E5E  4800 1888       580          LH    R0,COUNT                                                 RST05800
0E62  2601            581          AIS   R0,1               INCREMENT COUNT                       RST05810
0E64  4000 1888       582          STH   R0,COUNT                                                 RST05820
0E68  4500 19AC       583          CLH   R0,LOOP+6          IF COUNT > LOOP,                      RST05830
0E6C  2385            584          BNLS  KEEP7              GO TO NEXT TEST MODULE                RST05840
0E6E  41F0 1470       585          BAL   LINK,TSTBRK        IF BREAK GO TO OPTIN                  RST05850
0E72  4300 0E44       586          B     KEEP6              OTHERWISE, REPEAT SAME TEST           RST05860
0E76  4800 187A       587  KEEP7   LH    R0,NOERR           LOOK @ ERROR FLAG                     RST05870
0E7A  2135            588          BNZS  KEEP71                                                   RST05880
0E7C  C850 18D8       589          LHI   R5,NOERMSG                                               RST05890
0E80  41F0 1304       590          BAL   LINK,PRINT         PRINT "NO ERROR"                      RST05900
0E84  4810 1886       591  KEEP71  LH    R1,BTESTNO         GET TEST #                            RST05910
0E88  4510 187C       592          CLH   R1,SELTST          IS THE LAST SELECTED TEST DONE ?      RST05920
0E8C  4280 0DEC       593          BL    KEEP4              NO, GO SELECT NEXT TEST               RST05930
                      594  *                                                                      RST05940
                      595  *  ALL THE SELECTED TESTS ARE NOW RUN                                  RST05950
                      596  *                                                                      RST05960
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0E90  4200 0000          597          NOP                          *                                        RST05970
0E94  48C0 3720          598          LH    TEMP,PACOUNT           LOAD PAIR COUNT                    *     RST05980
0E98  27C1               599          SIS   TEMP,1                 DECREMENT                          *     RST05990
0E9A  4320 0EEA          600          BNP   FINMULT                 *                                        RST06000
0E9E  40C0 3720          601          STH   TEMP,PACOUNT           STORE DECREMENTED COUNT INTO PACOUNT     RST06010
0EA2  24A0               602          LIS   R10,0                  ZERO OUT R10                       *     RST06020
0EA4  26A2               603  INAD1   AIS   R10,2                  ADD 2                              *     RST06030
0EA6  61A0 3690          604          AHM   R10,TESLIN             ADD TO PRESENT DEVICE ADDRESS      *     RST06040
0EAA  48A0 3690          605          LH    R10,TESLIN             LOAD NEW TEST DEVICE ADDRESS       *     RST06050
0EAE  081A               606          LHR   R1,R10                 *                                        RST06060
0EB0  2403               607          LIS   R0,3                   *                                        RST06070
0EB2  C820 3666          608          LHI   R2,PLMT                *                                        RST06080
0EB6  41F0 12DC          609          BAL   R15,HEXASC             *                                        RST06090
0EBA  26A2               610          AIS   R10,2                  ADD 2                              *     RST06100
0EBC  C3A0 0003          611          THI   R10,3                  TEST                               *     RST06110
0EC0  4230 0EC6          612          BNZ   INAD2                  IF NOT ZERO BRANCH AROUND          *     RST06120
0EC4  27A4               613          SIS   R10,4                  SUBTRACT 4                         *     RST06130
0EC6  40A0 3692          614  INAD2   STH   R10,CONLIN             STORE ASSOCIATED CDEVN ADDRESS     *     RST06140
0ECA  081A               615          LHR   R1,R10                 *                                        RST06150
0ECC  2403               616          LIS   R0,3                   *                                        RST06160
0ECE  C820 3672          617          LHI   R2,PLMR                *                                        RST06170
0ED2  41F0 12DC          618          BAL   R15,HEXASC             *                                        RST06180
0ED6  C850 3640          619          LHI   R5,PLMADR              SET UP FOR PRINT                   *     RST06190
0EDA  41F0 1304          620          BAL   LINK,PRINT             PRINT FROM ADDR IN R5              *     RST06200
0EDE  41E0 1AF4          621          BAL   RTN4,PARINIT           *                                        RST06210
0EE2  41F0 1584          622          BAL   LINK,LCORE             *                                        RST06220
0EE6  4300 0DE2          623          B     KEEP3                  GO TO TEST START                   *     RST06230
0EEA  48C0 194C          624  FINMULT LH    TEMP,TDEVN+6           RECALL TDEVN ORIGINAL VALUE        *     RST06240
0EEE  40C0 3690          625          STH   TEMP,TESLIN            RESTORE                            *     RST06250
0EF2  48C0 1958          626          LH    TEMP,CDEVN+6           RECALL DEVEN ORIGINAL VALUE        *     RST06260
0EF6  40C0 3692          627          STH   TEMP,CONLIN            RESTORE                            *     RST06270
0EFA  48C0 369E          628          LH    TEMP,PACOUNT2          RECALL ORIGINAL VALUE OF PACOUNT   *     RST06280
0EFE  40C0 3720          629          STH   TEMP,PACOUNT           RESTORE FOR FURTHER USE            *     RST06290
0F02  41E0 1AF4          630          BAL   RTN4,PARINIT           *                                        RST06300
0F06  41F0 1584          631          BAL   LINK,LCORE             *                                        RST06310
0F0A  41F0 14F0          632          BAL   LINK,TSTDU             RETURN WITH R1 = DU BIT                  RST06320
0F0E  4230 0F40          633          BNZ   KEEP9                  IF DU, DISPLAY TOTAL                     RST06330
0F12  4810 1880          634          LH    R1,WASDU1              WAS IT EVER ?                            RST06340
0F16  4230 0F78          635          BNZ   KEEP92                 YES, PRINT TOTAL, TOTERR                 RST06350
0F1A  41F0 1470          636          BAL   LINK,TSTBRK                                                     RST06360
0F1E  4810 1988          637          LH    R1,CONTIN+6            IF CONTIN = 1,                           RST06370
0F22  4230 0F44          638          BNZ   ABORT2                 INCREMENT & GO TO TEST 0                 RST06380
0F26  41F0 1526          639          BAL   LINK,SETKB             KB DEVICE = LIST DEVICE                  RST06390
0F2A  C850 1928          640          LHI   R5,EOTMSG                                                       RST06400
0F2E  4050 1878          641          STH   R5,ISITERR             (FORCE PRINTING)                         RST06410
0F32  41F0 1304          642          BAL   LINK,PRINT             'END OF TEST'                            RST06420
0F36  24F0               643          LIS   R15,0                                                           RST06430
0F38  40F0 1878          644          STH   R15,ISITERR            (RESET PRINTING FLAG)                    RST06440
0F3C  4300 0AF4          645          B     OPTIN                                                           RST06450
                         646  *-----------------------------------                                         RST06460
                         647  *  ROUTINE INCREMENTS,DISPLAYS & CHECKS 'TOTAL'                               RST06470
                         648  *                                                                             RST06480
0F40  4010 187E          649  KEEP9   STH   R1,WASDU               SET 'WASDU' FLAG                         RST06490
0F44  4810 1882          650  ABORT2  LH    R1,TOTAL               INCREMENT TOTAL                          RST06500
0F48  2611               651          AIS   R1,1                                                            RST06510
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0F4A  4010 1882          652           STH   R1,TOTAL                                  RST06520
0F4E  41F0 0FBA          653  KEEP91   BAL   LINK,DISPLAY       DISPLAY TOTAL & TOTERR  RST06530
0F52  1882               654           DC    Z(TOTAL),Z(TOTERR)                        RST06540
0F54  1884
0F56  4810 1882          655           LH    R1,TOTAL                                  RST06550
0F5A  C510 7FFF          656           CLHI  R1,X'7FFF'        TOTAL < MAX RETAINABLE ?  RST06560
0F5E  2389               657           BNLS  HALT9                                     RST06570
0F60  4800 1886          658           LH    R0,BTESTNO        R0 = CURRENT TEST #     RST06580
0F64  4500 187C          659           CLH   R0,SELTST         IS IT LAST TEST ?       RST06590
0F68  4280 0DEC          660           BL    KEEP4             NO, GO TO NEXT TEST     RST06600
0F6C  4300 0DE2          661           B     KEEP3             GO TO TEST 0            RST06610
                         662  *                                                         RST06620
0F70  C810 080F          663  HALT9    LHI   R1,X'080F'                                RST06630
0F74  9114               664           SLHLS R1,4              (R1) = X'80F0'          RST06640
0F76  9521               665           EPSR  R2,R1             HALT PROCESSOR          RST06650
                         666  *                                                         RST06660
                         667  *  WHEN EXE/RUN IS PRESSED, PRINT TOTAL & TOTERR          RST06670
                         668  *                                                         RST06680
0F78  41F0 14F0          669  KEEP92   BAL   LINK,TSTDU        SEE IF LIST DEV IS ON   RST06690
0F7C  2036               670           BNZS  HALT9             NO, HALT                RST06700
0F7E  2400               671  KEEP10   LIS   R0,0                                      RST06710
0F80  4000 187E          672           STH   R0,WASDU          RESET FLAG              RST06720
0F84  41F0 138C          673           BAL   LINK,CRLF                                 RST06730
0F88  C850 18C8          674           LHI   R5,TOTMSG                                 RST06740
0F8C  4050 1878          675           STH   R5,ISITERR                                RST06750
0F90  41F0 1304          676           BAL   LINK,PRINT        PRINT 'TOTAL   TOTERR'  RST06760
0F94  2404               677           LIS   R0,4              TO PRINT 4 HEX DIGITS   RST06770
0F96  4850 1882          678           LH    R5,TOTAL                                  RST06780
0F9A  41F0 12B2          679           BAL   LINK,R5HEX        PRINT TOTAL IN HEX      RST06790
0F9E  2434               680           LIS   R3,4                                      RST06800
0FA0  C840 0020          681           LHI   R4,C' '           SPACE                   RST06810
0FA4  41F0 139A          682  KEEP101  BAL   LINK,OUTCHR       OUTPUT IT               RST06820
0FA8  2731               683           SIS   R3,1                                      RST06830
0FAA  2023               684           BPS   KEEP101          4 TIMES                 RST06840
0FAC  2404               685           LIS   R0,4              TO PRINT 4 HEX DIGITS   RST06850
0FAE  4850 1884          686           LH    R5,TOTERR                                 RST06860
0FB2  41F0 12B2          687           BAL   LINK,R5HEX        PRINT TOTERR IN HEX     RST06870
0FB6  4300 0AF4          688           B     OPTIN             GO TO BEGINNING         RST06880
                         689  ************************************                      RST06890
                         690  *                                                         RST06900
0FBA  2401               691  DISPLAY  LIS   R0,1              DISPLAY PANEL ADDRESS   RST06910
0FBC  DE00 184E          692           OC    R0,INCR           INCREMENTAL MODE        RST06920
0FC0  481F 0002          693           LH    R1,2(LINK)        GET 2ND PARAMETER ADDRESS RST06930
0FC4  4811 0000          694           LH    R1,0(R1)          GET DATA                RST06940
0FC8  9411               695           EXBR  R1,R1                                     RST06950
0FCA  9801               696           WHR   R0,R1             WRITE DATA              RST06960
0FCC  481F 0000          697           LH    R1,0(LINK)        GET 1ST PARAMETER ADDRESS RST06970
0FD0  4811 0000          698           LH    R1,0(R1)          GET DATA                RST06980
0FD4  9411               699           EXBR  R1,R1                                     RST06990
0FD6  9801               700           WHR   R0,R1             WRITE DATA TO D1,D2     RST07000
0FD8  DE00 184D          701           OC    R0,NORM           NORMAL MODE             RST07010
0FDC  430F 0004          702           B     4(LINK)           RETURN                  RST07020
                         703  * ************************************                    RST07030
                         704  *  ERROR ROUTINES                                       RST07040
                         705  *                                                         RST07050
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0FE0  D000 3838          706 ERR      STM   R0,ERRSAVE        STORE REGISTERS                          RST07060
0FE4  41F0 1470          707          BAL   LINK,TSTBRK                                               RST07070
0FE8  4120 103C          708          BAL   R2,ERRCOM         RETURN IF LIST DEVICE IS ON              RST07080
0FEC  48C0 3698          709          LH    TEMP,PRTFLG       LOAD PRINT FLAG                          RST07090
0FF0  4230 0FFE          710          BNZ   ERRCOM12                                                   RST07100
0FF4  24C1               711          LIS   TEMP,1                                                     RST07110
0FF6  40C0 3698          712          STH   TEMP,PRTFLG       ERROR FLAG                               RST07120
0FFA  41E0 1070          713          BAL   RET,ERR1          PRINT TTNN                               RST07130
0FFE  48C0 369A          714 ERRCOM12 LH    TEMP,LPERFLG                                               RST07140
1002  4330 1018          715          BZ    ERRCOM2           IF YES NORMAL PRINT                      RST07150
1006  4800 19A0          716          LH    R0,LPERR+6        CHECK LPERR OPTION                       RST07160
100A  4330 1018          717          BZ    ERRCOM2           LPERR NOT SET, SKIP                      RST07170
100E  D100 3838          718          LM    R0,ERRSAVE        RESTORE REGISTERS                        RST07180
1012  48C0 369C          719          LH    TEMP,TESTAD                                                RST07190
1016  030C               720          BR    TEMP              BRANCH BACK TO LOOP ON ERR               RST07200
1018  0700               721 ERRCOM2  XHR   R0,R0                                                      RST07210
101A  4000 1878          722          STH   R0,ISITERR        RESET ERROR FLAG                         RST07220
101E  D100 3838          723          LM    R0,ERRSAVE        RESTORE REGISTERS                        RST07230
1022  030F               724          BR    LINK              RETURN TO TEST                           RST07240
1024  D000 3838          725 ERRALL   STM   R0,ERRSAVE        STORE REGISTERS                          RST07250
1028  4120 103C          726          BAL   R2,ERRCOM         RETURN IF LIST DEVICE IS ON              RST07260
102C  41E0 1070          727          BAL   RET,ERR1          PRINT 'ERROR TTNN'                       RST07270
1030  41E0 10AA          728          BAL   RET,ERRDS1        PRINT 'DEV DDD STA SS'                   RST07280
1034  41E0 10E8          729          BAL   RET,ERRPL1        PRINT 'PSW PPPP  LOC LLLL'               RST07290
1038  4300 1018          730          B     ERRCOM2                                                    RST07300
                         731 *                                                                         RST07310
                         732 *                                                                         RST07320
                         733 *  COMMON ERROR ROUTINE                                                   RST07330
                         734 *                                                                         RST07340
103C  4020 1896          735 ERRCOM   STA   R2,COMRET          STORE RETURN ADDRESS                     RST07350
1040  4810 0A24          736          LH    R1,PSW2                                                    RST07360
1044  9501               737          EPSR  R0,R1             DISABLE INT. @ PROCESSOR LEVEL           RST07370
1046  41F0 14F0          738          BAL   LINK,TSTDU        GET LIST DEVICE DU BIT IN R1             RST07380
104A  2138               739          BNZS  ERRCOM1           BRANCH IF OFF-LINE                       RST07390
104C  4020 1878          740          STH   R2,ISITERR        SET ERROR FLAG                           RST07400
1050  4020 187A          741          STH   R2,NOERR                                                   RST07410
1054  4820 1896          742          LDA   R2,COMRET                                                  RST07420
1058  0302               743          BR    R2                GO, PRINT ERROR MESSAGE                  RST07430
                         744 *                                                                         RST07440
105A  4810 1884          745 ERRCOM1  LH    R1,TOTERR         LIST DEVICE IS OFF                       RST07450
105E  2611               746          AIS   R1,1                                                       RST07460
1060  4010 1884          747          STH   R1,TOTERR         INCREMENT TOTERR                         RST07470
1064  C510 7FFF          748          CLHI  R1,X'7FFF'        TOTERR < MAX RETAINABLE ?                RST07480
1068  4280 0F4E          749          BL    KEEP91            NO, ABORT CURRENT TEST & GOTO NEXT       RST07490
106C  4300 0F70          750          B     HALT9             YES, HALT PROCESSOR                      RST07500
                         751 *--------------------------                                               RST07510
                         752 * MESSAGE PRINT ROUTINES          (DO NOT OVERRIDE NOMSG OPTION)           RST07520
                         753 *                                                                         RST07530
                         754 *  TO PRINT 'ERROR TTNN'                                                  RST07540
                         755 *                                                                         RST07550
1070  C850 18BC          756 ERR1     LHI   R5,ERRMSG                                                  RST07560
1074  41F0 1304          757          BAL   LINK,PRINT        PRINT 'ERROR TTNN'                       RST07570
                         758 *                                TT = TEST #, NN = ERROR #                RST07580
1078  030E               759          BR    RET               RETURN                                   RST07590
                         760 *                                                                         RST07600
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                                761  *  TO PRINT 'DEV DDD'                                                    RST07610
                                762  *                                                                        RST07620
107A   2403                     763  ERRD1    LIS   R0,3              SET UP DIGITS = 3                     RST07630
107C   4810 1848                764           LH    R1,ERRDEV         R1 = ERROR DEV # IN BINARY            RST07640
1080   C820 18F6                765           LHI   R2,ASCIDEV2                                             RST07650
1084   41F0 12DC                766           BAL   LINK,HEXASC       CONVERT IT TO ASCII                   RST07660
1088   C850 18F2                767           LHI   R5,DEVMSG2                                              RST07670
108C   41F0 1304                768           BAL   LINK,PRINT        PRINT 'DEV DD'                        RST07680
1090   030E                     769           BR    RET               RETURN                                RST07690
                                770  *                                                                        RST07700
                                771  *  TO PRINT 'STA SS'                                                     RST07710
                                772  *                                                                        RST07720
1092   2402                     773  ERRS1    LIS   R0,2              SET UP DIGITS = 2                     RST07730
1094   D310 184A                774           LB    R1,ERRSTA         R1 = ERROR STATUS                     RST07740
1098   C820 18EE                775           LHI   R2,ASCISTA                                              RST07750
109C   41F0 12DC                776           BAL   LINK,HEXASC       CONVERT IT TO ASCII                   RST07760
10A0   C850 18EA                777           LHI   R5,STAMSG                                               RST07770
10A4   41F0 1304                778           BAL   LINK,PRINT        PRINT 'STA SS'                        RST07780
10A8   030E                     779           BR    RET               RETURN                                RST07790
                                780  *                                                                        RST07800
                                781  *  TO PRINT 'DEV DDD STA SS'                                             RST07810
                                782  *                                                                        RST07820
10AA   2403                     783  ERRDS1   LIS   R0,3              SET UP DIGITS = 3                     RST07830
10AC   4810 1848                784           LH    R1,ERRDEV         R1 = ERROR DEV #                      RST07840
10B0   C820 18E6                785           LHI   R2,ASCIDEV                                              RST07850
10B4   41F0 12DC                786           BAL   LINK,HEXASC       CONVERT IT TO ASCII                   RST07860
10B8   2402                     787           LIS   R0,2              SET UP DIGITS = 2                     RST07870
10BA   D310 184A                788           LB    R1,ERRSTA         R1 = ERROR STATUS                     RST07880
10BE   C820 18EE                789           LHI   R2,ASCISTA                                              RST07890
10C2   41F0 12DC                790           BAL   LINK,HEXASC       CONVERT IT TO ASCII                   RST07900
10C6   C850 18E2                791           LHI   R5,DEVMSG                                               RST07910
10CA   41F0 1304                792           BAL   LINK,PRINT        PRINT 'DEV DD STA SS'                 RST07920
10CE   030E                     793           BR    RET               RETURN                                RST07930
                                794  *                                                                        RST07940
                                795  *  TO PRINT 'LOC LLLL'                                                   RST07950
                                796  *                                                                        RST07960
10D0   2404                     797  ERRL1    LIS   R0,4              SET UP DIGITS = 4                     RST07970
10D2   4810 1846                798           LH    R1,OLOC           R1= OLD LOC                           RST07980
10D6   C820 190A                799           LHI   R2,ASCILOC                                              RST07990
10DA   41F0 12DC                800           BAL   LINK,HEXASC       CONVERT IT TO ASCII                   RST08000
10DE   C850 1906                801           LHI   R5,LOCMSG                                               RST08010
10E2   41F0 1304                802           BAL   LINK,PRINT        PRINT 'LOC LLLL'                      RST08020
10E6   030E                     803           BR    RET               RETURN                                RST08030
                                804  *                                                                        RST08040
                                805  *  TO PRINT 'PSW PPPP  LOC LLLL'                                         RST08050
                                806  *                                                                        RST08060
10E8   2404                     807  ERRPL1   LIS   R0,4              SET UP DIGITS = 4                     RST08070
10EA   4810 1842                808           LH    R1,OPSW           R1 = OLD PSW                          RST08080
10EE   C820 1900                809           LHI   R2,ASCIPSW                                              RST08090
10F2   41F0 12DC                810           BAL   LINK,HEXASC       CONVERT IT TO ASCII                   RST08100
10F6   4810 1846                811           LH    R1,OLOC           R1= OLD LOC                           RST08110
10FA   C820 190A                812           LHI   R2,ASCILOC                                              RST08120
10FE   41F0 12DC                813           BAL   LINK,HEXASC       CONVERT IT TO ASCII                   RST08130
1102   C850 18FC                814           LHI   R5,PSWMSG                                               RST08140
1106   41F0 1304                815           BAL   LINK,PRINT        PRINT 'PSW PPPP  LOC LLLL'            RST08150
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110A  030E                816           BR    RET              RETURN                    RST08160
110C                      817  INTNG    DS    0                                          RST08170
110C  4160 11A6           818           BAL   RTN2,ERROR1      ERROR MSG                 RST08180
1110  4300 1190           819           B     NGEND                                      RST08190
1114                      820  NINTNG   DS    0                                          RST08200
1114  4160 11A6           821           BAL   RTN2,ERROR1      ERROR MSG                 RST08210
1118  4160 11F6           822           BAL   RTN2,ERROR6      INT MSG                   RST08220
111C  4300 1190           823           B     NGEND                                      RST08230
1120                      824  ADRNG1   DS    0                                          RST08240
1120  4030 3686           825           STH   RDDEV,SHUADR     SHUADR=RDDEV              RST08250
1124  4300 112C           826           B     ADRNG                                      RST08260
1128                      827  ADRNG2   DS    0                                          RST08270
1128  4040 3686           828           STH   WRDEV,SHUADR     SHUADR=WRDEV              RST08280
112C                      829  ADRNG    DS    0                                          RST08290
112C  4160 11A6           830           BAL   RTN2,ERROR1      ERROR MSG                 RST08300
1130  4160 11B0           831           BAL   RTN2,ERROR2      ADR MSG                   RST08310
1134  4300 1190           832           B     NGEND                                      RST08320
1138                      833  STANG0   DS    0              LABEL                     RST08330
1138  C8B0 5453           834           LHI   DATAR,C'TS'     TEST LINE SEND            RST08340
113C  4300 1154           835           B     ST3NG          GO TO COMMON              RST08350
1140                      836  STANG    DS    0              LABEL                     RST08360
1140  C8B0 5452           837           LHI   DATAR,C'TR'     TEST LINE RECEIVE         RST08370
1144  4300 1154           838           B     ST3NG          GO TO COMMON              RST08380
1148                      839  ST1NG    DS    0              LABEL                     RST08390
1148  C8B0 4352           840           LHI   DATAR,C'CR'     CONTROL LINE RECEIVE      RST08400
114C  4300 1154           841           B     ST3NG          GO TO COMMON              RST08410
1150                      842  ST2NG    DS    0              LABEL                     RST08420
1150  C8B0 4353           843           LHI   DATAR,C'CS'     CONTROL LINE SEND         RST08430
      0000 1154           844  ST3NG    EQU   *              COMMON                    RST08440
1154  40B0 3544           845           STH   DATAR,STAERR     STORE DATA INTO MESSAGE   RST08450
1158  40C0 3564           846           STH   TEMP,ERRGG       SAVE SHOULD BE STATUS     RST08460
115C  4160 11A6           847           BAL   RTN2,ERROR1      ERROR MSG                 RST08470
1160  4160 11DA           848           BAL   RTN2,ERROR3      STAT MSG                  RST08480
1164  48C0 1886           849           LH    TEMP,BTESTNO     LOAD BINARY TEST NUMBER   RST08490
1168  CBC0 0008           850           SHI   TEMP,8           HAVE SOME TESTS           RST08500
116C  4210 1190           851           BTC   1,NGEND                                    RST08510
1170  CBC0 0004           852           SHI   TEMP,4           EXIT THROUGH              RST08520
1174  4210 118C           853           BTC   1,ST4NG          NGEND                     RST08530
1178  4330 1190           854           BZ    NGEND            AND                       RST08540
117C  CBC0 0003           855           SHI   TEMP,3           SOME EXIT                 RST08550
1180  4210 118C           856           BTC   1,ST4NG          THROUGH ST4NG             RST08560
1184  CBC0 0001           857           SHI   TEMP,1                                     RST08570
1188  4230 1190           858           BTC   3,NGEND                                    RST08580
      0000 118C           859  ST4NG    EQU   *                                          RST08590
118C  4160 123E           860           BAL   RTN2,ERROR9      ERROR SEQUENCE 9          RST08600
1190                      861  NGEND    DS    0              LABEL                     RST08610
1190  C8C0 30F0           862           LHI   TEMP,X'30F0'     DISABLE                   RST08620
1194  95DC                863           EPSR  CHAR,TEMP        PROCESSOR INTERRUPTS      RST08630
1196                      864  NGEND2   DS    0              LABEL                     RST08640
1196  4830 3690           865           LH    RDDEV,TESLIN     LOAD TDEVN                RST08650
119A  4150 33C6           866           BAL   RTN,RSTR         RESTORE PARAMETERS        RST08660
119E  41F0 3454           867           BAL   LINK,IN4CLR      CLEAR PEND INTS FM ERR    RST08670
11A2  4300 0E50           868           B     TSTEND           TEST END SEQUENCE         RST08680
                          869  *********                                                RST08690
                          870  *        ERROR MESSAGE 1                                 RST08700
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                                871  *                                                                    RST08710
11A6   40A0 18C4                872  ERROR1   STH    ERR2,ERRNO          STORE ERROR NUMBER            RST08720
11AA   41F0 0FE0                873           BAL    15,ERR              GO TO COMMON ERROR SEQUENCE   RST08730
11AE   0306                     874           BR     RTN2                RETURN                        RST08740
                                875  *********                                                           RST08750
                                876  *         ERROR MESSAGE 2                                           RST08760
                                877  *                                                                    RST08770
11B0   48B0 1848                878  ERROR2   LH     DATAR,INTDEV        LOAD DEVICE                   RST08780
11B4   4150 3364                879           BAL    RTN,HEXCON          CONVERT                       RST08790
11B8   40B0 3530                880           STH    DATAR,ERRDD         STORE IN MESSAGE              RST08800
11BC   48B0 3686                881           LH     DATAR,SHUADR        LOAD MESSAGE                  RST08810
11C0   4150 3364                882           BAL    RTN,HEXCON          CONVERT                       RST08820
11C4   40B0 3540                883           STH    DATAR,ERREE         STORE IN MESSAGE              RST08830
11C8   C850 3522                884           LHI    5,ADRMSG            LOAD MESSAGE                  RST08840
11CC   41F0 1304                885           BAL    15,PRINT            PRINT                         RST08850
11D0   C850 3534                886           LHI    5,ERRD2             LOAD MESSAGE                  RST08860
11D4   41F0 1304                887           BAL    15,PRINT            PRINT                         RST08870
11D8   0306                     888           BR     RTN2                RETURN                        RST08880
                                889  *********                                                           RST08890
                                890  *         ERROR MESSAGE 3                                           RST08900
                                891  *                                                                    RST08910
11DA   08B8                     892  ERROR3   LHR    DATAR,STAT          LOAD STATUS                   RST08920
11DC   4150 3364                893           BAL    RTN,HEXCON          CONVERT                       RST08930
11E0   40B0 3552                894           STH    DATAR,ERRFF         STORE IN MESSAGE              RST08940
11E4   C850 3544                895           LHI    5,DSAMSG            LOAD MESSAGE                  RST08950
11E8   41F0 1304                896           BAL    15,PRINT            PRINT                         RST08960
11EC   C850 3556                897           LHI    5,ERRF2             LOAD MESSAGE                  RST08970
11F0   41F0 1304                898           BAL    15,PRINT            PRINT                         RST08980
11F4   0306                     899           BR     RTN2                RETURN                        RST08990
                                900  *********                                                           RST09000
                                901  *         ERROR MESSAGE 6                                           RST09010
                                902  *                                                                    RST09020
11F6   48B0 1848                903  ERROR6   LH     DATAR,INTDEV        LOAD DEVICE                   RST09030
11FA   4150 3364                904           BAL    RTN,HEXCON          CONVERT                       RST09040
11FE   40B0 3576                905           STH    DATAR,ERRLL         STORE IN MESSAGE              RST09050
1202   C850 3568                906           LHI    5,INTMSG            LOAD MESSAGE                  RST09060
1206   41F0 1304                907           BAL    15,PRINT            PRINT                         RST09070
120A   0306                     908           BR     RTN2                RETURN                        RST09080
                                909  *********                                                           RST09090
                                910  *         ERROR MESSAGE 7                                           RST09100
                                911  *                                                                    RST09110
       0000 120C                912  ERROR7   EQU    *                                                 RST09120
120C   40B0 368C                913           STH    DATAR,SVEHEX        LOAD CHARACTER                RST09130
1210   4150 3364                914           BAL    RTN,HEXCON          CONVERT                       RST09140
1214   40B0 3586                915           STH    DATAR,ERRMM         SAVE ''CHAR WAS''             RST09150
1218   48B0 368A                916           LH     DATAR,SVECHA        LOAD CHARACTER                RST09160
121C   4150 3364                917           BAL    RTN,HEXCON          CONVERT                       RST09170
1220   40B0 3596                918           STH    DATAR,ERRO2         STORE INTO MESSAGE            RST09180
       0000 1224                919  ERROR8   EQU    *                                                 RST09190
1224   C850 357A                920           LHI    5,CHAMSG            LOAD MESSAGE                  RST09200
1228   41F0 1304                921           BAL    15,PRINT            PRINT                         RST09210
122C   C850 358A                922           LHI    5,ERRM2             LOAD MESSAGE                  RST09220
1230   41F0 1304                923           BAL    15,PRINT            PRINT                         RST09230
1234   C850 359A                924           LHI    5,PARMSG            LOAD MESSAGE                  RST09240
1238   41F0 1304                925           BAL    15,PRINT            PRINT                         RST09250
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123C 0306           926           BR    RTN2              RETURN                                    RST09260
     0000 123E      927 ERROR9    EQU   *                                                           RST09270
123E 48B0 368A      928           LH    DATAR,SVECHA      LOAD CHARACTER                          RST09280
1242 4150 3364      929           BAL   RTN,HEXCON        CONVERT                                 RST09290
1246 40B0 3596      930           STH   DATAR,ERRO2       STORE INTO MEGSAGE                      RST09300
124A 4300 1224      931           B     ERROR8                                                    RST09310
                    932 * ********************************                                        RST09320
                    933 *  TO OBTAIN OPTION VALUE IN R6    (16 BITS, TARGT 16)                    RST09330
                    934 *                                                                          RST09340
124E 2460           935 OPTVAL    LIS   R6,0              INITIALIZE ACCUMULATOR                  RST09350
1250 41F0 1428      936           BAL   R15,GETCHR        GET A CHAR IN R4                        RST09360
1254 24FF           937 OPTVAL0   LIS   R15,15                                                    RST09370
1256 D44F 18A2      938 OPTVAL1   CLB   R4,HEXTAB(R15)    SCAN TABLE                              RST09380
125A 2334           939           BES   OPTVAL2           MATCH                                   RST09390
125C 27F1           940           SIS   R15,1                                                     RST09400
125E 2214           941           BNMS  OPTVAL1                                                 RST09410
1260 030C           942           BR    R12               ERROR; VALUE NOT IN TABLE.              RST09420
1262 9164           943 OPTVAL2   SLLS  R6,4              SHIFT LEFT 4                            RST09430
1264 066F           944           OAR   R6,R15            OR IN CURRENT DIGIT                     RST09440
1266 41F0 1428      945 OPTVAL3   BAL   R15,GETCHR        GET NEXT CHAR                           RST09450
126A C540 005F      946           CLHI  R4,X'5F'          IS IT LEFT ARROW ?                      RST09460
126E 2334           947           BES   OPTVAL5           YES, BRANCH                             RST09470
1270 C540 0008      948           CLHI  R4,X'08'          BACK SPACE ?                            RST09480
1274 2133           949           BNES  OPTVAL4           NO, BRANCH                              RST09490
1275 9064           950 OPTVAL5   SRLS  R6,4              THROW AWAY LAST HEX ENTRY               RST09500
1278 2209           951           BS    OPTVAL3                                                 RST09510
127A C540 000D      952 OPTVAL4   CLHI  R4,13             EXIT IF CR                              RST09520
127E 033E           953           BER   R14                                                     RST09530
1280 C540 002C      954           CLHI  R4,X'2C'          OR COMMA                                RST09540
1284 4230 1254      955           BNE   OPTVAL0           LOOP TO PROCESS                         RST09550
1288 030E           956           BR    R14               RETURN                                  RST09560
                    957 *-----------------------------------                                     RST09570
                    958 * TO CONVERT (R6) FROM BINARY TO UNARY PATTERN, IN R3                     RST09580
                    959 *                                                                          RST09590
128A 2431           960 UNARY     LIS   R3,1              INITIALIZE                              RST09600
128C C560 000F      961 UNARY1    CLHI  R6,15             DONE ?                                  RST09610
1290 033E           962           BER   R14               RETURN                                  RST09620
1292 0A33           963           AAR   R3,R3             NO. SHIFT R3.                           RST09630
1294 2661           964           AIS   R6,1              INCREMENT COUNTER                       RST09640
1296 2205           965           BS    UNARY1                                                  RST09650
                    966 *----------------------------                                           RST09660
                    967 *  TO PROVIDE # OF MILLISECONDS DELAY SPECIFIED BY R0                     RST09670
                    968 *                                                                          RST09680
1298 D000 3778      969 TIMER     STM   R0,RSAVE          SAVE REGISTERS                          RST09690
129C 2410           970 $TIMER1   LIS   R1,0                                                      RST09700
129E 2421           971           LIS   R2,1                                                      RST09710
12A0 4830 0A1E      972           LH    R3,TIME           R3 = TIME CONSTANT FOR 1 MS DELAY       RST09720
12A4 C110 12A4      973           BXLE  R1,*                                                    RST09730
12A8 2701           974           SIS   R0,1                                                    RST09740
12AA 2037           975           BNZS  $TIMER1           LOOP TILL SPECIFIED DELAY               RST09750
12AC D100 3778      976           LM    R0,RSAVE          RESTORE REGISTERS                       RST09760
12B0 030F           977 $TIMXT    BR    LINK              RETURN                                  RST09770
                    978 *----------------------------                                           RST09780
                    979 *  R5HEX PRINTS CONTENTS OF R5 IN HEX                                     RST09790
                    980 *        PRINTS UPTO 4 DIGITS      (8 DIGITS, TARGT 32)                   RST09800
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                                 981  *                                                                    RST09810
12B2   D000 3778                 982  R5HEX    STM   R0,RSAVE          STORE REGISTERS                   RST09820
12B6   0820                      983           LDAR  R2,R0             R2 = # OF DIGITS TO BE PRINTED    RST09830
12B8   2721                      984           SIS   R2,1                                                RST09840
12BA   4210 12D6                 985           BM    R5XB                                                RST09850
12BE   9122                      986           SLLS  R2,2              R2 = 4(DIGITS-1)                  RST09860
12C0   0845                      987  R5X      LDAR  R4,R5                                               RST09870
12C2   CC42 0000                 988           SRAL  R4,0(R2)                                            RST09880
12C6   C440 000F                 989           NHI   R4,15             R4 = HEX DIGIT                    RST09890
12CA   D344 18A2                 990           LB    R4,HEXTAB(R4)                                       RST09900
12CE   41F0 139A                 991  R5XA     BAL   R15,OUTCHR                                          RST09910
12D2   2724                      992           SIS   R2,4                                                RST09920
12D4   221A                      993           BNMS  R5X               LOOP TILL ALL DIGITS              RST09930
12D6   D100 3778                 994  R5XB     LM    R0,RSAVE          RESTORE REGISTERS                 RST09940
12DA   030F                      995           BR    LINK              RETURN                            RST09950
                                 996  *-------------------------                                         RST09960
                                 997  *  TO CONVERT HEXADECIMAL DATA IN R1 TO ASCII CHAR & STORE @ 0(R2) RST09970
                                 998  *                                                                    RST09980
12DC   D000 3778                 999  HEXASC   STM   R0,RSAVE          STORE REGISTERS                   RST09990
12E0   0830                     1000           LDAR  R3,R0             R3 = DIGITS                       RST10000
12E2   9132                     1001           SLLS  R3,2                                                RST10010
12E4   2734                     1002           SIS   R3,4              R3 = 4(DIGITS)-4                  RST10020
12E6   0841                     1003  HEXASC1  LDAR  R4,R1             R4 = HEX DATA                     RST10030
12E8   CC43 0000                1004           SRAL  R4,0(R3)                                            RST10040
12EC   C440 000F                1005           NHI   R4,15             R4 = HEX DIGIT TO BE CONVERTED    RST10050
12F0   D344 18A2                1006           LB    R4,HEXTAB(R4)                                       RST10060
12F4   D242 0000                1007           STB   R4,0(R2)          STORE ASCII CHAR                  RST10070
12F8   2621                     1008           AIS   R2,1                                                RST10080
12FA   2734                     1009           SIS   R3,4                                                RST10090
12FC   221B                     1010           BNMS  HEXASC1           LOOP TILL ALL DIGITS              RST10100
12FE   D100 3778                1011           LM    R0,RSAVE          RESTORE REGISTERS                 RST10110
1302   030F                     1012           BR    LINK              RETURN                            RST10120
                                1013  *-------------------------                                         RST10130
                                1014  *  TO PRINT THE ASCII MESSAGE                                       RST10140
                                1015  *                                                                    RST10150
1304   D000 3778                1016  PRINT    STM   R0,RSAVE          STORE REGISTERS                   RST10160
1308   41F0 14F0                1017           BAL   LINK,TSTDU                                          RST10170
130C   2337                     1018           BZS   P1                                                  RST10180
130E   4010 187E                1019           STH   R1,WASDU          SET WASDU FLAGS                   RST10190
1312   4010 1880                1020           STH   R1,WASDU1                                           RST10200
1316   4300 1382                1021           B     PRINT5            EXIT                              RST10210
131A   4820 187E                1022  P1       LH    R2,WASDU                                            RST10220
131E   4330 134C                1023           BZ    P3                                                  RST10230
1322   C810 0140                1024           LHI   R1,X'140'         DELAY CONSTANT                    RST10240
1326   C800 1000                1025  P4       LHI   R0,X'1000'                                          RST10250
132A   2701                     1026  P5       SIS   R0,1                                                RST10260
132C   2031                     1027           BTBS  3,P5                                                RST10270
132E   2711                     1028           SIS   R1,1                                                RST10280
1330   2035                     1029           BTBS  3,P4              LOOP TILL TIMEOUT                 RST10290
                                1030  *                               (20 SEC FOR CRT WARM-UP)          RST10300
1332   2440                     1031           LIS   R4,0                                                RST10310
1334   4040 187E                1032           STH   R4,WASDU                                            RST10320
1338   2541                     1033           LCS   R4,1              CHARACTER = X'FF'                 RST10330
133A   4040 1880                1034           STH   R4,WASDU1                                           RST10340
133E   2434                     1035           LIS   R3,4                                                RST10350
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1340  41F0 139A          1036  P2       BAL   LINK,OUTCHR                                    RST10360
1344  2731               1037           SIS   R3,1                                           RST10370
1346  2023               1038           BPS   P2                                             RST10380
1348  4300 0F7E          1039           B     KEEP10             PRINT TOTAL, TOTERR         RST10390
134C  4800 19B8          1040  P3       LH    R0,NOMSG+6                                     RST10400
1350  2335               1041           BZS   PRINT2             NO, PRINT ALL MESSAGES      RST10410
1352  4800 1878          1042           LH    R0,ISITERR                                     RST10420
1356  4330 1382          1043           BZ    PRINT5             NOT AN ERROR MSG. EXIT      RST10430
                         1044  *                                                            RST10440
135A  D345 0000          1045  PRINT2   LB    R4,0(R5)           GET A MESSAGE BYTE          RST10450
135E  41F0 139A          1046           BAL   LINK,OUTCHR        OUTPUT IT                   RST10460
1362  274D               1047           SIS   R4,13              CR ?                        RST10470
1364  2333               1048           BZS   PRINT3             MSG OVER                    RST10480
1366  2651               1049           AIS   R5,1                                          RST10490
1368  2207               1050           BS    PRINT2             LOOP FOR NEXT CHAR          RST10500
136A  244A               1051  PRINT3   LIS   R4,10              LF                          RST10510
136C  D310 372D          1052           LB    R1,IOSAVE+1        GET LIST DEV IDENTIFIER     RST10520
1370  2713               1053           SIS   R1,3               LINE PRINTER ?              RST10530
1372  2335               1054           BZS   PRINT3A            BRANCH IF YES.              RST10540
1374  41F0 139A          1055           BAL   LINK,OUTCHR        LF                          RST10550
1378  2541               1056           LCS   R4,1               DEL                         RST10560
137A  2302               1057           BS    PRINT3B                                        RST10570
137C  2441               1058  PRINT3A  LIS   R4,1               YES, OUTPUT X'01'           RST10580
137E  41F0 139A          1059  PRINT3B  BAL   LINK,OUTCHR        TERMINAL CHARACTER          RST10590
1382  41F0 1470          1060  PRINT5   BAL   LINK,TSTBRK                                    RST10600
1386  D100 3778          1061           LM    R0,RSAVE           RESTORE REGISTERS           RST10610
138A  030F               1062           BR    LINK               RETURN                      RST10620
                         1063  *-------------------------------                             RST10630
                         1064  *  SMALL SUPPORT ROUTINES                                     RST10640
                         1065  *                                                            RST10650
                         1066  *  TO OUTPUT CR,LF TO LIST DEVICE                             RST10660
                         1067  *                                                            RST10670
138C  D000 3778          1068  CRLF     STM   R0,RSAVE           STORE REGISTERS             RST10680
1390  244D               1069           LIS   R4,13                                          RST10690
1392  41F0 139A          1070           BAL   LINK,OUTCHR        OUTPUT CR                   RST10700
1396  4300 136A          1071           B     PRINT3             LINE FEED, RESTORE, RETURN  RST10710
                         1072  *----------------------------                              RST10720
                         1073  *  TO OUTPUT A CHARACTER TO THE LIST DEVICE                   RST10730
                         1074  *                                                            RST10740
139A  40F0 1890          1075  OUTCHR   STA   R15,OUT.SAV        SAVE RETURN ADDRESS         RST10750
139E  D300 372D          1076           LB    R0,IOSAVE+1                                    RST10760
13A2  2704               1077           SIS   R0,4                                           RST10770
13A4  4230 13E2          1078           BNZ   OUTCHR2            BRANCH IF NOT CAROUSEL      RST10780
13A8  4000 188E          1079           STH   R0,PAUSE                                       RST10790
13AC  41F0 14F0          1080  OTC.0    BAL   LINK,TSTDU         ON LINE ?                   RST10800
13B0  4230 141E          1081           BNZ   OUT0               NO, BRANCH                  RST10810
13B4  9DC1               1082           SSR   R0,R1             GET CAROUSEL STATUS         RST10820
13B6  2386               1083           BFFS  8,OTC.2            BRANCH IF CHAR. IS TO BE READ RST10830
13B8  4810 188E          1084  OTC.1    LH    R1,PAUSE           PAUSED NOW ?                RST10840
13BC  2038               1085           BNZS  OTC.0              YES, LOOP                   RST10850
13BE  4300 13E2          1086           B     OUTCHR2            NO, GO OUTPUT CHARACTER     RST10860
13C2  9B01               1087  OTC.2    RDR   R0,R1             GET CAROUSEL CHARACTER      RST10870
13C4  C410 007F          1088           NHI   R1,X'7F'                                       RST10880
13C8  CB10 0012          1089           SHI   R1,X'12'           DC2 ?                       RST10890
13CC  2134               1090           BNZS  OTC.3                                          RST10900
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13CE  4010 188E          1091          STH   R1,PAUSE                                    RST10910
13D2  2308               1092          BS    OUTCHR2                                     RST10920
13D4  2712               1093  OTC.3   SIS   R1,2               DC4 ?                    RST10930
13D6  4230 13AC          1094          BNZ   OTC.0               NO, GO WAIT FOR DC2      RST10940
13DA  40F0 188E          1095          STH   LINK,PAUSE                                  RST10950
13DE  4300 13AC          1096          B     OTC.0                                       RST10960
                         1097  *                                                         RST10970
13E2  4010 188E          1098  OUTCHR2 STH   R1,PAUSE            RESET FLAG               RST10980
13E6  41F0 14F0          1099          BAL   LINK,TSTDU          OFF-LINE ?               RST10990
13EA  4230 141E          1100          BNZ   OUT0                BRANCH IF OFF-LINE       RST11000
13EE  4110 156C          1101          BAL   R1,SETUP            SET UP FOR OUTPUT        RST11010
13F2  9D01               1102  OTC.4   SSR   R0,R1               WAIT FOR NOT BUSY        RST11020
13F4  4230 141E          1103          BTC   3,OUT0              BRANCH IF OFF-LINE       RST11030
13F8  C510 000C          1104          CLHI  R1,12               PASLA OFFLINE ?          RST11040
13FC  4330 141E          1105          BE    OUT0                BRANCH: YES.             RST11050
1400  C340 0008          1106          THI   R1,8                BUSY ?                   RST11060
1404  2039               1107          BNZS  OTC.4               WAIT FOR NOT BUSY.       RST11070
1406  9A04               1108          WDR   R0,R4               OUTPUT DATA BYTE         RST11080
1408  41F0 14F0          1109  OTC.5   BAL   LINK,TSTDU                                   RST11090
140C  2139               1110          BNZS  OUT0                                        RST11100
140E  D310 372D          1111          LB    R1,IOSAVE+1                                 RST11110
1412  9111               1112          SLHLS R1,1                                        RST11120
1414  D301 0A11          1113          LB    R0,IO+1(R1)         GET CONSOLE WRITE ADDRESS RST11130
1418  9D01               1114          SSR   R0,R1                                       RST11140
141A  2089               1115          BTBS  8,OTC.5             WAIT FOR BUSY TO DROP    RST11150
141C  2303               1116          BS    OUT1                                        RST11160
141E  4010 187E          1117  OUT0    STH   R1,WASDU            SET FLAG                 RST11170
1422  48F0 1890          1118  OUT1    LDA   R15,OUT.SAV                                 RST11180
1426  030F               1119          BR    R15                 RETURN AS SET UP ABOVE   RST11190
                         1120  *-----------------------------                            RST11200
                         1121  *  TO GET A CHAR FROM KEYBOARD (IN REG R4)                 RST11210
                         1122  *                                                         RST11220
1428  4140 1534          1123  GETCHR  BAL   R4,KBREAD           PUT KB DEVICE IN READ MODE RST11230
142C  0890               1124          LDAR  R9,R0               SAVE CONSOLE ADDRESS     RST11240
142E  9D04               1125          SSR   R0,R4                                       RST11250
1430  2081               1126          BTBS  8,1                 IF BUSY, LOOP (POSSIBLE HANG) RST11260
1432  9B04               1127          RDR   R0,R4               READ A CHAR IN R4        RST11270
                         1128  * TO ECHO RECEIVED CHARACTERS TO CONSOLE DEVICE IN FDX MODE RST11280
1434  D400 0A1A          1129  ECHO    CLB   R0,MICROBUS                                 RST11290
1438  233B               1130          BES   ECHO1               IF MICROBUS, BRANCH      RST11300
143A  D390 1856          1131          LB    R9,CONRD                                    RST11310
143E  C590 00A1          1132          CLHI  R9,X'A1'            CAROUSEL ?               RST11320
1442  2137               1133          BNES  ECHRTN              DO NOT ECHO              RST11330
1444  D390 1855          1134          LB    R9,CONADR+1                                 RST11340
1448  DD90 184C          1135          SS    R9,SINK                                     RST11350
144C  2082               1136          BTBS  8,2                                         RST11360
144E  9A94               1137  ECHO1   WDR   R9,R4               ECHO RECEIVED BYTE       RST11370
1450  C440 007F          1138  ECHRTN  NHI   R4,X'7F'            REMOVE PARITY BIT        RST11380
1454  030F               1139          BR    LINK                RETURN                   RST11390
                         1140  *-----------------------------                            RST11400
                         1141  *  TO OUTPUT '?' TO CONSOLE                               RST11410
                         1142  *                                                         RST11420
1456  41F0 138C          1143  QUESTN  BAL   LINK,CRLF                                   RST11430
145A  40F0 1878          1144          STH   LINK,ISITERR        SET FLAG                 RST11440
145E  C850 1936          1145          LHI   R5,QMSG                                     RST11450
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1462  41F0 1304          1146            BAL   LINK,PRINT          PRINT '?'                                  RST11460
1466  2400               1147            LIS   R0,0                                                         RST11470
1468  4000 1878          1148            STH   R0,ISITERR                                                   RST11480
146C  4300 0AF8          1149            B     OPTIN1              TO ACCEPT COMMAND INPUT                    RST11490
                         1150  *-----------------------------                                               RST11500
                         1151  * IF BREAK KEY DEPRESSED, GO TO 'OPTIN' OR (BRKVECT); ELSE RETURN.           RST11510
                         1152  *                                                                            RST11520
1470  D000 37B8          1153  TSTBRK    STM   R0,RSAVE+64        STORE REGISTERS                            RST11530
1474  40F0 1892          1154            STA   LINK,BRK.SAV        SAVE RETURN ADDRESS                      RST11540
1478  D300 1854          1155            LB    R0,CONADR           GET KEYBOARD DEVICE ADDRESS              RST11550
147C  9D01               1156            SSR   R0,R1                                                        RST11560
147E  4210 14E6          1157            BTC   1,TSTBRK3           IF CLI R MICRBUS DU, BRANCH              RST11570
1482  C510 000C          1158            CLHI  R1,X'0C'                                                     RST11580
1486  4330 14E6          1159            BE    TSTBRK3             IF PASLA DU, BRANCH                      RST11590
148A  C310 0020          1160            THI   R1,X'20'            'BREAK' KEY PRESSED ?                    RST11600
148E  4330 14E6          1161            BZ    TSTBRK3             NO. EXIT                                 RST11610
1492  D320 0A10          1162            LB    R2,IO                                                        RST11620
1496  C520 0005          1163            CLHI  R2,5                IS IT MICROBUS ?                         RST11630
149A  213C               1164            BNES  TSTBRK4             NO, BRANCH                               RST11640
149C  9B02               1165  TSTBRK5   RDR   R0,R2               KNOCK DOWN BREAK                         RST11650
149E  2621               1166  TSTBRK5A  AIS   R2,1                GO INTO TIMER LOOP                       RST11660
14A0  4230 149E          1167            BNZ   TSTBRK5A            LOOP IT                                  RST11670
14A4  9D01               1168            SSR   R0,R1               CHECK IF FRAMING ERROR                   RST11680
14A6  C310 0020          1169            THI   R1,X'20'            IF SET, LOOP AND                         RST11690
14AA  4230 149C          1170            BNZ   TSTBRK5             WAIT FOR BREAK KEY RELEASE               RST11700
14AE  4300 14D4          1171            B     TSTBRK2                                                      RST11710
14B2  4820 1850          1172  TSTBRK4   LH    R2,PASFLG           PASLA ?                                  RST11720
14B6  233B               1173            BZS   TSTBRK1             BRANCH IF NO.                            RST11730
14B8  C310 0008          1174            THI   R1,8                ALREADY ACKNOWLEDGED ?                   RST11740
14BC  4230 14E6          1175            BNZ   TSTBRK3             BRANCH IF YES                            RST11750
14C0  9B02               1176            RDR   R0,R2                                                        RST11760
14C2  9D01               1177            SSR   R0,R1                                                        RST11770
14C4  2281               1178            BFBS  8,1                                                          RST11780
14C6  0822               1179            LDAR  R2,R2               ZERO CHARACTER ?                         RST11790
14C8  213F               1180            BNZS  TSTBRK3             NO, BRANCH: JUST FRAMING ERROR           RST11800
14CA  2305               1181            BS    TSTBRK2             YES, BRANCH: TRUE BREAK                  RST11810
14CC  9D01               1182  TSTBRK1   SSR   R0,R1                                                        RST11820
14CE  C310 0020          1183            THI   R1,X'20'                                                     RST11830
14D2  2033               1184            BNZS  TSTBRK1             WAIT FOR BREAK KEY RELEASE               RST11840
14D4  48F0 1876          1185  TSTBRK2   LH    R15,BRKVECT         CHECK FOR SPECIAL ROUTINE                RST11850
14D8  4330 0AF4          1186            BZ    OPTIN               BRK W/NO VECTOR: BRANCH TO EXEC          RST11860
14DC  40F0 1892          1187            STA   R15,BRK.SAV         SET UP FOR EXIT                          RST11870
14E0  2400               1188            LIS   R0,0                                                         RST11880
14E2  4000 1876          1189            STH   R0,BRKVECT          DELETE VECTOR AFTER ONE SHOT.            RST11890
14E6  D100 37B8          1190  TSTBRK3   LM    R0,RSAVE+64         RESTORE REGISTERS                        RST11900
14EA  48F0 1892          1191            LDA   LINK,BRK.SAV                                                 RST11910
14EE  030F               1192            BR    LINK                RETURN TO PROGRAM                        RST11920
                         1193  *-----------------------------                                               RST11930
                         1194  * SEE IF CURRENT LIST DEVICE IS OFF-LINE (R1 & CC NON-ZERO IF OFF)            RST11940
                         1195  *                                                                            RST11950
14F0  2401               1196  TSTDU     LIS   R0,1                SET CLI STATUS MASK                      RST11960
14F2  4810 1852          1197            LH    R1,PASFLG2          LIST DEVICE ON PASLA ?                   RST11970
14F6  2333               1198            BZS   $TSTDU0             BRANCH: NO.                              RST11980
14F8  C800 00FC          1199            LHI   R0,X'FC'            SET PASLA STATUS MASK                    RST11990
14FC  D310 372D          1200  $TSTDU0   LB    R1,IOSAVE+1         GET I/O POINTER FOR LIST DEVICE          RST12000
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1500  9111           1201          SLHLS R1,1                                        RST12010
1502  D311 0A10      1202          LB    R1,IO(R1)           GET DEVICE ADDRESS      RST12020
1506  D210 184C      1203          STB   R1,SINK             AND SAVE IT             RST12030
150A  9D11           1204          SSR   R1,R1               GET LIST DEVICE STATUS  RST12040
150C  0410           1205          NAR   R1,R0               MASK OFF UNWANTED BITS  RST12050
150E  C310 0001      1206          THI   R1,1                DU FOR CLI ?            RST12060
1512  2135           1207          BNZS  $TSTDU2             BRANCH: YES.            RST12070
1514  C510 000C      1208          CLHI  R1,X'0C'            DU FOR PASLA ?          RST12080
1518  2332           1209          BES   $TSTDU2             BRANCH: YES.            RST12090
151A  2511           1210  $TSTDU1 LCS   R1,1                "NOT DU" EXIT: R1=CC=0  RST12100
151C  C710 FFFF      1211  $TSTDU2 XHI   R1,-1               "DU" EXIT: R1=CC<>0     RST12110
1520  D300 184C      1212          LB    R0,SINK             PUT DEVICE ADDRESS IN R0 RST12120
1524  030F           1213          BR    LINK                RETURN                  RST12130
                     1214  * ---------------------------------                       RST12140
                     1215  * TO DIRECT INPUT AND OUTPUT TO CONSOLE DEVICE            RST12150
                     1216  *                                                         RST12160
1526  D300 0A10      1217  SETKB   LB    R0,IO               GET KEYBOARD DEVICE     RST12170
152A  9410           1218          EXBR  R1,R0                                       RST12180
152C  0610           1219          OAR   R1,R0                                       RST12190
152E  4010 372C      1220          STH   R1,IOSAVE           KB DEVICE = LIST DEVICE  *** RST12200
1532  030F           1221          BR    LINK                RETURN                  RST12210
                     1222  *---------------------------                             RST12220
                     1223  *  TO PUT KEYBOARD DEVICE IN READ MODE                    RST12230
                     1224  *                                                         RST12240
1534  D300 1854      1225  KBREAD  LB    R0,CONADR                                   RST12250
1538  DE00 1856      1226          OC    R0,CONRD            OC CONSOLE - READ COMMAND RST12260
153C  DB00 184C      1227          RD    R0,SINK             READ A DUMMY CHARACTER (SET BUSY) RST12270
1540  4890 1850      1228          LH    R9,PASFLG           PASLA ?                 RST12280
1544  4200 1544      1229          NOP   *                   FOR SPECIAL KB DEVICE   RST12290
1548  2333           1230  TTYGET  BZS   KBXIT               NO, BRANCH TO EXIT      RST12300
154A  DE00 186E      1231          OC    R0,CONRQ2S          YES, OC (REQUEST TO SEND) RST12310
154E  0304           1232  KBXIT   BR    R4                  RETURN                  RST12320
                     1233  *---------------------------                             RST12330
                     1234  *  TO SET UP KEYBOARD DEV TO READ WITH INT ENABLED       RST12340
                     1235  *                                                         RST12350
1550  D000 3778      1236  KBRD    STM   R0,RSAVE           SAVE REGISTERS          RST12360
1554  D300 1854      1237          LB    R0,CONADR           GET KB DEV ADR          RST12370
1558  4810 1850      1238          LH    R1,PASFLG           PASLA ?                 RST12380
155C  2333           1239          BZS   KBRD1                                       RST12390
155E  DE00 186E      1240          OC    R0,CONRQ2S                                  RST12400
1562  DE00 1863      1241  KBRD1   OC    R0,CONENRD          CONSOLE : ENABLE, READ  RST12410
1566  D100 3778      1242          LM    R0,RSAVE            RESTORE REGISTERS       RST12420
156A  030F           1243          BR    LINK                RETURN                  RST12430
                     1244  *---------------------------                             RST12440
                     1245  *  LIST DEVICE SET UP ROUTINE                             RST12450
                     1246  *                                                         RST12460
156C  4010 1894      1247  SETUP   STA   R1,SET.RTN                                  RST12470
1570  D310 372D      1248          LB    R1,IOSAVE+1         GET LIST DEVICE IDENTIFIER RST12480
1574  9111           1249          SLHLS R1,1                HW INDEX                RST12490
1576  D301 0A11      1250          LB    R0,IO+1(R1)         GET LIST DEVICE ADDRESS RST12500
157A  DE01 1857      1251          OC    R0,CONWRT(R1)                               RST12510
157E  4810 1894      1252          LDA   R1,SET.RTN                                  RST12520
1582  0301           1253          BR    R1                  RETURN                  RST12530
                     1254  * ***************************                             RST12540
                     1255  *  LOW CORE SET UP ROUTINE                                RST12550
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                         1256  *                                                                                  RST12560
1584  2410               1257  LCORE    LIS   R1,0                                                              RST12570
1586  2422               1258           LIS   R2,2                                                              RST12580
1588  C830 004E          1259           LHI   R3,X'4E'                                                          RST12590
158C  2400               1260           LIS   R0,0                                                              RST12600
158E  4001 0000          1261  ZERO1    STH   R0,0(R1)                                                          RST12610
1592  C110 158E          1262           BXLE  R1,ZERO1          ZERO CORE FROM 0 THRU X'4F'                     RST12620
1596  C810 0080          1263           LHI   R1,X'80'                                                          RST12630
159A  C830 00CE          1264           LHI   R3,X'CE'                                                          RST12640
159E  4001 0000          1265  ZERO2    STH   R0,0(R1)                                                          RST12650
15A2  C110 159E          1266           BXLE  R1,ZERO2          ZERO CORE FROM X'80' THRU X'CF'                 RST12660
15A6  C800 16DC          1267           LHI   R0,XI32           INTERRUPT HANDLER ROUTINE                       RST12670
15AA  C830 08CE          1268           LHI   R3,X'8CE'                                                         RST12680
15AE  4001 0000          1269  ZERO3    STH   R0,0(R1)                                                          RST12690
15B2  C110 15AE          1270           BXLE  R1,ZERO3          SET UP INT SERVICE POINTER TABLE                RST12700
15B6  C830 17D8          1271           LHI   R3,II                                                             RST12710
15BA  4030 0036          1272           STH   R3,X'36'          ILL INST INT NEW PSW LOC                        RST12720
15BE  C840 17F2          1273           LHI   R4,MM                                                             RST12730
15C2  4040 003E          1274           STH   R4,X'3E'          M. M. INT NEW PSW LOC                           RST12740
15C6  C830 17A4          1275           LHI   R3,AF                                                             RST12750
15CA  4030 004E          1276           STH   R3,X'4E'          ARITHMETIC FAULT NEW PSW LOC(32-BIT)            RST12760
                         1277  *                               FIXED PT DIVIDE FAULT NEW PSW LOC               RST12770
15CE  C830 1786          1278           LHI   R3,FORFAULT       FORMAT FAULT NEW PSW LOC                        RST12780
15D2  4030 00CE          1279           STH   R3,X'CE'                                                          RST12790
15D6  C840 3808          1280           LHI   R4,PSWSAVE+X'FF'&X'FF00'+8                                        RST12800
15DA                     1281           IFZ   ADC-2                                                             RST12810
15DA  4810 183A          1282           LH    R1,MOD32                                                          RST12820
15DE  4230 1600          1283           BNZ   LCORE32                                                           RST12830
                         1284  *                                                                                RST12840
                         1285  *  SET UP LOW CORE FOR 16 BIT MACHINE                                            RST12850
                         1286  *                                                                                RST12860
15E2  4040 0022          1287           STH   R4,X'22'          REG SAVE POINTER                                RST12870
15E6  C830 1792          1288           LHI   R3,FP                                                             RST12880
15EA  4030 002E          1289           STH   R3,X'2E'          FLOATING PT FAULT INT NEW PSW LOC               RST12890
15EE  4850 0A24          1290           LH    R5,PSW2                                                           RST12900
15F2  4050 0044          1291           STH   R5,X'44'          HW EXT INT NEW PSW STATUS                       RST12910
15F6  C850 16CE          1292           LHI   R5,XI16                                                           RST12920
15FA  4050 0046          1293           STH   R5,X'46'          EXT INT NEW PSW LOC                             RST12930
15FE  030F               1294           BR    LINK                                                              RST12940
                         1295           ENDC                                                                    RST12950
                         1296  *                                                                                RST12960
                         1297  *  SET UP LOW CORE FOR 32 BIT MACHINE                                            RST12970
                         1298  *                                                                                RST12980
1600  4040 0086          1299  LCORE32  STH   R4,X'86'          REG SAVE POINTER                                RST12990
1604  C840 3738          1300           LHI   R4,PSWSAVE        PPF PSW SAVE AREA                               RST13000
1608  4040 0084          1301           STH   R4,X'84'          .   POINTER                                     RST13010
160C  C830 179A          1302           LHI   R3,RP                                                             RST13020
1610  4030 0096          1303           STH   R3,X'96'          RELOC/PROTECT INT NEW PSW LOC                   RST13030
1614  D310 1854          1304           LB    R1,CONADR         LOAD CONSOLE I/O ADDRESS                        RST13040
1618  0A11               1305           AAR   R1,R1                                                             RST13050
161A  C800 1638          1306           LHI   R0,KBINTO         R0 = A(KEYBOARD INT HANDLER)                    RST13060
161E  4001 00D0          1307           STH   R0,X'D0'(R1)      STORE @  X'D0'+2(KB DEV ADR)                    RST13070
1622  2410               1308           LIS   R1,0              TO SET UP SERVICE POINTER TABLE                 RST13080
1624  C830 16DC          1309           LHI   R3,XI32                                                           RST13090
1628  4821 36AC          1310  LCORE32A LH    R2,DEVSADR(R1)    GET DEV ADR FROM TABLE                          RST13100
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162C  021F            1311          BMR   LINK              DONE. RETURN                          RST13110
162E  0A22            1312          AAR   R2,R2                                                   RST13120
1630  4032 00D0       1313          STH   R3,X'D0'(R2)      STORE @  X'D0'+2(DEV ADR)             RST13130
1634  2612            1314          AIS   R1,2                                                    RST13140
1636  2207            1315          BS    LCORE32A                                                RST13150
                      1316  *-------------------------------                                      RST13160
                      1317  *  KEYBOARD INTERRUPT HANDLER                                         RST13170
                      1318  *                                                                      RST13180
1638  C330 0020       1319  KBINT0  THI   R3,X'20'          IS BREAK KEY DEPRESSED ?              RST13190
163C  4330 1684       1320          BZ    KBINT1            NO                                    RST13200
1640  D300 0A10       1321          LB    R0,IO                                                   RST13210
1644  C500 0005       1322          CLHI  R0,5              IS IT MICROBUS ?                      RST13220
1648  4230 1664       1323          BNE   KBINTOB           NO, BRANCH                            RST13230
164C  DE20 1860       1324          OC    R2,MREADC         YES, ISSUE READ                       RST13240
1650  9D23            1325          SSR   R2,R3                                                   RST13250
1652  2081            1326          BTBS  8,1                                                     RST13260
1654  9B24            1327  KBINTOC RDR   R2,R4             KNOCK DOWN BREAK                      RST13270
1656  9D23            1328          SSR   R2,R3                                                   RST13280
1658  C330 0020       1329          THI   R3,X'20'          BREAK STILL THERE ?                   RST13290
165C  4230 1654       1330          BNZ   KBINTOC           YES, KNOCK IT DOWN AGAIN              RST13300
1660  4300 16BC       1331          B     RETOPSW           NO, RETURN ON OLD PSW                 RST13310
1664  4850 1850       1332  KBINTOB LH    R5,PASFLG         CONSOLE ON PASLA ?                    RST13320
1668  2339            1333          BZS   KBINTOA           BRANCH IF NO.                         RST13330
166A  9B24            1334          RDR   R2,R4                                                   RST13340
166C  9D23            1335          SSR   R2,R3                                                   RST13350
166E  2281            1336          BFBS  8,1                                                     RST13360
1670  0844            1337          LDAR  R4,R4                                                   RST13370
1672  4230 16BC       1338          BNZ   RETOPSW           IGNORE FRERR ONLY                     RST13380
1676  4300 169A       1339  KBINTOO B     KBINT3                                                  RST13390
167A  9D23            1340  KBINTOA SSR   R2,R3                                                   RST13400
167C  C330 0020       1341          THI   R3,X'20'                                                RST13410
1680  2033            1342          BTBS  3,KBINTOA         WAIT FOR BREAK RELEASE                RST13420
1682  2206            1343          BS    KBINTOO           GO TO COMMAND MODE                    RST13430
1684  C500 0005       1344  KBINT1  CLHI  R0,5              IS IT MICROBUS ?                      RST13440
1688  4230 169A       1345          BNE   KBINT3            NO, BRANCH                            RST13450
168C  DE20 1860       1346          OC    R2,MREADC         READ COMMAND TO MICROBUS              RST13460
1690  9D23            1347          SSR   R2,R3                                                   RST13470
1692  2081            1348          BTBS  8,1                                                     RST13480
1694  9B24            1349          RDR   R2,R4             KNOCK DOWN INTERRUPT                  RST13490
1696  4300 16BC       1350          B     RETOPSW           RETURN                                RST13500
169A  4020 1848       1351  KBINT3  STH   R2,INTDEV                                              RST13510
169E  D230 184A       1352          STB   R3,INTSTA                                               RST13520
16A2                  1353          IFZ   ADC-2                                                   RST13530
16A2  4840 183A       1354          LH    R4,MOD32                                                RST13540
16A6  2335            1355          BZS   KBINT2                                                  RST13550
                      1356          ENDC                                                          RST13560
16A8  4000 1842       1357          STH   R0,OPSW           STORE OLD PSW OF 32-BIT PROCESSOR     RST13570
16AC  4010 1846       1358          STH   R1,OLOC           IN ORDER TC RETURN BACK TO TEST       RST13580
16B0  9B24            1359  KBINT2  RDR   R2,R4                                                   RST13590
16B2  41F0 1434       1360          BAL   LINK,ECHO         ECHO RECEIVED BYTE                    RST13600
16B6  4890 1874       1361          LH    R9,KBINT          IF ZERO,IGNORE; ELSE                  RST13610
16BA  0239            1362          BNZR  R9                GO,PROCESS KB INT FURTHER             RST13620
                      1363  * -------------------------------                                     RST13630
                      1364  *  TO RETURN ON OLD PSW                                               RST13640
                      1365  *                                                                      RST13650
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16BC                    1366          IFZ   ADC-2                                                    RST13660
16BC  4890 183A         1367  RETOPSW LH    R9,MOD32                                                 RST13670
16C0  2135              1368          BNZS  RETOPSW1                                                 RST13680
16C2  D100 37F8         1369          LM    R0,INTSAVE          RESTORE REGISTERS                    RST13690
16C6  C200 0040         1370          LPSW  X'40'               RETURN ON OLD PSW AFTER KB INT       RST13700
                        1371  *                                                                      RST13710
16CA  C200 1840         1372  RETOPSW1 LPSW OPSW32                                                   RST13720
                        1373          ELSE                                                           RST13730
                        1374  RETOPSW LPSW  OPSW32                                                   RST13740
                        1375          ENDC                                                           RST13750
                        1376  *                                                                      RST13760
                        1377  * ********************************************                         RST13770
                        1378  *  EXTERNAL INTERRUPT HANDLER                                          RST13780
16CE                    1379          IFZ   ADC-2                                                    RST13790
16CE  D000 37F8         1380  XI16    STM   R0,INTSAVE          FOR 16-BIT PROCESSOR                 RST13800
16D2  9F23              1381          ACKR  R2,R3                ACKNOWLEDGE THE INTERRUPT            RST13810
16D4  D420 1854         1382          CLB   R2,CONADR            FROM KEYBOARD DEVICE ?               RST13820
16D8  4330 1638         1383          BE    KBINT0                                                   RST13830
                        1384          ENDC                                                           RST13840
                        1385  *                                                                      RST13850
                        1386  *                                  FOR 32-BIT PROCESSOR                RST13860
16DC  95AA              1387  XI32    EPSR  R10,R10              CAPTURE CURRENT PSW                  RST13870
16DE  40A0 183C         1388          STH   R10,INTPSW                                               RST13880
16E2  4020 1848         1389          STH   R2,INTDEV            STORE INTERRUPTING DEVICE ADDRESS    RST13890
16E6  D230 184A         1390          STB   R3,INTSTA            STORE INTERRUPTING DEVICE STATUS     RST13900
16EA                    1391          IFZ   ADC-2                                                    RST13910
16EA  4850 183A         1392          LH    R5,MOD32                                                 RST13920
16EE  2135              1393          BNZS  XI32A                                                    RST13930
16F0  4800 0040         1394          LH    R0,X'40'             16-BIT OLD PSW                      RST13940
16F4  4810 0042         1395          LH    R1,X'42'                                                 RST13950
                        1396          ENDC                                                           RST13960
16F8  4000 1842         1397  XI32A   STH   R0,OPSW              STORE OLD PSW STATUS                 RST13970
16FC  4010 1846         1398          STH   R1,OLOC              STORE OLD PSW LOC                    RST13980
1700                    1399          IFZ   ADC-2                                                    RST13990
1700  0855              1400          LDAR  R5,R5                MOD32 = 0 ?                          RST14000
1702  233A              1401          BZS   XI16A                BRANCH IF YES.                       RST14010
                        1402          ENDC                                                           RST14020
1704  4820 0A24         1403          LH    R2,PSW2                                                  RST14030
1708  9512              1404          EPSR  R1,R2                SELECT USER REGISTER SET             RST14040
170A  D000 37F8         1405          STM   R0,INTSAVE           SAVE USER REGISTERS                  RST14050
170E  4820 1848         1406          LH    R2,INTDEV                                                RST14060
1712  48A0 183C         1407          LH    R10,INTPSW                                               RST14070
                        1408  *                                                                      RST14080
1716  2450              1409  XI16A   LIS   R5,0                                                     RST14090
1718  4865 36AC         1410  XI1     LH    R6,DEVSADR(R5)       GET DEV ADRS FROM TABLE             RST14100
171C  4210 1752         1411          BM    XIERR                TABLE OVERFLOW.                     RST14110
1720  0562              1412          CLAR  R6,R2                COMPARE INTERRUPTING DEVICE ADDRESS RST14120
1722  2333              1413          BES   XI2                                                      RST14130
1724  2652              1414          AIS   R5,2                                                    RST14140
1726  2207              1415          BS    XI1                                                      RST14150
1728  4865 36B6         1416  XI2     LH    R6,DEVINT(R5)        GET INTERRUPT HANDLER ADDRESS       RST14160
172C  4330 1752         1417          BZ    XIERR                INTERRUPT NOT EXPECTED              RST14170
1730  4060 1750         1418          STH   R6,XIEXIT                                                RST14180
                        1419  *                                                                      RST14190
1734                    1420          IFZ   ADC-2                                                    RST14200
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1734  4860 183A          1421          LH    R6,MOD32           32-BIT MACHINE ?                    RST14210
1738  2339               1422          BZS   XI3              BRANCH IF NO.                       RST14220
                         1423          ENDC                                                       RST14230
173A  9051               1424          SRLS  R5,1                                                RST14240
173C  90A4               1425          SRLS  R10,4                                               RST14250
173E  C4A0 000F          1426          NHI   R10,15                                              RST14260
1742  D4A5 36BE          1427          CLB   R10,INTLVL(R5)     CHECK PROPER INTERRUPT LEVEL       RST14270
1746  4230 1762          1428          BNE   LVLERR                                              RST14280
                         1429  *                                                                  RST14290
174A  D100 37F8          1430  XI3     LM    R0,INTSAVE         RESTORE FROM XI16/XI32 ENTRY       RST14300
174E  4300 174E          1431  XI5     B     *                  AND GO TO INTERRUPT HANDLER        RST14310
      0000 1750          1432  XIEXIT  EQU   XI5+2              NOTE:  16 KB RESTRICTION !         RST14320
                         1433  *----------------------------------                                RST14330
                         1434  *  EXTERNAL INTERRUPT ERROR ROUTINE                                RST14340
                         1435  *                                                                  RST14350
1752  C860 4634          1436  XIERR   LHI   R6,C'F4'           ERROR # F4                         RST14360
1756  4060 18C4          1437          STH   R6,ERRNO                                            RST14370
175A  41F0 1024          1438          BAL   LINK,ERRALL        'ERROR XXF4', 'DEV DDD STA SS'     RST14380
                         1439  *                                'PSW PPPP  LOC LLLL'               RST14390
175E  4300 0AF8          1440          B     OPTIN1             TO ENTER COMMAND MODE              RST14400
                         1441  *----------------------------------                                RST14410
                         1442  * DEVICE INTERRUPTED IN WRONG INTERRUPT LEVEL                       RST14420
                         1443  *                                                                  RST14430
1762  C860 4636          1444  LVLERR  LHI   R6,C'F6'           ERROR # F6                         RST14440
1766  4060 18C4          1445          STH   R6,ERRNO                                            RST14450
176A  D3AA 18A2          1446          LB    R10,HEXTAB(R10)    CONVERT TO ASCII                   RST14460
176E  D2A0 1925          1447          STB   R10,ERRLVL         AND STORE ERROR LEVEL IN MESSAGE   RST14470
1772  41F0 1024          1448          BAL   LINK,ERRALL        'ERROR XXF6', 'DEV DDD STA SS'     RST14480
                         1449  *                                'PSW PPPP  LOC LLLL'               RST14490
1776  C850 1910          1450          LHI   R5,INTLVLM                                          RST14500
177A  4050 1878          1451          STH   R5,ISITERR         SET FLAG TO OVERRIDE NOMSG OPTION  RST14510
177E  41F0 1304          1452          BAL   LINK,PRINT         'INTERRUPTED IN LEVEL  N'          RST14520
1782  4300 0AF8          1453          B     OPTIN1             ENTER COMMAND MODE.                RST14530
                         1454  **********************                                            RST14540
                         1455  *                                                                  RST14550
                         1456  * FORMAT FAULT INTERRUPT ERROR ROUTINE                             RST14560
                         1457  *                                                                  RST14570
1786  C820 4637          1458  FORFAULT LHI  R2,C'F7'           LOAD ERROR NO                      RST14580
178A  4020 18C4          1459          STH   R2,ERRNO           STORE FOR MSG                      RST14590
178E  4300 17BA          1460          B     COMM               GO TO COMMON ERROR RTN             RST14600
                         1461  *-----------------------------                                    RST14610
                         1462  *  SPURIOUS INTERRUPT HANDLERS                                     RST14620
                         1463  *                                                                  RST14630
                         1464  *                                                                  RST14640
1792                     1465          IFZ   ADC-2                                               RST14650
                         1466  *  FLOATING-PT ARITH FAULT INT TRAP  (16 BIT PROCESSOR)            RST14660
                         1467  *                                                                  RST14670
1792  48E0 0028          1468  FP      LH    R14,X'28'          OLD PSW (16-BIT PROCESSOR)         RST14680
1796  48F0 002A          1469          LH    R15,X'2A'          OLD LOC                            RST14690
                         1470          ENDC                                                       RST14700
                         1471  *                                                                  RST14710
                         1472  *  RELOCATION/PROTECTION INT TRAP                                  RST14720
                         1473  *                                                                  RST14730
179A  C820 4635          1474  RP      LHI   R2,C'F5'                                            RST14740
179E  4020 18C4          1475          STH   R2,ERRNO           SET ERROR # F5                     RST14750
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17A2   230C              1476          BS    COMM                                          RST14760
                         1477  *                                                          RST14770
                         1478  *  ARITHMETIC FAULT INT (32-BIT PROCESSOR) TRAP            RST14780
17A4                     1479          IFZ   ADC-2                                         RST14790
                         1480  *  FIXED-PT DIVIDE FAULT INT (16-BIT PROCESSOR) TRAP       RST14800
                         1481          ENDC                                              RST14810
                         1482  *                                                          RST14820
17A4   C820 4631         1483  AF      LHI   R2,C'F1'                                     RST14830
17A8   4020 18C4         1484          STH   R2,ERRNO          SET ERROR # F1            RST14840
17AC                     1485          IFZ   ADC-2                                       RST14850
17AC   4820 183A         1486          LH    R2,MOD32                                    RST14860
17B0   2135              1487          BNZS  COMM                                        RST14870
17B2   48E0 0048         1488          LH    R14,X'48'         OLD PSW (16-BIT PROCESSOR) RST14880
17B6   48F0 004A         1489          LH    R15,X'4A'         OLD LOC (16-BIT PROCESSOR) RST14890
                         1490          ENDC                                              RST14900
17BA   40E0 1842         1491  COMM    STH   R14,OPSW                                   RST14910
17BE   40F0 1846         1492          STH   R15,OLOC                                    RST14920
17C2   4800 0A24         1493  COMM1   LH    R0,PSW2                                     RST14930
17C6   9520              1494          EPSR  R2,R0             NO INT. , REG SET 15      RST14940
17C8   41F0 0FE0         1495          BAL   LINK,ERR          PRINT 'ERROR XXFN'        RST14950
17CC   40F0 1878         1496          STH   LINK,ISITERR      FORCE PRINT               RST14960
17D0   41E0 10E8         1497          BAL   RET,ERRPL1        PRINT 'PSW PPPP  LOC LLLL' RST14970
17D4   4300 0AF8         1498          B     OPTIN1            ENTER COMMAND MODE        RST14980
                         1499  *                                                          RST14990
                         1500  *  ILLEGAL INSTRUCTION INTERRUPT TRAP                      RST15000
                         1501  *                                                          RST15010
17D8   C820 4632         1502  II      LHI   R2,C'F2'                                     RST15020
17DC   4020 18C4         1503          STH   R2,ERRNO          SET ERROR # F2            RST15030
17E0                     1504          IFZ   ADC-2                                       RST15040
17E0   4820 183A         1505          LH    R2,MOD32                                    RST15050
17E4   2135              1506          BNZS  II32                                        RST15060
17E6   48E0 0030         1507          LH    R14,X'30'         OLD PSW                   RST15070
17EA   48F0 0032         1508          LH    R15,X'32'         OLD LOC                   RST15080
                         1509          ENDC                                              RST15090
17EE   4300 17BA         1510  II32    B     COMM                                        RST15100
                         1511  *                                                          RST15110
                         1512  *  MACHINE MALFUNCTION INTERRUPT TRAP                      RST15120
                         1513  *                                                          RST15130
17F2   95AA              1514  MM      EPSR  R10,R10           CAPTURE MMINT PSW         RST15140
17F4   C820 4633         1515          LHI   R2,C'F3'                                    RST15150
17F8   4020 18C4         1516          STH   R2,ERRNO          SET ERROR # F3            RST15160
17FC   48E0 0022         1517          LH    R14,X'22'         OLD PSW ( 32-BIT PROCESSOR) RST15170
1800   48F0 0026         1518          LH    R15,X'26'         OLD LOC                   RST15180
1804                     1519          IFZ   ADC-2                                       RST15190
1804   4820 183A         1520          LH    R2,MOD32                                    RST15200
1808   2135              1521          BNZS  MM32                                        RST15210
180A   48E0 0038         1522          LH    R14,X'38'         OLD PSW (16 BIT PROCESSOR) RST15220
180E   48F0 003A         1523          LH    R15,X'3A'         OLD LOC                   RST15230
                         1524          ENDC                                              RST15240
1812   C4E0 FFF0         1525  MM32    NHI   R14,X'FFF0'                                 RST15250
1816   C4A0 000F         1526          NHI   R10,X'000F'                                 RST15260
181A   06EA              1527          OAR   R14,R10                                     RST15270
181C   40E0 1842         1528          STH   R14,OPSW                                    RST15280
1820   40F0 1846         1529          STH   R15,OLOC                                    RST15290
1824                     1530          IFZ   ADC-2                                       RST15300
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1824  C810 7FFF          1531          LHI   R1,X'7FFF'                                    RST15310
1828  2711               1532  MM16    SIS   R1,1                                         RST15320
182A  2021               1533          BPS   MM16                                         RST15330
                         1534          ENDC                                               RST15340
182C  C800 080F          1535          LHI   R0,X'080F'                                   RST15350
1830  9104               1536          SLHLS R0,4              R0 = X'80F0'               RST15360
1832  9520               1537          EPSR  R2,R0             HALT PROCESSOR             RST15370
                         1538  *                                                          RST15380
                         1539  *   WHEN EXE/RUN IS DEPRESSED, ERROR MSG IS PRINTED.      RST15390
                         1540  *                                                          RST15400
1834  4300 17C2          1541          B     COMM1                                        RST15410
                         1542  * ***************************                            RST15420
                         1543  *  ETPE CONSTANTS & TABLES                                RST15430
                         1544  *                                                          RST15440
1838  0000               1545  FIRST   DCX   0                                            RST15450
183A  0000               1546  MOD32   DCX   0               FLAG FOR 32-BIT M/C(NON-ZERO) RST15460
183C  0000               1547  INTPSW  DCX   0               (FOR 32-BIT M/C ONLY)        RST15470
1840                     1548          ALIGN 8                                            RST15480
                         1549  *------------------------                                RST15490
1840  0000               1550  OPSW32  DCX   0               OLD PSW STORAGE AREA         RST15500
1842  0000               1551  OPSW    DCX   0                                          RST15510
1844  0000               1552          DCX   0                                          RST15520
1846  0000               1553  OLOC    DCX   0                                          RST15530
                         1554  *------------------------                                RST15540
1848  0000               1555  INTDEV  DCX   0               INTERRUPTING DEV ADR       RST15550
      0000 1848          1556  ERRDEV  EQU   INTDEV          ERROR DEVICE #             RST15560
184A  00                 1557  INTSTA  DB    0               INTERRUPTING DEV STATUS    RST15570
      0000 184A          1558  ERRSTA  EQU   INTSTA          ERRONEOUS STATUS           RST15580
184B  00                 1559          DB    0               DUMMY FILL                 RST15590
184C  00                 1560  SINK    DB    0               BIT BUCKET                 RST15600
184D  80                 1561  NORM    DB    X'80'                                      RST15610
184E  40                 1562  INCR    DB    X'40'                                      RST15620
184F  00                 1563          DB    *               (ALIGN ON HW BOUNDRY)      RST15630
1850  0000               1564  PASFLG  DCX   0               SET WHEN CONSOLE ON PASLA/PALM RST15640
1852  0000               1565  PASFLG2 DCX   0               SET WHEN LIST DEVICE ON PASLA RST15650
                         1566  * --------------------                                  RST15660
                         1567  *  ETPE IO COMMANDS                                      RST15670
                         1568  *                                                        RST15680
1854  0000               1569  CONADR  DCX   0               CONSOLE DEVICE ADDRESS     RST15690
                         1570  *                                                        RST15700
1856  0000               1571  CONRD   DCX   0               CONSOLE READ/WRITE COMMANDS RST15710
      0000 1857          1572  CONWRT  EQU   CONRD+1                                    RST15720
1858  A1A3               1573  CRTRD   DCX   A1A3            FOR CRT                    RST15730
185A  A4D8               1574  CLIFRD  DCX   A4D8            *   CURRENT LOOP INTERFACE RST15740
185C  0080               1575  LPWRT   DCX   0080            *   LINE PRINTER           RST15750
185E  A1A3               1576  CARRD   DCX   A1A3            *   CAROUSEL 300           RST15760
1860  8202               1577  MREADC  DCX   8202            *   MICROBUS               RST15770
                         1578  *                                                        RST15780
1862  0000               1579  CON2ND  DCX   0               2ND COMMAND; ENABLE READ COMMAND RST15790
      0000 1863          1580  CONENRD EQU   CON2ND+1                                   RST15800
1864  EE61               1581  CRT2ND  DCX   EE61            FOR CRT                    RST15810
1866  0064               1582  CLIF2ND DCX   0064            *   CURRENT LOOP INTERFACE RST15820
1868  0000               1583          DCX   0               *   DUMMY HW FOR LP        RST15830
186A  F061               1584  CAR2ND  DCX   F061            *   CAROUSEL 300           RST15840
186C  0000               1585          DCX   0               *   DUMMY HW FOR MICROBUS  RST15850
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                                1586  *                                                                    RST15860
186E  00                        1587  CONRQ2S  DB    0                 CONSOLE REQUEST TO SEND CMD        RST15870
186F  23                        1588  CRTRQ2S  DB    X'23'             FOR CRT                            RST15880
1870  00                        1589           DB    0                 *   DUMMY BYTE FOR CLI             RST15890
1871  00                        1590           DB    0                 *   DUMMY BYTE FOR LP              RST15900
1872  23                        1591  CARRQ2S  DB    X'23'             *   CAROUSEL 300                   RST15910
1873  00                        1592           DB    0                 *   DUMMY BYTE FOR MICROBUS        RST15920
1874                            1593           DB    *                 (ALIGN ON HW BOUNDRY)              RST15930
                                1594  * --------------------                                              RST15940
1874  16BC                      1595  KBINT    DC    Z(RETOPSW)        KEYBOARD INT RETURN ADR            RST15950
1876  0000                      1596  BRKVECT  DC    Z(0)              BREAK KEY VECTOR                   RST15960
1878  0000                      1597  ISITERR  DCX   0                                                    RST15970
187A  0000                      1598  NOERR    DCX   0                                                    RST15980
187C  0000                      1599  SELTST   DCX   0                 HIGHEST SELECTED TEST #            RST15990
187E  0000                      1600  WASDU    DCX   0                 1 IF KEYBOARD DEVICE WAS OFF       RST16000
1880  0000                      1601  WASDU1   DCX   0                 NON-ZERO IF TOTAL,TOTERR TC PRINT  RST16010
1882  0000                      1602  TOTAL    DCX   0                 # OF TIMES THE SELECTED TESTS RUN  RST16020
1884  0000                      1603  TOTERR   DCX   0                 TOTAL ERRORS DETECTED WHILE DU     RST16030
1886  0000                      1604  BTESTNO  DCX   0                 CURRENT TEST # IN BINARY           RST16040
1888  0000                      1605  COUNT    DCX   0                                                    RST16050
188A  0000                      1606  NEXTST   DCX   0                 NEXT TEST #                        RST16060
188C  0000                      1607  $NULL    DCX   0                 NULL HW FOR DISPLAY USE            RST16070
188E  0000                      1608  PAUSE    DCX   0                 SET DURING TRANSMISSION PAUSE (C300) RST16080
1890  0000                      1609  OUT.SAV  DAC   0                 OUTCHR RETURN ADDRESS SAVE         RST16090
1892  0000                      1610  BRK.SAV  DAC   0                 TSTBRK RETURN ADDRESS SAVE         RST16100
1894  0000                      1611  SET.RTN  DAC   0                 SETUP RETURN ADDRESS SAVE          RST16110
1896  0000                      1612  COMRET   DAC   0                 ERRCOM RETURN ADDRESS SAVE         RST16120
                                1613  *                                                                    RST16130
1898  0001                      1614  DECTAB   DC    1,10,100,1000,10000                                   RST16140
189A  000A
189C  0064
189E  03E8
18A0  2710
18A2  3031 3233 3435 3637       1615  HEXTAB   DB    C'0123456789ABCDEF'                                  RST16150
18AA  3839 4142 4344 4546
                                1616  *--------------------------------                                   RST16160
                                1617  *  ETPE MESSAGES                                                     RST16170
                                1618  *                                                                    RST16180
18B2  5445 5354 2020 2A2A       1619  TSTMSG   DC    C'TEST  **',X'0D00'                                   RST16190
18BA  0D00
      0000 18B8                 1620  MTESTNO  EQU   TSTMSG+6                                             RST16200
18BC  4552 524F 5220 2A2A       1621  ERRMSG   DC    C'ERROR ****',X'0D00'                                 RST16210
18C4  2A2A
18C6  0D00
      0000 18C2                 1622  ETESTNO  EQU   ERRMSG+6          STORED BY ETPE                     RST16220
      0000 18C4                 1623  ERRNO    EQU   ERRMSG+8          STORE ERRNO AS CHAR CONSTANT       RST16230
18C8  544F 5441 4C20 2020       1624  TOTMSG   DC    C'TOTAL   TOTERR',X'0D00'                            RST16240
18D0  544F 5445 5252
18D6  0D00
18D8  4E4F 2045 5252 4F52       1625  NOERMSG  DC    C'NO ERROR',X'0D00'                                  RST16250
18E0  0D00
18E2  4445 5620 2A2A 2A20       1626  DEVMSG   DC    C'DEV *** STA **',X'0D00'                            RST16260
18EA  5354 4120 2A2A
18F0  0D00
      0000 18E6                 1627  ASCIDEV  EQU   DEVMSG+4                                             RST16270
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                0000 18EA              1628  STAMSG   EQU   DEVMSG+8                                          RST16280
                0000 18EE              1629  ASCISTA  EQU   DEVMSG+12                                         RST16290
18F2  4445 5620 2A2A 2A20              1630  DEVMSG2  DC    C'DEV ***',X'0D00'                                RST16300
18FA  0D00
                0000 18F6              1631  ASCIDEV2 EQU   DEVMSG2+4                                         RST16310
18FC  5053 5720 2A2A 2A2A              1632  PSWMSG   DC    C'PSW ****  LOC ****',X'0D00'                    RST16320
1904  2020 4C4F 4320 2A2A
190C  2A2A
190E  0D00
                0000 1900              1633  ASCIPSW  EQU   PSWMSG+4                                          RST16330
                0000 1906              1634  LOCMSG   EQU   PSWMSG+10                                         RST16340
                0000 190A              1635  ASCILOC  EQU   PSWMSG+14                                         RST16350
1910  494E 5445 5252 5550              1636  INTLVLM  DC    C'INTERRUPTED IN LEVEL *',X'0D00'                 RST16360
1918  5445 4420 494E 204C
1920  4556 454C 202A
1926  0D00
                0000 1925              1637  ERRLVL   EQU   INTLVLM+21                                        RST16370
1928  454E 4420 4F46 2054              1638  EOTMSG   DC    C'END OF TEST',X'0D00'                            RST16380
1930  4553 5420
1934  0D00
1936  3F0D                             1639  QMSG     DC    X'3F0D'                                          RST16390
1938  2A0D                             1640  AMSG     DC    X'2A0D'                                          RST16400
                                       1641  *------------------------------                                RST16410
                                       1642  *  OPTION/COMMAND TABLE                                        RST16420
                                       1643  *                                                              RST16430
                0000 193A              1644  OPT      EQU   *                                                RST16440
193A  5445 5354 2020                   1645  TEST     DC    C'TEST  ',X'7C0F',X'C000',0                      RST16450
1940  7C0F
1942  C000
1944  0000
1946  5444 4556 4E20                   1646  TDEVN    DC    C'TDEVN ',X'20',0,0                              RST16460
194C  0020
194E  0000
1950  0000
1952  4344 4556 4E20                   1647  CDEVN    DC    C'CDEVN ',X'22',0,0                              RST16470
1958  0022
195A  0000
195C  0000
195E  4D4F 4445 2020                   1648  MODE     DC    C'MODE  ',X'1',ZERONE,X'0'                       RST16480
1964  0001
1966  0CE0
1968  0000
196A  5041 5241 2020                   1649  PARA     DC    C'PARA  ',X'FE',PARACHK,0                        RST16490
1970  00FE
1972  0D20
1974  0000
1976  5041 4952 5320                   1650  PAIRS    DC    C'PAIRS ',X'0',PAIRCHK,0                         RST16500
197C  0000
197E  0D18
1980  0000
1982  434F 4E54 494E                   1651  CONTIN   DC    C'CONTIN',0,ZERONE,0                             RST16510
1988  0000
198A  0CE0
198C  0000
198E  434C 4F43 4B20                   1652  CLOCK    DC    C'CLOCK ',X'ABCD',CLKCHK,X'0'                    RST16520
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1994   ABCD
1996   0CF8
1998   0000
199A   4C50 4552 5220      1653  LPERR    DC    C'LPERR ',0,ZERONE,0                                  RST16530
19A0   0000
19A2   0CE0
19A4   0000
19A6   4C4F 4F50 2020      1654  LOOP     DC    C'LOOP  ',0,0,0                                       RST16540
19AC   0000
19AE   0000
19B0   0000
19B2   4E4F 4D53 4720      1655  NOMSG    DC    C'NOMSG ',0,ZERONE,0                                  RST16550
19B8   0000
19BA   0CE0
19BC   0000
19BE   494E 544C 4556      1656  INTLEV   DC    C'INTLEV',0,LEVEL,0                                   RST16560
19C4   0000
19C6   0CF0
19C8   0000
       0000 19CA           1657  OPTEND2  EQU   *                    END OF PRINTING OPTIONS          RST16570
       0000 19CA           1658  CPTEND   EQU   OPTEND2                                               RST16580
19CA   4F50 5449 4F4E      1659  OPTION   DC    C'OPTION',0,0,0                                       RST16590
19D0   0000
19D2   0000
19D4   0000
19D6   5255 4E20 2020      1660  RUN      DC    C'RUN   ',0,0,0                                       RST16600
19DC   0000
19DE   0000
19E0   0000
19E2   434F 4E20 2020      1661  CON      DC    C'CON   ',0,0,0                                       RST16610
19E8   0000
19EA   0000
19EC   0000
19EE   5449 4D56 414C      1662  TIMVAL   DC    C'TIMVAL',X'200',0,0                                  RST16620
19F4   0200
19F6   0000
19F8   0000
19FA   4445 4C41 4444      1663  DELADD   DC    C'DELADD',0,ZERONE,0                                  RST16630
1A00   0000
1A02   0CE0
1A04   0000
                           1664  *                                FOR FUTURE USE TO STRETCH DELAYS     RST16640
                           1665  *                                IF=1 THEN DELAY = 3 MS + 16 MS       RST16650
1A06   FFFF                1666        DC    -1                                                         RST16660
       0000 1971           1667  CMD2     EQU   PARA+7                                                 RST16670
                           1668  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST16680
                           1669  *                                                               *    RST16690
                           1670  *    INITIALIZATION  ROUTINE                                         RST16700
                           1671  *                                                               *    RST16710
1A08   0700                1672  INIT     XHR   R0,R0                                                  RST16720
1A0A   4000 1886           1673        STH   R0,BTESTNO           RESET THESE FLAGS TO 0               RST16730
1A0E   4000 1882           1674        STH   R0,TOTAL                                                  RST16740
1A12   4000 1884           1675        STH   R0,TOTERR                                                 RST16750
1A16   4000 187E           1676        STH   R0,WASDU                                                  RST16760
1A1A   4000 1878           1677        STH   R0,ISITERR                                                RST16770
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1A1E  C810 3030          1678          LHI   R1,C'00'                                          RST16780
1A22  4010 18B8          1679          STH   R1,MTESTNO          RESET THESE FLAGS TO C'00'      RST16790
1A26  4010 18C2          1680          STH   R1,ETESTNO                                          RST16800
1A2A  4010 18C4          1681          STH   R1,ERRNO                                            RST16810
1A2E  48C0 194C          1682          LH    TEMP,TDEVN+6        SAVE TDEVN OPTION INPUT       RST16820
1A32  40C0 3690          1683          STH   TEMP,TESLIN         STORE IN SECONDARY MEMORY     RST16830
1A36  48C0 1958          1684          LH    TEMP,CDEVN+6        SAVE RDEVN OPTION INPUT       RST16840
1A3A  40C0 3692          1685          STH   TEMP,CONLIN                                         RST16850
1A3E  48C0 1970          1686          LH    TEMP,PARA+6         LOAD PARA OPTION              RST16860
1A42  D2C0 3694          1687          STB   TEMP,CMD2SET        COPY OPTION                   RST16870
1A46  4860 197C          1688          LH    R6,PAIRS+6          LOAD # OF PAIRS               RST16880
1A4A  9161               1689  PCOUNT1 SLLS  R6,1                IF FULL MULTIPLY LINES BY 2   RST16890
1A4C  4060 3720          1690  PCOUNT2 STH   R6,PACOUNT          STORE # OF PASSES TO COMPLETE TEST RST16900
                         1691  *                                 FOR GIVEN NUMBER OF LINES     RST16910
1A50  4060 369E          1692          STH   R6,PACOUNT2         SAVE LINES OPTION COUNTER     RST16920
1A54  030E               1693          BR    RTN4                RETURN TO CALL                RST16930
                         1694  *                                                               RST16940
                         1695  *                                                               RST16950
      0000 1A56          1696  INITA   EQU   *                                                 RST16960
1A56  0B00               1697          SHR   R0,R0               ZERO OUT R0                   RST16970
1A58  4000 3680          1698          STH   R0,LBFLG            ZERO OUT LINE BREAK FLAG      RST16980
1A5C  4000 3678          1699          STH   R0,PRFLG            ZERO OUT PARITY FLAG          RST16990
1A60  4000 3682          1700          STH   R0,OVFLG            ZERO OUT OVERFLOW FLAG        RST17000
1A64  4000 34E8          1701          STH   R0,CONTER           ZERO OUT CONTER               RST17010
1A68  4000 3698          1702          STH   R0,PRTFLG           INITIALIZE PRINT FLAG         RST17020
1A6C  4000 369A          1703          STH   R0,LPERFLG          INITIALIZE LOOP ON ERROR FLAG RST17030
1A70  C800 2A2A          1704          LHI   R0,C'**'            LOAD FOR START OF EACH PASS   RST17040
1A74  4000 3530          1705          STH   R0,ERRDD            CLEAR INT DEV ADR             RST17050
1A78  4000 3540          1706          STH   R0,ERREE            CLEAR SHOULD BE ADR           RST17060
1A7C  4000 3552          1707          STH   R0,ERRFF            CLEAR LINE STATUS             RST17070
1A80  4000 3564          1708          STH   R0,ERRGG            CLEAR SHOULD BE STATUS        RST17080
1A84  4000 3576          1709          STH   R0,ERRLL            CLEAR INT DEV ADR             RST17090
1A88  4000 3586          1710          STH   R0,ERRMM            CLEAR CHAR WAS                RST17100
1A8C  4000 3596          1711          STH   R0,ERRO2            CLEAR SHOULD BE CHAR          RST17110
1A90  C800 202A          1712          LHI   R0,C' *'            LOAD FOR START OF PASS        RST17120
1A94  4000 359E          1713          STH   R0,ERRPP            CLEAR BAUD RATE               RST17130
1A98  4000 35A6          1714          STH   R0,ERRQQ            CLEAR NUMBER OF BITS          RST17140
1A9C  4000 35AC          1715          STH   R0,ERRRR            CLEAR NUMBER OF STOP BITS     RST17150
1AA0  4000 35B2          1716          STH   R0,ERRSS            CLEAR PARITY                  RST17160
1AA4  4830 3690          1717          LH    RDDEV,TESLIN        LOAD UP TDEVN                 RST17170
1AA8  4820 3692          1718          LH    CLDEV,CONLIN        LOADUP CDEVN                  RST17180
1AAC  DE30 34BA          1719          OC    RDDEV,DDRR          INIT TEST LINE RCV SIDE       RST17190
1AB0  DE20 34BA          1720          OC    CLDEV,DDRR          INIT CNTL LINE RCV SIDE       RST17200
1AB4  0843               1721          LHR   WRDEV,RDDEV         LOAD INTO WRDEV               RST17210
1AB6  48C0 1964          1722          LH    TEMP,MODE+6         CHECK MODE                    RST17220
1ABA  4330 1ACC          1723          BZ    GGOX                IF HALF DUPLEX SKIP           RST17230
1ABE  2641               1724          AIS   WRDEV,1             INCREMENT ADDRESS             RST17240
1AC0  DE40 34C0          1725          OC    WRDEV,DDRW          INIT TEST LINE SND SIDE       RST17250
1AC4  2621               1726          AIS   CLDEV,1             INCREMENT ADDRESS             RST17260
1AC6  DE20 34C0          1727          OC    CLDEV,DDRW          INIT CNTL LINE SND SIDE       RST17270
1ACA  2721               1728          SIS   CLDEV,1             RESTORE ADDRESS               RST17280
      0000 1ACC          1729  GGOX    EQU   *                                                 RST17290
1ACC  48C0 19F4          1730          LH    TEMP,TIMVAL+6       LOAD UP TIME VALUE            RST17300
1AD0  40C0 0A1E          1731          STH   TEMP,TIME           STORE INTO TIME OUT LOOP      RST17310
1AD4  48C0 1A00          1732          LH    TEMP,DELADD+6       LOAD ADDITIONAL DELAY FLAG    RST17320
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1AD8  91C4           1733          SLLS  TEMP,4              SHIFT                                  RST17330
1ADA  40C0 3696      1734          STH   TEMP,DELPLUS         STORE TO DELAY                         RST17340
1ADE  41F0 33F8      1735          BAL   R15,CLKSET           SET UP CLOCK TABLE                     RST17350
1AE2  4180 334E      1736          BAL   RTN3,CLERR           CLEAR ERRORS                           RST17360
1AE6  41F0 3454      1737          BAL   LINK,IN4CLR         CLEAR UP TO 4 PENDING INTERRIPTS       RST17370
1AEA  D3C0 3694      1738          LB    TEMP,CMD2SET        LOAD CMD2                              RST17380
1AEE  087C           1739          LHR   PAR,TEMP            TEMP=PAR                               RST17390
1AF0  4160 32B8      1740          BAL   R6,LASCI            SET UP FOR PRINT                       RST17400
      0000 1AF4      1741  PARINIT EQU   *                   PARTIAL INITIALIZE SEQUENCE            RST17410
1AF4  48C0 0000      1742          LH    TEMP,0              LOAD FOR STORE                         RST17420
1AF8  40C0 36AC      1743          STH   TEMP,DEVSADR        CLEAR                                  RST17430
1AFC  40C0 36AE      1744          STH   TEMP,DEVSADR+2      CLEAR                                  RST17440
1B00  40C0 36B0      1745          STH   TEMP,DEVSADR+4      CLEAR                                  RST17450
1B04  40C0 36B2      1746          STH   TEMP,DEVSADR+6      CLEAR                                  RST17460
1B08  48C0 3690      1747          LH    TEMP,TESLIN         LOAD DEVICE ADDRESS                    RST17470
1B0C  40C0 36AC      1748          STH   TEMP,DEVSADR        DEVICE ADDRESSES                       RST17480
1B10  4890 1964      1749          LH    SAVER,MODE+6        LOAD FOR MODE CHECK                    RST17490
1B14  4330 1B1A      1750          BZ    PARIN2              IF HALF DUPLEX, SKIP                   RST17500
1B18  26C1           1751          AIS   TEMP,1              INCREMENT ADDRESS                      RST17510
1B1A  40C0 36AE      1752  PARIN2  STH   TEMP,DEVSADR+2      STORE IN INTERRUPT TABLE               RST17520
1B1E  48C0 3692      1753          LH    TEMP,CONLIN         LOAD UP  CDEVN                         RST17530
1B22  40C0 36B0      1754          STH   TEMP,DEVSADR+4      STORE INTO INTERRUPT TABLE             RST17540
1B26  0899           1755          LHR   SAVER,SAVER         CHECK MODE                             RST17550
1B28  4330 1B2E      1756          BZ    PARIN3              IF HALF DUPLEX, SKIP                   RST17560
1B2C  26C1           1757          AIS   TEMP,1              INCREMENT ADDRESS                      RST17570
1B2E  40C0 36B2      1758  PARIN3  STH   TEMP,DEVSADR+6      STORE IN INTERRUPT TABLE               RST17580
1B32  D3C0 19C5      1759          LB    TEMP,INTLEV+7       LOAD UP INTERRUPT LEVEL                RST17590
1B36  D2C0 36BE      1760          STB   TEMP,INTLVL         STORE INTO TABLE                       RST17600
1B3A  D2C0 36BF      1761          STB   TEMP,INTLVL+1       STORE IN TABLE                         RST17610
1B3E  D2C0 36C0      1762          STB   TEMP,INTLVL+2       STORE IN TABLE                         RST17620
1B42  D2C0 36C1      1763          STB   TEMP,INTLVL+3       STORE IN TABLE                         RST17630
1B46  C8C0 33DC      1764          LHI   TEMP,BRKRSTR        LOAD BREAK VECTOR ROUTINE ADDR         RST17640
1B4A  40C0 1876      1765          STH   TEMP,BRKVECT        STORE ADDRESS                          RST17650
1B4E  030E           1766          BR    RTN4                RETURN                                 RST17660
                     1767  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * RST17670
                     1768  *                                                                        RST17680
                     1769  * TEST 1       FALSE SYNC TEST                                  *       RST17690
                     1770  *                                                                        RST17700
                     1771  * PURPOSE:                                                              RST17710
                     1772  *  TEST FOR FALSE SYNC RESPONSE FROM LINE.                              RST17720
                     1773  *                                                                        RST17730
                     1774  * DESIGN SPECIFICATION:                                                 RST17740
                     1775  *  THIS SUBTEST ATTEMPTS TO PERFORM A STATUS REQUEST ON THE RCV SIDE     RST17750
                     1776  *  OF THE TEST LINE. A STATUS OF ANYTHING OTHER THAN X'04' IS ASSUMED    RST17760
                     1777  *  CORRECT.                                                             RST17770
                     1778  *                                                                        RST17780
                     1779  * HOW TO RUN TEST 1                                                     RST17790
                     1780  *                                                                        RST17800
                     1781  * TYPE: TEST 1                                                          RST17810
                     1782  *       RUN                                                             RST17820
                     1783  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                              RST17830
                     1784  *        TDEVN                                                          RST17840
                     1785  *        CDEVN                                                          RST17850
                     1786  *        NOMSG                                                          RST17860
                     1787  *        LOOP                                                           RST17870
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                                1788  *        CONTIN                                                        RST17880
                                1789  *        MODE                                                          RST17890
                                1790  *                                                                      RST17900
                                1791  ** ERRORS THAT CAN OCCUR IN THIS TEST                                 RST17910
                                1792  * 01-STATUS REQUEST IS PREFORMED ON TEST RCV LINE WITH A FALSE SYNC     RST17920
                                1793  *    AS A RESULTING STATUS                                            RST17930
                                1794  *                                                                      RST17940
                                1795  *  THIS TEST MAY BE RUN IN HALF OR FULL DUPLEX                        RST17950
                                1796  *                                                                      RST17960
                                1797  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 1 SECOND                 RST17970
                                1798  *                                                                      RST17980
                                1799  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *      RST17990
      0000 1B50                 1800  TEST1    EQU   *                                                      RST18000
1B50  41E0 1A56                 1801           BAL   RTN4,INITA          INITIALIZE SYSTEM                  RST18010
1B54  41F0 339E                 1802           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2       RST18020
1B58  48C0 3690                 1803           LH    TEMP,TESLIN         LOAD FIRST DEVICE                  RST18030
1B5C  9DC8                      1804  NEXDEV   SSR   TEMP,STAT          SENSE STATUS                       RST18040
1B5E  C580 0004                 1805           CLHI  STAT,4              TEST FOR FALSE SYNC                RST18050
1B62  4330 1B7C                 1806           BE    FLSYNC              GO TO ERROR IF FALSE SYNC          RST18060
1B66  4890 1964                 1807           LH    SAVER,MODE+6        CHECK MODE                         RST18070
1B6A  4330 0E50                 1808           BZ    TSTEND              IF HALF DUPLEX, DONE, EXIT         RST18080
1B6E  26C1                      1809           AIS   TEMP,1              INCREMENT DEVICE                   RST18090
1B70  C3C0 0001                 1810           THI   TEMP,1              LAST ADDRESS?                      RST18100
1B74  4330 0E50                 1811           BZ    TSTEND              YES  EXIT                          RST18110
1B78  4300 1B5C                 1812  T1E01    B     NEXDEV              NO  GO TO NEXT DEVICE              RST18120
1B7C  C8A0 3031                 1813  FLSYNC   LHI   ERR2,C'01'          ERROR 01                           RST18130
1B80  4160 11A6                 1814           BAL   RTN2,ERROR1         ERROR PRINT SEQUENCE               RST18140
1B84  4300 1190                 1815           B     NGEND               ERROR EXIT SEQUENCE                RST18150
                                1816  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *      RST18160
                                1817  *                                                                      RST18170
                                1818  * TEST 2       DATA SET INPUT LINES                          *       RST18180
                                1819  *                                                                      RST18190
                                1820  * PURPOSE:                                                            RST18200
                                1821  *  VARY DATA SET INPUT LINES TO TEST LINE AND VERIFY THE STATUS WORDS  RST18210
                                1822  *  FOR EACH OF THE CHANGES.                                           RST18220
                                1823  *                                                                      RST18230
                                1824  * DESIGN SPECIFICATION:                                               RST18240
                                1825  *  IN THIS SUBTEST DATA SET INPUT LINES TO THE TEST LINE ARE CHANGED   RST18250
                                1826  *  BY COMANDING THE CNTL LINE. WITH EACH LINE CHANGE BOTH THE TEST     RST18260
                                1827  *  SND AND TEST RCV STATUS WORDS ARE CHECKED FOR THE PROPER CONDITION  RST18270
                                1828  *                                                                      RST18280
                                1829  * HOW TO RUN TEST 2                                                   RST18290
                                1830  *                                                                      RST18300
                                1831  * TYPE: TEST 2                                                        RST18310
                                1832  *       RUN                                                           RST18320
                                1833  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                            RST18330
                                1834  *        CDEVN                                                        RST18340
                                1835  *        TDEVN                                                        RST18350
                                1836  *        NOMSG                                                        RST18360
                                1837  *        LOOP                                                         RST18370
                                1838  *        CONTIN                                                       RST18380
                                1839  *        MODE                                                         RST18390
                                1840  *        LPERR                                                        RST18400
                                1841  *                                                                     RST18410
                                1842  ** ERRORS THAT CAN OCCUR IN THIS TEST                                RST18420
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                                1843  * 01-FALSE SYNC HAS OCCURRED                                                    RST18430
                                1844  * 02-RING INPUTS TO TEST LINE ACTIVE BUT STATUS OF TEST RCV LINE               RST18440
                                1845  *    INCORRECT                                                                 RST18450
                                1846  * 03-RING INPUTS TO TEST LINE ACTIVE BUT STATUS OF TEST SND LINE               RST18460
                                1847  *    INCORRECT.                                                                RST18470
                                1848  * 04-DSRDY.CAR,RCR INPUTS TO TEST LINE ACTIVE; STATUS OF TEST SND LINE         RST18480
                                1849  *    INCORRECT                                                                 RST18490
                                1850  * 05-DSRDY,CAR,RCR,INPUTS TO TEST LINE ACTIVE; STATUS OF TEST RCV LINE         RST18500
                                1851  *    INCORRECT                                                                 RST18510
                                1852  * 06-DSRDY,CAR,RCR,CL2S INPUTS TO TEST LINE ACTIVE; STATUS OF TEST RCV         RST18520
                                1853  *    LINE INCORRECT                                                            RST18530
                                1854  * 07-DSRDY,CAR,RCR,CL2S INPUTS TO TEST LINE ACTIVE; STATUS OF TEST SND         RST18540
                                1855  *    LINE INCORRECT                                                            RST18550
                                1856  *                                                                              RST18560
                                1857  *  THIS TEST MAY BE RUN IN HALF OR FULL DUPLEX                                 RST18570
                                1858  *                                                                              RST18580
                                1859  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 1 SECOND                          RST18590
                                1860  *                                                                              RST18600
                                1861  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST18610
      0000 1B88                 1862  TEST2    EQU   *                                                              RST18620
1B88  41E0 1A56                 1863           BAL   RTN4,INITA          INITIALIZE SYSTEM                        RST18630
1B8C  41F0 339E                 1864           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2             RST18640
1B90  C8C0 1B9C                 1865           LHI   TEMP,T2S            SET UP IF LOOP                           RST18650
1B94  40C0 369C                 1866           STH   TEMP,TESTAD         ON ERROR REQUIRED                        RST18660
1B98  40C0 369A                 1867           STH   TEMP,LPERFLG        SET LOOP FLAG                            RST18670
1B9C  DE30 34BA                 1868  T2S      OC    RDDEV,DDRR          TEST LINE-DIS,DTR,RCT,RD                 RST18680
1BA0  4240 1B7C                 1869           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC        RST18690
1BA4  DE20 34BC                 1870           OC    CLDEV,DR            CNTL LINE-DIS,RD                         RST18700
1BA8  4160 3340                 1871           BAL   RTN2,DELAY          DELAY 3 MILS                             RST18710
1BAC  9D38                      1872           SSR   RDDEV,STAT          SENSE STATUS ON RDDEV                    RST18720
1BAE  C480 001F                 1873           NHI   STAT,X'1F'           MASK OFF                                 RST18730
1BB2  C580 001F                 1874           CLHI  STAT,X'1F'          RING,RCR SHOULD BE SET                   RST18740
1BB6  4330 1BC6                 1875  T2E02    BE    ILOK1               IF STATUS GOOD NEXT SECTION              RST18750
1BBA  C8A0 3032                 1876           LHI   ERR2,C'02'          ERROR 02                                 RST18760
1BBE  C8C0 3146                 1877           LHI   TEMP,C'1F'          SHOULD BE STATUS                         RST18770
1BC2  4300 1140                 1878           B     STANG               ERROR PRINT SEQUENCE                     RST18780
1BC6  48C0 1964                 1879  ILOK1    LH    TEMP,MODE+6         CHECK MODE                               RST18790
1BCA  4230 1BEC                 1880           BNZ   ILM21               IF FULL DUPLEX SKIP DOWN                 RST18800
1BCE  DE30 34BD                 1881           OC    RDDEV,DDW           TEST LINE-DIS,DTR,WT                     RST18810
1BD2  4160 3340                 1882           BAL   RTN2,DELAY          DELAY                                    RST18820
1BD6  9D38                      1883           SSR   RDDEV,STAT          SENSE STATUS ON RDDEV                    RST18830
1BD8  C580 005D                 1884           CLHI  STAT,X'5D'          CL2SN,RCR,BSY,EX,RING                    RST18840
1BDC  4330 1C02                 1885           BE    ILOK2               IF GOOD GO ON                            RST18850
1BE0  C8A0 3033                 1886           LHI   ERR2,C'03'          ERROR 03                                 RST18860
1BE4  C8C0 3544                 1887           LHI   TEMP,C'5D'          SHOULD BE STATUS                         RST18870
1BE8  4300 1138                 1888           B     STANGO              T SND STAT NG                            RST18880
1BEC  9D48                      1889  ILM21    SSR   WRDEV,STAT          SENSE STATUS ON WRDEV                    RST18890
1BEE  C580 0048                 1890           CLHI  STAT,X'48'          CL2SN,BSY                                RST18900
1BF2  4330 1C02                 1891           BE    ILOK2               IF GOOD GO ON                            RST18910
1BF6  C8A0 3033                 1892           LHI   ERR2,C'03'          ERROR 03                                 RST18920
1BFA  C8C0 3438                 1893           LHI   TEMP,C'48'          SHOULD BE STATUS                         RST18930
1BFE  4300 1138                 1894           B     STANGO              T SND STAT NG                            RST18940
1C02  DE20 34BA                 1895  ILOK2    OC    CLDEV,DDRR          RAISE RCT IN CNTL                        RST18950
1C06  4160 3340                 1896           BAL   RTN2,DELAY          DELAY 3 MILS                             RST18960
1C0A  9D48                      1897           SSR   WRDEV,STAT          SENSE STATUS ON WRDEV                    RST18970
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1C0C  C580 0048          1898          CLHI  STAT,X'48'        CL2SN,BSY                    RST18980
1C10  4330 1C20          1899          BE    ILOK3             IF GOOD GO ON                RST18990
1C14  C8A0 3034          1900          LHI   ERR2,C'04'        ERROR 04                     RST19000
1C18  C8C0 3438          1901          LHI   TEMP,C'48'        SHOULD BE STATUS             RST19010
1C1C  4300 1138          1902          B     STANGO            T SND STAT NG                RST19020
1C20  DE30 34BE          1903  ILOK3   OC    RDDEV,DDR         TEST LINE TO RCV MODE        RST19030
1C24  4160 3340          1904          BAL   RTN2,DELAY        DELAY 3 MILS                 RST19040
1C28  9D38               1905          SSR   RDDEV,STAT        SENSE STATUS ON RDDEV        RST19050
1C2A  C480 001B          1906          NHI   STAT,X'1B'        MASK OFF                     RST19060
1C2E  C580 0008          1907          CLHI  STAT,8            BSY SET                      RST19070
1C32  4330 1C42          1908          BE    ILOK4             IF GOOD GO ON                RST19080
1C36  C8A0 3035          1909          LHI   ERR2,C'05'        ERROR 05                     RST19090
1C3A  C8C0 3038          1910          LHI   TEMP,C'08'        SHOULD BE STATUS             RST19100
1C3E  4300 1140          1911          B     STANG             ERROR PRINT SEQUENCE         RST19110
1C42  DE20 34C0          1912  ILOK4   OC    CLDEV,DDRW        RAISE RQ2S                   RST19120
1C46  4160 3340          1913          BAL   RTN2,DELAY        DELAY                        RST19130
1C4A  9D38               1914          SSR   RDDEV,STAT        SENSE STATUS ON RDDEV        RST19140
1C4C  C480 001B          1915          NHI   STAT,X'1B'        MASK OFF                     RST19150
1C50  C580 0008          1916          CLHI  STAT,X'8'         COMPARE WITH 8               RST19160
1C54  4330 1C64          1917          BE    ILOK5             IF GOOD GO ON                RST19170
1C58  C8A0 3036          1918          LHI   ERR2,C'06'        ERROR 06                     RST19180
1C5C  C8C0 3038          1919          LHI   TEMP,C'08'        SHOULD BE STATUS             RST19190
1C60  4300 1140          1920          B     STANG             ERROR PRINT SEQUENCE         RST19200
1C64  DE30 34BD          1921  ILOK5   OC    RDDEV,DDW         TEST LINE TO SND MODE        RST19210
1C68  4160 3340          1922          BAL   RTN2,DELAY        DELAY                        RST19220
1C6C  9D48               1923          SSR   WRDEV,STAT        SENSE STATUS IN WRDEV        RST19230
1C6E  C580 0000          1924          CLHI  STAT,0            COMPARE TO 0                 RST19240
1C72  4330 1C82          1925          BE    EXTT2             IF GOOD EXIT SEQUENCE        RST19250
1C76  C8A0 3037          1926          LHI   ERR2,C'07'        ERROR 07                     RST19260
1C7A  C8C0 3030          1927          LHI   TEMP,C'00'        SHOULD BE STATUS             RST19270
1C7E  4300 1138          1928          B     STANGO            T SND STAT NG                RST19280
1C82  4300 0E50          1929  EXTT2   B     TSTEND            GOOD TEST END                RST19290
                         1930  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  RST19300
                         1931  *                                                            RST19310
                         1932  * TEST 3  OUTPUT LINES TO DATA SET.                        *  RST19320
                         1933  *                                                            RST19330
                         1934  * PURPOSE:                                                  RST19340
                         1935  *  VARY OUTPUT LINES TO DATA SET FROM TEST LINE AND CHECK CNTL STATUS  RST19350
                         1936  *  FOR CORRECT RESULTS.                                     RST19360
                         1937  *                                                            RST19370
                         1938  * DESIGN SPECIFICATION:                                     RST19380
                         1939  *  IN THIS SUBTEST DATA SET OUTPUT LINES FROM THE TEST LINE ARE  RST19390
                         1940  *  CHANGED, THE RESULTS ARE CHECKED BY VERIFYING THE STATUS  RST19400
                         1941  *  WORDS OF BOTH THE CNTL SND AND CNTL RCV LINES.           RST19410
                         1942  *                                                            RST19420
                         1943  * HOW TO RUN TEST 3                                         RST19430
                         1944  *                                                            RST19440
                         1945  * TYPE: TEST 3                                              RST19450
                         1946  *       RUN                                                 RST19460
                         1947  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                  RST19470
                         1948  *       CDEVN                                               RST19480
                         1949  *       TDEVN                                               RST19490
                         1950  *       NOMSG                                               RST19500
                         1951  *       LOOP                                                RST19510
                         1952  *       CONTIN                                              RST19520
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                                1953  *        MODE                                                                  RST19530
                                1954  *                                                                              RST19540
                                1955  ** ERRORS THAT CAN OCCUR IN THIS TEST                                         RST19550
                                1956  * 01-FALSE SYNC HAS OCCURRED                                                  RST19560
                                1957  * 08-RING INPUT TO CNTL LINE ACTIVE; STATUS OF CNTL RCV LINE INCORRECT       RST19570
                                1958  * 09-RING INPUT TO CNTL LINE ACTIVE; STATUS OF CNTL SND LINE INCORRECT       RST19580
                                1959  * 10-DSRDY,CAR,RCR INPUTS TO CNTL LINE ACTIVE; STATUS OF CNTL SND LINE       RST19590
                                1960  *    INCORRECT                                                               RST19600
                                1961  * 11-DSRDY,CAR,RCR INPUTS TO CNTL LINE ACTIVE; STATUS OF CNTL RCV LINE       RST19610
                                1962  *    INCORRECT                                                               RST19620
                                1963  * 12-DSRDY,CAR,RCR,CL2S INPUTS TO CNTL LINE ACTIVE; STATUS OF CNTL RCV       RST19630
                                1964  *    LINE INCORRECT                                                          RST19640
                                1965  * 13-DSRDY,CAR,RCR,CL2S INPUTS TO CNTL LINE ACTIVE; STATUS OF CNTL SND       RST19650
                                1966  *    LINE INCORRECT                                                          RST19660
                                1967  *                                                                           RST19670
                                1968  *  THIS TEST MAY BE RUN IN HALF OR FULL DUPLEX                              RST19680
                                1969  *                                                                           RST19690
                                1970  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 1 SECOND                       RST19700
                                1971  *                                                                           RST19710
                                1972  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *   RST19720
      0000 1C86                 1973  TEST3    EQU   *                                                            RST19730
1C86  41E0 1A56                 1974           BAL   RTN4,INITA          INITIALIZE SYSTEM                       RST19740
1C8A  41F0 339E                 1975           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2            RST19750
1C8E  DE30 34BC                 1976           OC    RDDEV,DR            DROP RCT IN TEST                        RST19760
1C92  4240 1B7C                 1977           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC       RST19770
1C96  DE20 34BE                 1978           OC    CLDEV,DDR           DIS,DTR,RD IN CNTL                      RST19780
1C9A  4160 3340                 1979           BAL   RTN2,DELAY          DELAY  3MILS                            RST19790
1C9E  9D28                      1980           SSR   CLDEV,STAT          SENSE STATUS IN CLDEV                   RST19800
1CA0  C480 001F                 1981           NHI   STAT,X'1F'          MASK OFF                                RST19810
1CA4  C580 001F                 1982           CLHI  STAT,X'1F'          CNTL RCV STAT=X'1F'                     RST19820
1CA8  4330 1CB8                 1983           BE    OLOK1               IF GOOD GO ON                           RST19830
1CAC  C8A0 3038                 1984           LHI   ERR2,C'08'          ERROR 08                                RST19840
1CB0  C8C0 3146                 1985           LHI   TEMP,C'1F'          SHOULD BE STATUS                        RST19850
1CB4  4300 1148                 1986           B     ST1NG               C RCV STAT NG                           RST19860
1CB8  48C0 1964                 1987  OLOK1    LH    TEMP,MODE+6         CHECK MODE                              RST19870
1CBC  4230 1CDE                 1988           BNZ   OLM21               BRANCH IF MODE 2                        RST19880
1CC0  DE20 34BD                 1989           OC    CLDEV,DDW           CNTL TO SND MODE                        RST19890
1CC4  4160 3340                 1990           BAL   RTN2,DELAY          DELAY                                   RST19900
1CC8  9D28                      1991           SSR   CLDEV,STAT          SENSE STATUS ON CLDEV                   RST19910
1CCA  C580 005D                 1992           CLHI  STAT,X'5D'          COMPARE TO 5D                           RST19920
1CCE  4330 1CF6                 1993  T3E09    BE    OLOK2               IF STATUS GOOD NEXT SECTION             RST19930
1CD2  C8A0 3039                 1994           LHI   ERR2,C'09'          ERROR 09                                RST19940
1CD6  C8C0 3544                 1995           LHI   TEMP,C'5D'          SHOULD BE STATUS                        RST19950
1CDA  4300 1150                 1996           B     ST2NG               ERROR PRINT SEQUENCE                    RST19960
1CDE  2621                      1997  OLM21    AIS   CLDEV,1             INCREMENT ADDRESS                       RST19970
1CE0  9D28                      1998           SSR   CLDEV,STAT          SENSE STATUS ON CLDEV                   RST19980
1CE2  C580 0048                 1999           CLHI  STAT,X'48'          IS STATUS CORRECT                       RST19990
1CE6  4330 1CF6                 2000           BE    OLOK2               IF GOOD GO ON                           RST20000
1CEA  C8A0 3039                 2001           LHI   ERR2,C'09'          ERROR 09                                RST20010
1CEE  C8C0 3438                 2002           LHI   TEMP,C'48'          SHOULD BE STATUS                        RST20020
1CF2  4300 1150                 2003           B     ST2NG               ERROR PRINT SEQUENCE                    RST20030
1CF6  DE30 34BA                 2004  OLOK2    OC    RDDEV,DDRR          RAISE DTR,RCT IN TEST LINE              RST20040
1CFA  4160 3340                 2005           BAL   RTN2,DELAY          DELAY 3 MILS                            RST20050
1CFE  9D28                      2006           SSR   CLDEV,STAT          SENSE STATUS ON CLDEV                   RST20060
1D00  C580 0048                 2007           CLHI  STAT,X'48'          COMPARE TO 48                           RST20070
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1D04  4330 1D14          2008          BE    OLOK3              IF GOOD GO TO NEXT SECTION          RST20080
1D08  C8A0 3130          2009          LHI   ERR2,C'10'         ERROR 10                            RST20090
1D0C  C8C0 3438          2010          LHI   TEMP,C'48'         SHOULD BE STATUS                    RST20100
1D10  4300 1150          2011          B     ST2NG              ERROR PRINT SEQUENCE                RST20110
1D14  4820 3692          2012 OLOK3    LH    CLDEV,CONLIN       LOAD DEVICE ADDRESS                 RST20120
1D18  DE20 34BA          2013          OC    CLDEV,DDRR         CNTL LINE TO RCV MODE               RST20130
1D1C  4200 0000          2014          NOP   0                  NO OP DELAY                         RST20140
1D20  9D28               2015          SSR   CLDEV,STAT         SENSE STATUS ON CLDEV               RST20150
1D22  C480 001B          2016          NHI   STAT,X'1B'         MASK OFF                            RST20160
1D26  C580 0008          2017          CLHI  STAT,8             COMPARE WITH 8                      RST20170
1D2A  4330 1D3A          2018          BE    OLOK4              IF GOOD GO ON                       RST20180
1D2E  C8A0 3131          2019          LHI   ERR2,C'11'         ERROR  11                           RST20190
1D32  C8C0 3038          2020          LHI   TEMP,C'08'         SHOULD BE STATUS                    RST20200
1D36  4300 1148          2021          B     ST1NG              C RCV STAT NG                       RST20210
1D3A  DE30 34C0          2022 OLOK4    OC    RDDEV,DDRW         RAISE RQ2S IN TEST LINE             RST20220
1D3E  4160 3340          2023          BAL   RTN2,DELAY         DELAY 3 MILS                        RST20230
1D42  9D28               2024          SSR   CLDEV,STAT         SENSE STATUS ON CLDEV               RST20240
1D44  C480 001B          2025          NHI   STAT,X'1B'         MASK OFF                            RST20250
1D48  C580 0008          2026          CLHI  STAT,8             COMPARE WITH 8                      RST20260
1D4C  4330 1D5C          2027          BE    OLOK5              IF GOOD GO ON                       RST20270
1D50  C8A0 3132          2028          LHI   ERR2,C'12'         ERROR 12                            RST20280
1D54  C8C0 3038          2029          LHI   TEMP,C'08'         SHOULD BE STATUS                    RST20290
1D58  4300 1148          2030          B     ST1NG              C RCV STAT NG                       RST20300
1D5C  DE20 34BD          2031 OLOK5    OC    CLDEV,DDW          CNTL LINE TO SND MODE               RST20310
1D60  4160 3340          2032          BAL   RTN2,DELAY         DELAY                               RST20320
1D64  4890 1964          2033          LH    SAVER,MODE+6       CHECK MODE                          RST20330
1D68  4330 1D6E          2034          BZ    OLOK6              IF HALF DUPLEX, SKIP                RST20340
1D6C  2621               2035          AIS   CLDEV,1            INCREMENT ADDRESS                   RST20350
1D6E  9D28               2036 CLOK6    SSR   CLDEV,STAT         SENSE STATUS ON CLDEV               RST20360
1D70  C580 0000          2037          CLHI  STAT,0             COMPARE STATUS TO 0                 RST20370
1D74  4330 1D84          2038          BE    EXTT3              IF GOOD EXIT                        RST20380
1D78  C8A0 3133          2039          LHI   ERR2,C'13'         ERROR 13                            RST20390
1D7C  C8C0 3030          2040          LHI   TEMP,C'00'         SHOULD BE STATUS                    RST20400
1D80  4300 1150          2041          B     ST2NG              ERRROR PRINT SEQUENCE               RST20410
1D84  4300 0E50          2042 EXTT3    B     TSTEND             GOOD TEST END                       RST20420
                         2043 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *     RST20430
                         2044 *                                                                    RST20440
                         2045 * TEST 4       DISABLE INTERRUPT                              *      RST20450
                         2046 *                                                                    RST20460
                         2047 * PURPOSE:                                                           RST20470
                         2048 *  CHECK DISABLE INTERRUPT FUNCTION PREVENTS INTERRUPTS FROM OCCURRING RST20480
                         2049 *                                                                    RST20490
                         2050 * DESIGN SPECIFICATION:                                             RST20500
                         2051 *  IN THIS SUBTEST INTERRUPTS ON BOTH SIDES OF THE TEST LINE ARE     RST20510
                         2052 *  DISABLED. AN INTERRUPT IS GENERATED ON EACH SIDE OF THE TEST LINE RST20520
                         2053 *  BY DEACTIVATING THE RCR AND CL2S INPUT LINES. THE DISABLE         RST20530
                         2054 *  FUNCTION SHOULD INHIBIT THE INTERRUPT.                            RST20540
                         2055 *                                                                    RST20550
                         2056 * HOW TO RUN TEST 4                                                 RST20560
                         2057 *                                                                    RST20570
                         2058 * TYPE: TEST 4                                                      RST20580
                         2059 *       RUN                                                         RST20590
                         2060 * OPTIONS THAT AFFECT RUNNING OF THIS TEST                          RST20600
                         2061 *       CDEVN                                                       RST20610
                         2062 *       TDEVN                                                       RST20620
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                                2063  *        NOMSG                                                    RST20630
                                2064  *        LOOP                                                     RST20640
                                2065  *        CONTIN                                                   RST20650
                                2066  *        MODE                                                     RST20660
                                2067  *                                                                 RST20670
                                2068  ** ERRORS THAT CAN OCCUR IN THIS TEST                            RST20680
                                2069  * 01-FALSE SYNC HAS OCCURRED                                      RST20690
                                2070  * 14-INTERRUPT OCCURS WHILE TEST LINE IN DISABLED MODE (NOT-RCR AND RST20700
                                2071  *    NOT-CL2S INTERRUPTS GENERATED.)                              RST20710
                                2072  *                                                                 RST20720
                                2073  *  THIS TEST MAY BE RUN IN HALF OR FULL DUPLEX                    RST20730
                                2074  *                                                                 RST20740
                                2075  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 1 SECOND             RST20750
                                2076  *                                                                 RST20760
                                2077  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST20770
      0000 1D88                 2078  TEST4    EQU   *                                                  RST20780
1D88  41E0 1A56                 2079           BAL   RTN4,INITA          INITIALIZE SYSTEM              RST20790
1D8C  41F0 339E                 2080           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2   RST20800
1D90  DE20 34BB                 2081           OC    CLDEV,DRR           SET UP REV SIDES.              RST20810
1D94  4240 1B7C                 2082           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC RST20820
1D98  DE30 34C0                 2083           OC    RDDEV,DDRW          OUTPUT A WRITE TO RDDEV        RST20830
1D9C  DE20 34BF                 2084           OC    CLDEV,DRW           SET UP SND SIDES               RST20840
1DA0  DE30 34BA                 2085           OC    RDDEV,DDRR          OUTPUT A READ TO RDDEV         RST20850
1DA4  4160 3340                 2086  DSM11    BAL   RTN2,DELAY          DELAY                          RST20860
1DA8  41F0 3460                 2087           BAL   LINK,IN2CLR         CLEAR TWO PENDING INTERRUPTS   RST20870
1DAC  C8C0 1DE4                 2088           LHI   TEMP,NINT1          NPSW ADDR                      RST20880
1DB0  41F0 349E                 2089           BAL   LINK,TABINT         INITIALIZE ETPE INTERRUPT TABLE RST20890
1DB4  C8C0 40F0                 2090           LHI   TEMP,X'40F0'        ENABLE                         RST20900
1DB8  95DC                      2091           EPSR  CHAR,TEMP           PROCESSOR INTERRUPTS           RST20910
1DBA  DE20 34BC                 2092           OC    CLDEV,DR            CAUSE RCR,CL2S INTS            RST20920
1DBE  48C0 1964                 2093           LH    TEMP,MODE+6         CHECK MODE                     RST20930
1DC2  4230 1DD6                 2094           BNZ   DSM21               BRANCH IF MODE 2               RST20940
1DC6  DE30 34C0                 2095           OC    RDDEV,DDRW          TEST LINE TO WRT MODE          RST20950
1DCA  DE20 34C1                 2096           OC    CLDEV,DW            CNTL LINE TO WRT MODE          RST20960
1DCE  4160 3340                 2097           BAL   RTN2,DELAY          DELAY                          RST20970
1DD2  DE20 34BC                 2098           OC    CLDEV,DR            CAUSE CL2S INT                 RST20980
1DD6  4160 3340                 2099  DSM21    BAL   RTN2,DELAY          DELAY                          RST20990
1DDA  C8C0 00F0                 2100           LHI   TEMP,X'F0'          DISABLE                        RST21000
1DDE  95DC                      2101           EPSR  CHAR,TEMP           PROCESSOR INTERRUPTS           RST21010
1DE0  4300 0E50                 2102  T4E14    B     TSTEND              TEST GOOD FINISH               RST21020
      0000 1DE4                 2103  NINT1    EQU   *                                                  RST21030
1DE4  C8A0 3134                 2104           LHI   ERR2,C'14'          ERROR 14                       RST21040
1DE8  4300 1114                 2105           B     NINTNG              ERROR PRINT SEQUENCE           RST21050
                                2106  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST21060
                                2107  *                                                                RST21070
                                2108  * TEST 5  INTERRUPT QUEUE                                 *      RST21080
                                2109  *                                                                RST21090
                                2110  * PURPOSE:                                                       RST21100
                                2111  *  ALLOW INTERRUPTS TO BE QUEUED.                                RST21110
                                2112  *                                                                RST21120
                                2113  * DESIGN SPECIFICATION:                                          RST21130
                                2114  * IN THIS SUBTEST PENDING INTERRUPTS ARE CLEARED UPON ENTRY. THE RST21140
                                2115  * RCR AND CL2S INTERRUPTS ARE GENERATED AND ALLOWED TO BE QUEUED. RST21150
                                2116  * MODE 2 ONLY,IN MODE 1 ONLY RCR CAN BE QUEUED SINCE THE LINE IS IN RCV RST21160
                                2117  *  MODE. THE INTERRUPTING ADDRESS AND STATUS ARE CHECKED. THEN THE RST21170
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                        2118  *  PROGRAM CHECKS THAT THE PROCESSOR CLEARS THE INTERRUPT                RST21180
                        2119  *  FLIP-FLOP ON THE LINE.                                               RST21190
                        2120  *   FOR MODE 2, THE SND INTERRUPT IS ALLOWED TO OCCUR. FOR MODE 1, THE  RST21200
                        2121  *  TEST LINE IS PUT IN THE SND MODE AND THE CL2S INTERRUPT IS           RST21210
                        2122  *  REGENERATED AND ALLOWED TO OCCUR. THE INTERRUPT ADDRESS AND STATUS   RST21220
                        2123  *  ARE CHECKED, THEN THE PROGRAM CHECKS THAT THE PROCESSOR CLEARED      RST21230
                        2124  *  THE INTERRUPT BEFORE GOING ON TO THE NEXT TEST.                      RST21240
                        2125  *                                                                       RST21250
                        2126  * HOW TO RUN TEST 5                                                    RST21260
                        2127  *                                                                       RST21270
                        2128  * TYPE: TEST 5                                                         RST21280
                        2129  *       RUN                                                            RST21290
                        2130  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                             RST21300
                        2131  *       CDEVN                                                          RST21310
                        2132  *       TDEVN                                                          RST21320
                        2133  *       NOMSG                                                          RST21330
                        2134  *       LOOP                                                           RST21340
                        2135  *       CONTIN                                                         RST21350
                        2136  *       MODE                                                           RST21360
                        2137  *                                                                       RST21370
                        2138  ** ERRORS THAT CAN OCCUR IN THIS TEST                                 RST21380
                        2139  * 01-FALSE SYNC HAS OCCURRED                                           RST21390
                        2140  * 15-TRANSITION OF RCR TO NOT-RCR INTERRUPT NOT QUEUED ON TEST RCV LINE RST21400
                        2141  * 16-TRANSITION OF RCR TO NOT-RCR INTERRUPT QUEUED ON TEST RCV LINE    RST21410
                        2142  *    BUT INTERRUPT ADDRESS INCORRECT                                    RST21420
                        2143  * 17-TRANSISTION OF RCR TO NOT-RCR INTERRUPT QUEUED ON TEST RCV LINE   RST21430
                        2144  *    BUT STATUS INCORRECT                                               RST21440
                        2145  * 18-ACKNOWLEDGE INTERRUPT ON TEST LINE DID NOT CLEAR INTERRUPT FLIP-  RST21450
                        2146  *    FLOP                                                               RST21460
                        2147  * 19-TRANSITION OF CL2S TO NOT-CL2S INTERRUPT NOT QUEUED ON TEST       RST21470
                        2148  *    SND LINE                                                           RST21480
                        2149  * 20-TRANSITION OF CL2S TO NOT CL2 INTERRUPT QUEUED BUT INTERRUPT      RST21490
                        2150  *    ADDRESS INCORRECT                                                  RST21500
                        2151  * 21-TRANSITION OF CL2S TO NOT CL2S INTERRUPT QUEUED BUT STATUS        RST21510
                        2152  *    INCORRECT                                                          RST21520
                        2153  * 22-TRANSITION OF CL2S TO NOT CL2S INTERRUPT NOT DISARMED WHILE       RST21530
                        2154  *    TEST LINE WAS IN SND MODE.                                         RST21540
                        2155  *                                                                       RST21550
                        2156  *  THIS TEST MAY BE RUN IN HALF OR FULL DUPLEX                         RST21560
                        2157  *                                                                       RST21570
                        2158  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 1 SECOND                  RST21580
                        2159  *                                                                       RST21590
                        2160  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *     RST21600
    0000 1DEC           2161  TEST5    EQU   *                                                      RST21610
1DEC 41E0 1A56          2162           BAL   RTN4,INITA          INITIALIZE SYSTEM                  RST21620
1DF0 41F0 339E          2163           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2       RST21630
1DF4 4180 3356          2164           BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH LINES        RST21640
1DF8 DE20 34BB          2165           OC    CLDEV,DRR           INIT CNTL LINE                     RST21650
1DFC 4240 1B7C          2166           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC  RST21660
1E00 DE20 34BF          2167           OC    CLDEV,DRW           OUTPUT A WRITE TO CLDEV            RST21670
1E04 DE30 34C2          2168           OC    RDDEV,EDR           ENABLE INTS                        RST21680
1E08 DE40 34C3          2169           OC    WRDEV,EDW           ENABLE INTS                        RST21690
1E0C 4160 3340          2170           BAL   RTN2,DELAY          DELAY                              RST21700
1E10 41F0 3460          2171           BAL   LINK,IN2CLR         CLEAR TWO PENDING INTERRUPTS       RST21710
1E14 C8C0 1E3A          2172           LHI   TEMP,INT51          NPSW ADDR                          RST21720
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1E18  41F0 349E          2173          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE      RST21730
1E1C  DE40 34BD          2174          OC    WRDEV,DDW         DIS INTS                             RST21740
1E20  DE30 34C2          2175          OC    RDDEV,EDR         ENABLE INTS                          RST21750
1E24  DE20 34BC          2176          OC    CLDEV,DR          GEN CL2SN,RCR INTS                   RST21760
1E28  4160 3340          2177          BAL   RTN2,DELAY        DELAY                                RST21770
1E2C  C8C0 40F0          2178          LHI   TEMP,X'40F0'      ENABLE                               RST21780
1E30  95DC               2179          EPSR  CHAR,TEMP         PROCESSOR INTERRUPTS                 RST21790
1E32  C8A0 3135          2180          LHI   ERR2,C'15'        ERROR 15                             RST21800
1E36  4300 110C          2181          B     INTNG             ERROR PRINT SEQUENCE                 RST21810
      0000 1E3A          2182  INT51   EQU   *                                                      RST21820
1E3A  4830 3690          2183          LH    RDDEV,TESLIN      LOAD DEVICE ADDRESS                  RST21830
1E3E  41F0 34B0          2184          BAL   LINK,STDAS        LOAD INT DEV AND STST                RST21840
1E42  0573               2185          CLHR  DEV,RDDEV         IS DEVICE CORRECT                    RST21850
1E44  4330 1E50          2186  T5E16   BE    ADOK51            IFF DEVICES MATCH NEXT SECTION       RST21860
1E48  C8A0 3136          2187          LHI   ERR2,C'16'        ERROR 16                             RST21870
1E4C  4300 1120          2188          B     ADRNG1            ADDR INCORRECT                       RST21880
1E50  C480 001F          2189  ADOK51  NHI   STAT,X'1F'       MASK OFF                             RST21890
1E54  C580 001F          2190          CLHI  STAT,X'1F'        IS STAT CORRECT                      RST21900
1E58  4330 1E68          2191          BE    STOK51            IF GOOD GO ON                        RST21910
1E5C  C8A0 3137          2192          LHI   ERR2,C'17'        ERROR 17                             RST21920
1E60  C8C0 3146          2193          LHI   TEMP,C'1F'        SHOULD BE STATUS                     RST21930
1E64  4300 1140          2194          B     STANG             READ STAT INCORRECT                  RST21940
1E68  C8C0 1EC2          2195  STOK51  LHI   TEMP,NINT51        LOAD VECTOR ADDRESS                  RST21950
1E6C  41F0 349E          2196          BAL   LINK,TABINT        INITIALIZE ETPE INTERRUPT TABLE      RST21960
1E70  C8C0 40F0          2197          LHI   TEMP,X'40F0'      ENABLE                               RST21970
1E74  95DC               2198          EPSR  CHAR,TEMP         PROCESSOR INTERRUPTS                 RST21980
1E76  C8C0 00F0          2199          LHI   TEMP,X'F0'        DISABLE                              RST21990
1E7A  95DC               2200          EPSR  CHAR,TEMP         PROCESSOR INTERRUPTS                 RST22000
1E7C  DE30 34BE          2201          OC    RDDEV,DDR         DIS INTS ON RCV SIDE                 RST22010
1E80  DE40 34BD          2202          OC    WRDEV,DDW         DIS INTS ON SND SIDE.                RST22020
1E84  C8C0 1ECA          2203          LHI   TEMP,INT52        LOAD VECTOR ADDRESS                  RST22030
1E88  41F0 349E          2204          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE      RST22040
1E8C  48C0 1964          2205          LH    TEMP,MODE+6       CHECK MODE                           RST22050
1E90  4230 1EAC          2206          BNZ   QIM2              BRANCH IF MODE 2                     RST22060
1E94  4160 3340          2207          BAL   RTN2,DELAY        DELAY                                RST22070
1E98  C8C0 1EF6          2208          LHI   TEMP,INT53        LOAD VECTOR ADDRESS                  RST22080
1E9C  41F0 349E          2209          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE      RST22090
1EA0  DE20 34C1          2210          OC    CLDEV,DW          RAISE RQ2S                           RST22100
1EA4  4160 3340          2211          BAL   RTN2,DELAY        DELAY                                RST22110
1EA8  DE20 34BC          2212          OC    CLDEV,DR          DROP RQ2S                            RST22120
      0000 1EAC          2213  QIM2    EQU   *                                                      RST22130
1EAC  DE40 34C3          2214          OC    WRDEV,EDW         OUTPUT A WRITE TO WRDEV              RST22140
1EB0  C8C0 40F0          2215          LHI   TEMP,X'40F0'      ENABLE                               RST22150
1EB4  95DC               2216          EPSR  CHAR,TEMP         PROCESSOR INTERRUPT                  RST22160
1EB6  4160 3340          2217          BAL   RTN2,DELAY        DELAY                                RST22170
1EBA  C8A0 3139          2218          LHI   ERR2,C'19'        ERROR 19                             RST22180
1EBE  4300 110C          2219          B     INTNG             CL2S INT NOT QUEUED                  RST22190
      0000 1EC2          2220  NINT51  EQU   *                                                      RST22200
1EC2  C8A0 3138          2221          LHI   ERR2,C'18'        ERROR 18                             RST22210
1EC6  4300 1114          2222          B     NINTNG            ACK DIDN'T CLEAR INT                 RST22220
      0000 1ECA          2223  INT52   EQU   *                                                      RST22230
1ECA  4840 3690          2224          LH    WRDEV,TESLIN      LOAD UP TDEVN                        RST22240
1ECE  2641               2225          AIS   WRDEV,1           ADD ONE TO WRDEV 19                  RST22250
1ED0  41F0 34B0          2226          BAL   LINK,STDAS        LOAD INT DEV AND STATUS              RST22260
1ED4  0574               2227          CLHR  DEV,WRDEV         IS DEVICE CORRECT                    RST22270
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1ED6   4330 1EE2          2228           BE    AOK52              IF GOOD GO ON                          RST22280
1EDA   C8A0 3232          2229           LHI   ERR2,C'22'         ERROR 22                               RST22290
1EDE   4300 1128          2230           B     ADRNG2             ERROR PRINT SEQUENCE                   RST22300
1EE2   C580 0048          2231  AOK52    CLHI  STAT,X'48'         IS STATUS CORRECT                      RST22310
1EE6   4330 1F20          2232           BE    STOK52             IF GOOD GO ON                          RST22320
1EEA   C8A0 3231          2233           LHI   ERR2,C'21'         ERROR  21                              RST22330
1EEE   C8C0 3438          2234           LHI   TEMP,C'48'         SHOULD BE STATUS                       RST22340
1EF2   4300 1138          2235           B     STANGO             T SND STAT NG                          RST22350
       0000 1EF6          2236  INT53    EQU   *                                                         RST22360
1EF6   4830 3690          2237           LH    RDDEV,TESLIN       LOAD UP TDEVN                          RST22370
1EFA   41F0 34B0          2238           BAL   LINK,STDAS          LOAD UP INT DEV AND STATUS             RST22380
1EFE   0573               2239           CLHR  DEV,RDDEV          IS DEVICE CORRECT                      RST22390
1F00   4330 1F0C          2240           BE    AOK53              IF GOOD GO ON                          RST22400
1F04   C8A0 3230          2241           LHI   ERR2,C'20'         ERROR 20                               RST22410
1F08   4300 1120          2242           B     ADRNG1             ERROR PRINT SEQUENCE                   RST22420
1F0C   C580 005D          2243  AOK53    CLHI  STAT,X'5D'         IS STATUS CORRECT                      RST22430
1F10   4330 1F20          2244           BE    STOK52             IF GOOD GO ON                          RST22440
1F14   C8A0 3231          2245           LHI   ERR2,C'21'         ERROR 21                               RST22450
1F18   C8C0 3544          2246           LHI   TEMP,C'5D'         SHOULD BE STATUS                       RST22460
1F1C   4300 1138          2247           B     STANGO             T SND STAT NG                          RST22470
1F20   C8C0 1EC2          2248  STOK52   LHI   TEMP,NINT51        LOAD UP VECTOR ADDRESS                 RST22480
1F24   41F0 349E          2249           BAL   LINK,TABINT        INITIALIZE VECTOR TABLE                RST22490
1F28   C8C0 40F0          2250           LHI   TEMP,X'40F0'       ENABLE                                 RST22500
1F2C   95DC               2251           EPSR  CHAR,TEMP          PROCESSOR INTERRUPTS                   RST22510
1F2E   C8C0 00F0          2252           LHI   TEMP,X'F0'         DISABLE                                RST22520
1F32   95DC               2253           EPSR  CHAR,TEMP          PROCESSOR INTERRUPTS                   RST22530
1F34   4300 0E50          2254           B     TSTEND             GOOD TEST END                          RST22540
                          2255  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST22550
                          2256  *                                                                        RST22560
                          2257  * TEST 6        HARDWARE DISARM (HDX)                          *        RST22570
                          2258  *                                                                        RST22580
                          2259  * PURPOSE:                                                              RST22590
                          2260  *  TEST HARDWARE DISARM FUNCTION.                                       RST22600
                          2261  *                                                                        RST22610
                          2262  * DESIGN SPECIFICATION:                                                  RST22620
                          2263  *  IN THIS SUBTEST IF MODE2 IS SELECTED THE PROGRAM PRINTS AN ERROR      RST22630
                          2264  *  MESSAGE INDICATING FULL DUPLEX MUST NOT BE USED ON THIS TEST. BUT     RST22640
                          2265  *  WHEN MODE 1 IS SELECTED THE TEST LINE IS PLACED IN THE RCV MODE       RST22650
                          2266  *  AND AN INTERRUPT IS GENERATED ON THE SND SIDE. AFTER A DELAY TO       RST22660
                          2267  *  ALLOW THE INTERRUPT TO OCCUR, THE TEST LINE IS PUT IN THE EN, SND     RST22670
                          2268  *  MODE; NO INTERRUPT SHOULD OCCUR SINCE, WHILE IN THE RCV MODE         RST22680
                          2269  *  INTERRUPTS ARE DISARMED ON THE SND SIDE.                             RST22690
                          2270  *   WITH THE TEST LINE IN THE SND MODE, AN INTERRUPT IS GENERATED       RST22700
                          2271  *  ON THE RCV SIDE. AFTER A DELAY TO ALLOW THE INTERRUPT TO OCCUR       RST22710
                          2272  *  THE TEST LINE IS PUT IN THE EN,RCV MODE; NO INTERRUPT SHOULD OCCUR   RST22720
                          2273  *  SINCE,WHILE IN THE SND MODE, INTERRUPTS ARE DISARMED ON THE RCV      RST22730
                          2274  *  SIDE.                                                               RST22740
                          2275  *                                                                      RST22750
                          2276  * HOW TO RUN TEST 6                                                    RST22760
                          2277  *                                                                      RST22770
                          2278  * TYPE: MODE 0                                                         RST22780
                          2279  *       TEST 6                                                         RST22790
                          2280  *       RUN                                                            RST22800
                          2281  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                             RST22810
                          2282  *        CDEVN                                                         RST22820
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                                2283  *        TDEVN                                                          RST22830
                                2284  *        NOMSG                                                          RST22840
                                2285  *        LOOP                                                           RST22850
                                2286  *        CONTIN                                                         RST22860
                                2287  *        MODE                                                           RST22870
                                2288  *                                                                       RST22880
                                2289  ** ERRORS THAT CAN OCCUR IN THIS TEST                                  RST22890
                                2290  * 01-FALSE SYNC HAS OCCURRED                                           RST22900
                                2291  * 22-TRANSITION OF CL2S TO NOT CL2S INTERRUPT NOT DISARMED WHILE       RST22910
                                2292  *    TEST LINE WAS IN RCV MODE                                         RST22920
                                2293  * 23-TRANSITION OF NOT CAR TO CAR INTERRUPT NOT DISARMED WHILE TEST     RST22930
                                2294  *    LINE WAS IN SND MODE.                                             RST22940
                                2295  *                                                                       RST22950
                                2296  *  THIS TEST RUNS IN HALF DUPLEX ONLY                                  RST22960
                                2297  *                                                                       RST22970
                                2298  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 1 SECOND                  RST22980
                                2299  *                                                                       RST22990
                                2300  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *   RST23000
      0000 1F38                 2301  TEST6    EQU   *                                                       RST23010
1F38  41E0 1A56                 2302           BAL   RTN4,INITA          INITIALIZE SYSTEM                  RST23020
1F3C  41F0 339E                 2303           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2       RST23030
1F40  48C0 1964                 2304           LH    TEMP,MODE+6         CHECK MODE                         RST23040
1F44  4230 3286                 2305           BNZ   NOTEST1             NOT HALF DUP PRINT CAUTION         RST23050
1F48  4180 3356                 2306           BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH LINES        RST23060
1F4C  DE30 34BE                 2307           OC    RDDEV,DDR           TEST LINE TO RCV MODE              RST23070
1F50  4240 1B7C                 2308           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC  RST23080
1F54  DE20 34C1                 2309           OC    CLDEV,DW            CNTL LINE TO SND MODE              RST23090
1F58  4160 3340                 2310           BAL   RTN2,DELAY          DELAY                              RST23100
1F5C  DE20 34BC                 2311           OC    CLDEV,DR            CAUSE CL2SN INT ON SND SIDE        RST23110
1F60  4160 3340                 2312           BAL   RTN2,DELAY          DELAY                              RST23120
1F64  DE30 34C3                 2313           OC    RDDEV,EDW           TEST LINE TO SND MODE              RST23130
1F68  4160 3340                 2314           BAL   RTN2,DELAY          DELAY                              RST23140
1F6C  C8C0 1FAC                 2315           LHI   TEMP,NINT6          NPSW ADDR                          RST23150
1F70  41F0 349E                 2316           BAL   LINK,TABINT         INITIALIZE ETPE INTERRUPT TABLE    RST23160
1F74  C8C0 40F0                 2317           LHI   TEMP,X'40F0'        ENABLE                             RST23170
1F78  95DC                      2318           EPSR  CHAR,TEMP           PROCESSOR INTERRUPTS               RST23180
1F7A  C8C0 00F0                 2319           LHI   TEMP,X'F0'         DISABLE                            RST23190
1F7E  95DC                      2320           EPSR  CHAR,TEMP           PROCESSOR INTERRUPTS               RST23200
1F80  C8C0 1FB8                 2321           LHI   TEMP,NINT61         NEW PSW ADDR                       RST23210
1F84  41F0 349E                 2322           BAL   LINK,TABINT         INITIALIZE ETPE INTERRUPT TABLE    RST23220
1F88  DE30 34BD                 2323           OC    RDDEV,DDW           DIS INTS                           RST23230
1F8C  DE20 34BE                 2324           OC    CLDEV,DDR           CAUSE CAR INT ON RCV SIDE          RST23240
1F90  4160 3340                 2325           BAL   RTN2,DELAY          DELAY                              RST23250
1F94  DE30 34C2                 2326           OC    RDDEV,EDR           ENABLE INTS ON RCV SIDE            RST23260
1F98  4160 3340                 2327           BAL   RTN2,DELAY          DELAY                              RST23270
1F9C  C8C0 40F0                 2328           LHI   TEMP,X'40F0'        ENABLE                             RST23280
1FA0  95DC                      2329           EPSR  CHAR,TEMP           PROCESSOR INTERRUPTS               RST23290
1FA2  C8C0 C0F0                 2330           LHI   TEMP,X'F0'         DISABLE                            RST23300
1FA6  95DC                      2331           EPSR  CHAR,TEMP           PROCESSOR INTERRUPTS               RST23310
1FA8  4300 0E50                 2332  T6E22    B     TSTEND              TEST GOOD FINISH                   RST23320
      0000 1FAC                 2333  NINT6    EQU   *                                                       RST23330
1FAC  41F0 34B0                 2334           BAL   LINK,STDAS          LOAD INT DEV ADR                   RST23340
1FB0  C8A0 3232                 2335           LHI   ERR2,C'22'          ERROR 22                           RST23350
1FB4  4300 1114                 2336           B     NINTNG              HDWR DISARM NOT WORKING.           RST23360
      0000 1FB8                 2337  NINT61   EQU   *                                                       RST23370
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1FB8   41F0 34B0          2338           BAL   LINK,STDAS          LOAD INT DEV ADR                    RST23380
1FBC   C8A0 3233          2339           LHI   ERR2,C'23'          ERROR 23                            RST23390
1FC0   4300 1114          2340           B     NINTNG              HDWR DISARM NOT WORKING             RST23400
                          2341  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *   RST23410
                          2342  *                                                                       RST23420
                          2343  * TEST 7        INTERRUPT SOURCES (HDX)                          *      RST23430
                          2344  *                                                                       RST23440
                          2345  * PURPOSE:                                                             RST23450
                          2346  *  VERIFY THAT EACH OF THE POSSIBLE INTERRUPT SOURCES CAN GENERATE     RST23460
                          2347  *  INTERRUPTS.                                                         RST23470
                          2348  *                                                                       RST23480
                          2349  * DESIGN SPECIFICATION:                                                RST23490
                          2350  *  IN THIS SUBTEST INTERRUPT SOURCES ARE CHECKED SEPARATELY.           RST23500
                          2351  *  WITH EACH INTERRUPT A TIME-OUT OF APPROXIMATELY 3 MILLLSECONDS      RST23510
                          2352  *  IS ALLOWED BEFORE IT IS DETERMINED THAT THE INTERRUPT               RST23520
                          2353  *  DID NOT OCCUR. UPON DETECTION OF AN INTERRUPT, THE DEVICE           RST23530
                          2354  *  ADDRESS AND STATUS ARE CHECKED FOR PROPER RESULTS.                  RST23540
                          2355  *                                                                       RST23550
                          2356  * HOW TO RUN TEST 7                                                    RST23560
                          2357  *                                                                       RST23570
                          2358  * TYPE: MODE 0                                                         RST23580
                          2359  *       PARA AB  (WHERE AB SPECIFIES PARTICULAR CLOCK AND BIT COMB.)    RST23590
                          2360  *       TEST 7                                                         RST23600
                          2361  *       RUN                                                            RST23610
                          2362  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                             RST23620
                          2363  *        CDEVN                                                         RST23630
                          2364  *        TDEVN                                                         RST23640
                          2365  *        NOMSG                                                         RST23650
                          2366  *        LOOP                                                          RST23660
                          2367  *        CONTIN                                                        RST23670
                          2368  *        MODE                                                          RST23680
                          2369  *        PARA                                                          RST23690
                          2370  *        LPERR                                                         RST23700
                          2371  *                                                                       RST23710
                          2372  ** ERRORS THAT CAN OCCUR IN THIS TEST                                 RST23720
                          2373  * 01-FALSE SYNC HAS OCCURRED                                           RST23730
                          2374  * 24-TRANSISTION OF NOT-CAR TO CAR DID NOT GENERATE INTERRUPT ON TEST  RST23740
                          2375  *    RCV LINE                                                          RST23750
                          2376  * 25-TRANSITION OF NOT-CAR TO CAR GENERATED AN INTERRUPT ON TEST RCV   RST23760
                          2377  *    LINE BUT INTERRUPT ADDRESS INCORRECT.                             RST23770
                          2378  * 26-TRANSITION OF NOT-CAR TO CAR GENERATED AN INTERRUPT ON TEST RCV   RST23780
                          2379  *    LINE BUT TEST RCV STATUS INCORRECT                                RST23790
                          2380  * 27-TRANSISTION OF CAR/DSRDY TO NOT(CAR/DSRDY) DID NOT GENERATE       RST23800
                          2381  *    INTERRUPT ON TEST RCV LINE.                                       RST23810
                          2382  * 28-TRANSITION OF CAR/DSRDY TO NOT(CAR/DSRDY) GENERATED INTERRUPT ON  RST23820
                          2383  *    TEST RCV LINE BUT INTERRUPT ADDRESS INCORRECT.                    RST23830
                          2384  * 29-TRANSITION OF CAR/DSRDY TO NOT(CAR/DSRDY) GENERATED INTERRUPT ON  RST23840
                          2385  *    TEST RCV LINE BUT STATUS INCORRECT                                RST23850
                          2386  * 30-TRANSITION OF RCR/NOT-RING TO NOT-RCR/RING DIP NOT GENERATE       RST23860
                          2387  *    INTERRUPT ON TEST RCV LINE.                                       RST23870
                          2388  * 31-TRANSITION OF RCR/NOT-RING TO NOT-RCR/RING GENERATED INTERRUPT ON  RST23880
                          2389  *    TEST RCV LINE BUT ADDRESS INCORRECT                               RST23890
                          2390  * 32-TRANSITION OF RCR/NOT-RING TO NOT-RCR/RING GENERATED INTERRUPT ON  RST23900
                          2391  *    TEST RCV LINE BUT STATUS INCORRECT.                               RST23910
                          2392  * 33-TRANSITION OF NOT RCR TO RCR DID NOT GENERATE AN INTERRUPT ON     RST23920
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                                2393  *    TEST RCV LINE                                                    RST23930
                                2394  * 34-TRANSITION OF RCR TO NOT RCR GENERATED AN INTERRUPT ON TEST RCV  RST23940
                                2395  *    LINE BUT INTERRUPT ADDRESS INCORRECT                             RST23950
                                2396  * 35-TRANSITION OF NOT RCR TO RCR GENERATED AN INTERRUPT ON TEST RCV  RST23960
                                2397  *    LINE BUT STATUS INCORRECT                                        RST23970
                                2398  * 36-CHARACTERS TRANSMITTED FROM CNTL TO TEST LINE BUT DID NOT GET A  RST23980
                                2399  *    RECEIVE CHARACTER INTERRUPT ON TEST RCV LINE                     RST23990
                                2400  * 37-RECEIVED CHARACTER GENERATED AN INTERRUPT ON TEST RCV LINE       RST24000
                                2401  *    BUT INTERRUPT ADDRESS INCORRECT                                  RST24010
                                2402  * 38-RECEIVED CHARACTER GENERATED AN INTERRUPT ON TEST RCV LINE       RST24020
                                2403  *    BUT STATUS INCORRECT                                             RST24030
                                2404  * 39-TRANSITION OF RCR/NOT-RING TO NOT-RCR/RING DID NOT GENERATED AN  RST24040
                                2405  *    INTERRUPT ON TEST SND LINE.                                      RST24050
                                2406  * 40-TRANSITION OF RCR/NOT-RING TO NOT-RCR/RING GENERATED AN INTERRUPT RST24060
                                2407  *    ON TEST SND LINE BUT ADDRESS INCORRECT.                          RST24070
                                2408  * 41-TRANSITION OF RCR/NOT-RING TO NOT-RCR/RING GENERATED AN INTERRUPT RST24080
                                2409  *    ON TEST SND LINE BUT STATUS INCORRECT                            RST24090
                                2410  * 42-TRANSITION OF BSY TO NOT BSY DID NOT GENERATE AN INTERRUPT ON     RST24100
                                2411  *    TEST SND LINE                                                    RST24110
                                2412  * 43-TRANSITION OF BSY TO NOT BSY GENERATED AN INTERRUPT CN TEST SND  RST24120
                                2413  *    LINE BUT INTERRUPT ADDRESS INCORRECT                             RST24130
                                2414  * 44-TRANSITION OF BSY TO NOT BSY GENERATED AN INTERRUPT ON TEST SND  RST24140
                                2415  *    LINE BUT STATUS INCORRECT                                        RST24150
                                2416  * 45-TRANSITION OF CL2S TO NOT CL2S DID NOT GENERATE AN INTERRUPT ON  RST24160
                                2417  *    TEST SND LINE.                                                   RST24170
                                2418  * 46-TRANSITION OF CL2S TO NOT CL2S GENERATED AN INTERRUPT ON THE TEST RST24180
                                2419  *    SND LINE BUT THE INTERRUP ADDRESS WAS INCORRECT                  RST24190
                                2420  * 47-TRANSITION OF CL2S TO NOT CL2S GENERATED AN INTERRUPT ON THE     RST24200
                                2421  *    TEST SND LINE BUT THE STATUS WAS INCORRECT.                      RST24210
                                2422  * 70-CNTL SND BUSY STATUS BIT INCORRECT WHEN READY TO TRANSMIT CHAR.  RST24220
                                2423  * 71-CNTL RCV BUSY STATUS BIT INCORRECT WHEN CHARACTER ASSEMBLY       RST24230
                                2424  * 76-BSY STATUS BIT ON TEST SND LINE SET WHILE NO CHARACTER          RST24240
                                2425  *    TRANSFER IN PROGRESS                                             RST24250
                                2426  *                                                                     RST24260
                                2427  *  THIS TEST RUNS IN HALF DUPLEX ONLY                                RST24270
                                2428  *                                                                     RST24280
                                2429  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 1 SECOND                RST24290
                                2430  *                                                                     RST24300
                                2431  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *   RST24310
          0000 1FC4             2432  TEST7    EQU   *                                                     RST24320
1FC4      41E0 1A56             2433           BAL   RTN4,INITA          INITIALIZE SYSTEM                 RST24330
1FC8      41F0 339E             2434           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2      RST24340
1FCC      48C0 1964             2435           LH    TEMP,MODE+6         CHECK MODE                        RST24350
1FD0      4230 3286             2436           BNZ   NOTEST1             IF NOT HALF DUP PRINT CAUTION     RST24360
1FD4      4180 3356             2437           BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH LINES       RST24370
          0000 1FD8             2438  SCAR     EQU   *                                                     RST24380
1FD8      C8C0 1FD8             2439           LHI   TEMP,SCAR           SET UP IF LOOP                    RST24390
1FDC      40C0 369C             2440           STH   TEMP,TESTAD         ON ERROR REQUIRED                 RST24400
1FE0      40C0 369A             2441           STH   TEMP,LPERFLG        SET LOOP FLAG                     RST24410
1FE4      DE30 34C4             2442           OC    RDDEV,ER            OUTPUT RESD TO RDDEV              RST24420
1FE8      4240 1B7C             2443           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC RST24430
1FEC      DE20 34BB             2444           OC    CLDEV,DRR                                             RST24440
1FF0      4160 3340             2445           BAL   RTN2,DELAY          DELAY 3 MILS                      RST24450
1FF4      41F0 3466             2446           BAL   LINK,IN1CLR         CLEAR ONE PENDING INTERRUPT       RST24460
1FF8      C8C0 2016             2447           LHI   TEMP,CARH1          LOAD VECTOR ADDRESS               RST24470
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1FFC  41F0 349E          2448          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE      RST24480
2000  C8C0 40F0          2449          LHI   TEMP,X'40F0'      ENABLE                               RST24490
2004  95DC               2450          EPSR  CHAR,TEMP         PROCESSOR INTERRUPTS                 RST24500
2006  DE20 34BA          2451          OC    CLDEV,DDRR        ACTIVATE CARRIER                     RST24510
200A  4160 3340          2452          BAL   RTN2,DELAY        DELAY 3 MILS                         RST24520
200E  C8A0 3234          2453          LHI   ERR2,C'24'       ERROR 24                             RST24530
2012  4300 110C          2454          B     INTNG             CARRIER DIDNT CAUSE INT              RST24540
      0000 2016          2455  CARH1   EQU   *                                                      RST24550
2016  4830 3690          2456          LH    RDDEV,TESLIN      RESTORE DEVICE ADDRESS               RST24560
201A  41F0 34B0          2457          BAL   LINK,STDAS        LOAD UP INT DEV AND STATUS           RST24570
201E  0573               2458          CLHR  DEV,RDDEV         IS DEVICE CORRECT                    RST24580
2020  4330 202C          2459  T7E25   BE    AOK71             IF DEVICES MATCH NEXT SECTION        RST24590
2024  C8A0 3235          2460          LHI   ERR2,C'25'       ERROR 25                             RST24600
2028  4300 1120          2461          B     ADRNG1            INT ADDR INCORRECT                   RST24610
202C  C480 001B          2462  AOK71   NHI   STAT,X'1B'       MASK OFF                             RST24620
2030  C580 0008          2463          CLHI  STAT,X'08'        IS STATUS CORRECT                    RST24630
2034  4330 2044          2464          BE    SOK71             IF GOOD GO ON                        RST24640
2038  C8A0 3236          2465          LHI   ERR2,C'26'       ERROR 26                             RST24650
203C  C8C0 3038          2466          LHI   TEMP,C'08'        SHOULD BE STATUS                     RST24660
2040  4300 1140          2467          B     STANG             STATUS INCORRECT                     RST24670
2044  C8C0 2062          2468  SOK71   LHI   TEMP,CARHN1       NPSW ADDR                            RST24680
2048  41F0 349E          2469          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE      RST24690
204C  C8C0 40F0          2470          LHI   TEMP,X'40F0'      ENABLE                               RST24700
2050  95DC               2471          EPSR  CHAR,TEMP         PROCESSOR                            RST24710
2052  DE20 34BB          2472          OC    CLDEV,DRR         DROP DTR IN CNTL LINE                RST24720
2056  4160 3340          2473          BAL   RTN2,DELAY        DELAY 3 MILS                         RST24730
205A  C8A0 3237          2474          LHI   ERR2,C'27'       ERROR 27                             RST24740
205E  4300 110C          2475          B     INTNG             CAR NOT INT DID'NT OCCUR             RST24750
      0000 2062          2476  CARHN1  EQU   *                                                      RST24760
2062  4830 3690          2477          LH    RDDEV,TESLIN      RESTORE DEVICE ADDRESS               RST24770
2066  41F0 34B0          2478          BAL   LINK,STDAS        LOAD UP INT DEV AND STATUS           RST24780
206A  0573               2479          CLHR  DEV,RDDEV         IS DEVICE CORRECT                    RST24790
206C  4330 2078          2480          BE    AOK72             IF GOOD GO ON                        RST24800
2070  C8A0 3238          2481          LHI   ERR2,C'28'       ERROR 28                             RST24810
2074  4300 1120          2482          B     ADRNG1            INT ADDR INCORRECT                   RST24820
2078  C480 001F          2483  AOK72   NHI   STAT,X'1F'       MASK OFF                             RST24830
207C  C580 000E          2484          CLHI  STAT,X'0E'        IS STATUS CORRECT                    RST24840
2080  4330 2090          2485          BE    STOK72            IF GOOD GO ON                        RST24850
2084  C8A0 3239          2486          LHI   ERR2,C'29'       ERROR 29                             RST24860
2088  C8C0 3045          2487          LHI   TEMP,C'0E'        SHOULD BE STATUS                     RST24870
208C  4300 1140          2488          B     STANG             STATUS INCORRECT                     RST24880
2090  DE20 34BB          2489  STOK72  OC    CLDEV,DRR         RAISE RCT                            RST24890
2094  C8C0 2090          2490          LHI   TEMP,STOK72       SET UP IF LOOP                       RST24900
2098  40C0 369C          2491          STH   TEMP,TESTAD       ON ERROR REQUIRED                    RST24910
209C  4200 0000          2492          NOP   0                 NO OP DELAY                          RST24920
20A0  41F0 3466          2493          BAL   LINK,IN1CLR       CLEAR ONE PENDING INTERRUPT          RST24930
20A4  C8C0 20C2          2494          LHI   TEMP,RNGH1        NPSW ADDR                            RST24940
20A8  41F0 349E          2495          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE      RST24950
20AC  C8C0 40F0          2496          LHI   TEMP,X'40F0'      ENABLE                               RST24960
20B0  95DC               2497          EPSR  CHAR,TEMP         PROCESSOR INTERRUPTS                 RST24970
20B2  DE20 34BC          2498          OC    CLDEV,DR          DROP RCT IN CNTL LINE                RST24980
20B6  4160 3340          2499          BAL   RTN2,DELAY        DELAY 3 MILS                         RST24990
20BA  C8A0 3330          2500          LHI   ERR2,C'30'       ERROR 30                             RST25000
20BE  4300 110C          2501          B     INTNG             RING INT DIDNT OCCUR                 RST25010
      0000 20C2          2502  RNGH1   EQU   *                                                      RST25020
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20C2  4830 3690          2503           LH    RDDEV,TESLIN       RESTORE DEVICE ADDRESS                    RST25030
20C6  41F0 34B0          2504           BAL   LINK,STDAS         LOAD UP INT DEV AND STATUS                RST25040
20CA  0573               2505           CLHR  DEV,RDDEV          IS DEVICE CORRECT                         RST25050
20CC  4330 20D8          2506           BE    AOK73              IF GOOD GO ON                             RST25060
20D0  C8A0 3331          2507           LHI   ERR2,C'31'         ERROR 31                                  RST25070
20D4  4300 1120          2508           B     ADRNG1             INT ADDR INCORPECT                        RST25080
20D8  C480 001F          2509  AOK73    NHI   STAT,X'1F'         MASK OFF                                  RST25090
20DC  C580 001F          2510           CLHI  STAT,X'1F'         IS STATUS CORRECT                         RST25100
20E0  4330 20F0          2511           BE    SOK73              IF GOOD GO ON                             RST25110
20E4  C8A0 3332          2512           LHI   ERR2,C'32'         ERROR 32                                  RST25120
20E8  C8C0 3146          2513           LHI   TEMP,C'1F'         SHOULD BE STATUS                          RST25130
20EC  4300 1140          2514           B     STANG              STATUS INCORRECT                          RST25140
20F0  C8C0 210E          2515  SOK73    LHI   TEMP,RCN1          NPSW ADDR                                 RST25150
20F4  41F0 349E          2516           BAL   LINK,TABINT        INITIALIZE ETPE INTERRUPT TABLE           RST25160
20F8  C8C0 40F0          2517           LHI   TEMP,X'40F0'       ENABLE                                    RST25170
20FC  95DC               2518           EPSR  CHAR,TEMP          PROCESSOR INTERRUPTS                      RST25180
20FE  DE20 34BB          2519           OC    CLDEV,DRR          RAISE RCT IN CNTL LINE                    RST25190
2102  4160 3340          2520           BAL   RTN2,DELAY         DELAY 3 MILS                              RST25200
2106  C8A0 3333          2521           LHI   ERR2,C'33'         ERROR 33                                  RST25210
210A  4300 110C          2522           B     INTNG              RCR INT DIDNT OCCUR                       RST25220
      0000 210E          2523  RCN1     EQU   *                                                           RST25230
210E  4830 3690          2524           LH    RDDEV,TESLIN       RESTORE DEVICE ADDRESS                    RST25240
2112  41F0 34B0          2525           BAL   LINK,STDAS         LOAD UP INT DEV AND STATUS                RST25250
2116  0573               2526           CLHR  DEV,RDDEV          IS DEVICE CORRECT                         RST25260
2118  4330 2124          2527           BE    AOK74              IF GOOD GO ON                             RST25270
211C  C8A0 3334          2528           LHI   ERR2,C'34'         ERROR 34                                  RST25280
2120  4300 1120          2529           B     ADRNG1             INT ADDR INCORRECT                        RST25290
2124  C480 001F          2530  AOK74    NHI   STAT,X'1F'         MASK OFF                                  RST25300
2128  C580 000E          2531           CLHI  STAT,X'0E'         IS STATUS CORRECT                         RST25310
212C  4330 213C          2532           BE    SOK74              IF GOOD GO ON                             RST25320
2130  C8A0 3335          2533           LHI   ERR2,C'35'         ERROR 35                                  RST25330
2134  C8C0 3045          2534           LHI   TEMP,C'0E'         SHOULD BE DTATUS                          RST25340
2138  4300 1140          2535           B     STANG              STATUS INCORRECT                          RST25350
      0000 213C          2536  SOK74    EQU   *                                                           RST25360
213C  C8C0 213C          2537           LHI   TEMP,SOK74         SET UP IF LOOP                            RST25370
2140  40C0 369C          2538           STH   TEMP,TESTAD        ON ERROR REQUIRED                         RST25380
2144  9B3C               2539           RDR   RDDEV,TEMP         SET RCV BUSY                              RST25390
2146  DE20 34C0          2540           OC    CLDEV,DDRW         OUTPUT COMMAND TO CLDEV                   RST25400
214A  DE30 34C5          2541           OC    RDDEV,EDRR         OUTPUT COMMAND TO RDDEV                   RST25410
214E  4160 3340          2542           BAL   RTN2,DELAY         DELAY 3 MILS                              RST25420
2152  41F0 3466          2543           BAL   LINK,IN1CLR        CLEAR ONE PENDING INTERRUPT               RST25430
2156  C8C0 2178          2544           LHI   TEMP,RBSYH1        NPSW ADDR                                 RST25440
215A  41F0 349E          2545           BAL   LINK,TABINT        INITIALIZE ETPE INTERRUPT TABLE           RST25450
215E  C8C0 40F0          2546           LHI   TEMP,X'40F0'       ENABLE                                    RST25460
2162  95DC               2547           EPSR  CHAR,TEMP          PROCESSOR INTERRUPTS                      RST25470
2164  DA20 34CC          2548           WD    CLDEV,FOX          TRANS CHAR TO TEST LINE                   RST25480
2168  C800 0190          2549           LHI   R0,400             SET UP FOR 400 MILS DELAY                 RST25490
216C  4160 3348          2550           BAL   RTN2,DELAYA        DELAY                                     RST25500
2170  C8A0 3336          2551           LHI   ERR2,C'36'         ERROR 36                                  RST25510
2174  4300 110C          2552           B     INTNG              RBSY INT DIDNT OCCUR                      RST25520
      0000 2178          2553  RBSYH1   EQU   *                                                           RST25530
2178  4830 3690          2554           LH    RDDEV,TESLIN       RESTORE DEVICE ADDRESS                    RST25540
217C  41F0 34B0          2555           BAL   LINK,STDAS         LOAD UP INT DEV AND STATUS                RST25550
2180  9B3C               2556           RDR   RDDEV,TEMP         INIT READ BUSY                            RST25560
2182  0573               2557           CLHR  DEV,RDDEV          IS DEV CORRECT                            RST25570
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2184  4330 2190          2558          BE    AOK75          IF GOOD GO ON                          RST25580
2188  C8A0 3337          2559          LHI   ERR2,C'37'      ERROR 37                               RST25590
218C  4300 1120          2560          B     ADRNG1         INT ADDR INCORRECT                     RST25600
2190  C580 0000          2561  AOK75   CLHI  STAT,0         IS STATUS CORRECT                      RST25610
2194  4330 21A4          2562          BE    TCWBY          IF GOOD GO ON                          RST25620
2198  C8A0 3338          2563          LHI   ERR2,C'38'      ERROR 38                               RST25630
219C  C8C0 3030          2564          LHI   TEMP,C'00'      SHOULD BE STATUS                       RST25640
21A0  4300 1140          2565          B     STANG          STATUS INCORRECT                       RST25650
21A4  DE30 34C6          2566  TCWBY   OC    RDDEV,EDRW     TEST LINE TO SND MODE                  RST25660
21A8  C800 0032          2567          LHI   R0,50          SET UP FOR 50 MILS DELAY               RST25670
21AC  4160 3348          2568          BAL   RTN2,DELAYA    DELAY                                  RST25680
21B0  9D28               2569          SSR   CLDEV,STAT     SENSE STATUS ON CLDEV                  RST25690
21B2  4380 21BE          2570          BFC   8,SOK75        TEST FOR BUSY                          RST25700
21B6  C8A0 3730          2571          LHI   ERR2,C'70'      ERROR 70                               RST25710
21BA  4300 110C          2572          B     INTNG          ERROR ORTINT SEQUENCE                  RST25720
      0000 21BE          2573  SOK75   EQU   *                                                     RST25730
21BE  C8C0 21BE          2574          LHI   TEMP,SOK75     SET UP IF LOOP                         RST25740
21C2  40C0 369C          2575          STH   TEMP,TESTAD    ON ERROR REQUIRED                      RST25750
21C6  4820 3692          2576          LH    CLDEV,CONLIN   RESTORE DEVICE ADDRESS                 RST25760
21CA  DE30 34C6          2577          OC    RDDEV,EDRW     TEST LINE TO SND MODE                  RST25770
21CE  DE20 34BA          2578          OC    CLDEV,DDRR     CNTL LINE TO RCV MODE                  RST25780
21D2  4160 3340          2579          BAL   RTN2,DELAY     DELAY                                  RST25790
21D6  41F0 3466          2580          BAL   LINK,IN1CLR    CLEAR ONE PENDING INTERRUPT            RST25800
21DA  C8C0 21F8          2581          LHI   TEMP,RNGH2     NPSW ADDR                              RST25810
21DE  41F0 349E          2582          BAL   LINK,TABINT    INITIALIZE ETPE INTERRUPT TABLE        RST25820
21E2  C8C0 40F0          2583          LHI   TEMP,X'40F0'    ENABLE                                 RST25830
21E6  95DC               2584          EPSR  CHAR,TEMP      PROCESSOR INTERRUPTS                   RST25840
21E8  DE20 34BE          2585          OC    CLDEV,DDR      DROP RCT IN CNTL LINE                  RST25850
21EC  4160 3340          2586          BAL   RTN2,DELAY     DELAY                                  RST25860
21F0  C8A0 3339          2587          LHI   ERR2,C'39'      ERROR 39                               RST25870
21F4  4300 110C          2588          B     INTNG          RING INT DIDNT OCCUR                   RST25880
      0000 21F8          2589  RNGH2   EQU   *                                                     RST25890
21F8  D100 3778          2590          LM    R0,RSAVE       RESTORE REGISTERS                      RST25900
21FC  41F0 34B0          2591          BAL   LINK,STDAS     LOAD UP DEV AND STATUS                 RST25910
2200  0573               2592          CLHR  DEV,RDDEV      IS DEV CORRECT                         RST25920
2202  4330 220E          2593          BE    AOK76          IF GOOD GO ON                          RST25930
2206  C8A0 3430          2594          LHI   ERR2,C'40'      ERROR 40                               RST25940
220A  4300 1120          2595          B     ADRNG1         INT ADDR INCORRECT                     RST25950
220E  C580 0059          2596  AOK76   CLHI  STAT,X'59'     IS STATUS CORRECT                      RST25960
2212  4330 2222          2597          BE    SOK76          IF GOOD GO ON                          RST25970
2216  C8A0 3431          2598          LHI   ERR2,C'41'      ERROR 41                               RST25980
221A  C8C0 3539          2599          LHI   TEMP,C'59'      SHOULD BE STATUS                       RST25990
221E  4300 1138          2600          B     STANG0         T SND STAT NG                          RST26000
      0000 2222          2601  SOK76   EQU   *                                                     RST26010
2222  4820 3692          2602          LH    CLDEV,CONLIN   LOAD UP CDEVN ADDERSS                  RST26020
2226  DE20 34BD          2603          OC    CLDEV,DDW      OUTPUT COMMAND TO CLDEV                 RST26030
222A  0BCC               2604          SHR   TEMP,TEMP                                            RST26040
222C  9D38               2605  SOK76A  SSR   RDDEV,STAT     SENSE STATUS ON DSEV                   RST26050
222E  4380 2244          2606          BFC   8,SOK76B       BR IF NOT BUSY                         RST26060
2232  26C1               2607          AIS   TEMP,1         INCREMENT COUNTER                      RST26070
2234  C5C0 07D0          2608          CLHI  TEMP,2000      LIMIT YET                              RST26080
2238  4230 222C          2609          BNE   SOK76A         SENSE AGAIN                            RST26090
223C  C8A0 3736          2610          LHI   ERR2,C'76'      ERROR 76                               RST26100
2240  4300 110C          2611          B     INTNG          ERROR PRINT SEQUENCE                   RST26110
2244  4160 3340          2612  SOK76B  BAL   RTN2,DELAY     DELAY                                  RST26120
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2248  4200 0000          2613          NOP   0                                                    RST26130
224C  4200 0000          2614          NOP   0                                                    RST26140
2250  41F0 3466          2615          BAL   LINK,IN1CLR       CLEAR ONR PENDING INTERRUPTS       RST26150
2254  C8C0 227A          2616          LHI   TEMP,WBSYH1       LOAD UP VECTOR ADDRESS             RST26160
2258  41F0 349E          2617          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE    RST26170
225C  DE20 34BD          2618          OC    CLDEV,DDW         RAISE RQ2S IN CNTL LINE            RST26180
2260  C8C0 40F0          2619          LHI   TEMP,X'40F0'      ENABLE                             RST26190
2264  95DC               2620          EPSR  CHAR,TEMP         PROCESSOR INTERRUPTS               RST26200
2266  DA30 34CC          2621          WD    RDDEV,FOX         TRANS CHAR                         RST26210
226A  C800 0032          2622          LHI   R0,50            SET UP FOR 50 MILS DELAY           RST26220
226E  4160 3348          2623          BAL   RTN2,DELAYA       DELAY                              RST26230
2272  C8A0 3432          2624          LHI   ERR2,C'42'        ERROR 42                           RST26240
2276  4300 110C          2625          B     INTNG             WBSY INT DIDNT OCCUR               RST26250
      0000 227A          2626  WBSYH1  EQU   *                                                    RST26260
227A  4830 3690          2627          LH    RDDEV,TESLIN      RESTORE DEVICE ADDRESS             RST26270
227E  41F0 34B0          2628          BAL   LINK,STDAS        LOAD UP INT DDEV AND STATUS        RST26280
2282  0573               2629          CLHR  DEV,RDDEV         IS DEV CORRECT                     RST26290
2284  4330 2290          2630          BE    AOK77             IF GOOD GO ON                      RST26300
2288  C8A0 3433          2631          LHI   ERR2,C'43'        ERROR 43                           RST26310
228C  4300 1120          2632          B     ADRNG1            ERROR PRINT SEQUENCE               RST26320
2290  C580 0011          2633  AOK77   CLHI  STAT,X'11'        IS STATUS CORRECT                  RST26330
2294  4330 22A4          2634          BE    TCRBY             IF GOOD GO ON                      RST26340
2298  C8A0 3434          2635          LHI   ERR2,C'44'        ERROR 44                           RST26350
229C  C8C0 3131          2636          LHI   TEMP,C'11'        SHOULD BE STATUS                   RST26360
22A0  4300 1138          2637          B     STANGO            T SND STAT NG                      RST26370
22A4  DE20 34BE          2638  TCRBY   OC    CLDEV,DDR         CNTL LINE TO RCV NODE              RST26380
22A8  C800 0064          2639          LHI   R0,100            SET UP FOR 100 MILS DELAY          RST26390
22AC  4160 3348          2640          BAL   RTN2,DELAYA       DELAY                              RST26400
22B0  9D28               2641          SSR   CLDEV,STAT        FETCH STATUS                       RST26410
22B2  9B2C               2642          RDR   CLDEV,TEMP        SET BUSY                           RST26420
22B4  C480 0008          2643          NHI   STAT,8            MASK OFF                           RST26430
22B8  4330 22C4          2644          BZ    SOK77             BRANCH IF BUSY =0                  RST26440
22BC  C8A0 3731          2645          LHI   ERR2,C'71'        ERROR 71                           RST26450
22C0  4300 110C          2646          B     INTNG             ERROR PRINT SEQUENCE               RST26460
      0000 22C4          2647  SOK77   EQU   *                                                    RST26470
22C4  C8C0 2222          2648          LHI   TEMP,SOK76        SET UP IF LOOP                     RST26480
22C8  40C0 369C          2649          STH   TEMP,TESTAD       ON ERROR REQUIRED                  RST26490
22CC  4820 3692          2650          LH    CLDEV,CONLIN      RESTORE DEVICE ADDRESS             RST26500
22D0  C8C0 22EE          2651          LHI   TEMP,CL2SH1       NPSW ADDR                          RST26510
22D4  41F0 349E          2652          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE    RST26520
22D8  C8C0 40F0          2653          LHI   TEMP,X'40F0'      ENABLE                             RST26530
22DC  95DC               2654          EPSR  CHAR,TEMP         PROCESSOR INTERRUPTS               RST26540
22DE  DE20 34BE          2655          OC    CLDEV,DDR         DROP RQ2S IN CNTL LINE             RST26550
22E2  4160 3340          2656          BAL   RTN2,DELAY        DELAY 3 MILS                       RST26560
22E6  C8A0 3435          2657          LHI   ERR2,C'45'        ERROR 45                           RST26570
22EA  4300 110C          2658          B     INTNG             CL2SN INT DIDNT OCCUR              RST26580
      0000 22EE          2659  CL2SH1  EQU   *                                                    RST26590
22EE  4830 3690          2660          LH    RDDEV,TESLIN      RESTORE DEVICE ADDRESS             RST26600
22F2  41F0 34B0          2661          BAL   LINK,STDAS        LOAD UP INT DEV AND STATUS         RST26610
22F6  0573               2662          CLHR  DEV,RDDEV         IS DEV CORRECT                     RST26620
22F8  4330 2304          2663          BE    AOK78             IF GOOD GO ON                      RST26630
22FC  C8A0 3436          2664          LHI   ERR2,C'46'        ERROR 46                           RST26640
2300  4300 1120          2665          B     ADRNG1            ADDR INCORRECT                     RST26650
2304  C580 0059          2666  AOK78   CLHI  STAT,X'59'        IS STATUS CORRECT                  RST26660
2308  4330 2318          2667          BE    SOK78             IF GOOD GO ON                      RST26670
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230C   C8A0 3437          2668           LHI   ERR2,C'47'          ERROR 47                                  RST26680
2310   C8C0 3539          2669           LHI   TEMP,C'59'          SHOULD BE STAUS                           RST26690
2314   4300 1138          2670           B     STANGO              T SND STAT NG                             RST26700
       0000 2318          2671   SOK78   EQU   *                                                             RST26710
2318   4150 33C6          2672           BAL   RTN,RSTR            RESTORE PARAMETERS                        RST26720
231C   4300 0E50          2673           B     TSTEND                                                        RST26730
                          2674   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *   RST26740
                          2675   *                                                                           RST26750
                          2676   * TEST 8        READ MSG INT MODE TEST - HDX                 *              RST26760
                          2677   *                                                                           RST26770
                          2678   * PURPOSE:                                                                  RST26780
                          2679   *  RECEIVE MESSAGE OF 20 CHARACTERS AT TEST LINE IN THE INTERRUPT MODE.     RST26790
                          2680   *  USING EACH OF THE POSSIBLE PARAMETERS.                                   RST26800
                          2681   *                                                                           RST26810
                          2682   * DESIGN SPECIFICATION:                                                     RST26820
                          2683   *  THIS SUBTEST IS RUN IN THE INTERRUPT MODE. A CHARACTER IS                RST26830
                          2684   *  TRANSMITTED FROM THE CNTL LINE TO THE TEST LINE FROM THE LOCATION        RST26840
                          2685   *  SPECIFIED BY TBUF. THE HARDWARE IS ALLOWED APPROXIMATELY                 RST26850
                          2686   *  ONE SECOND TO ASSEMBLE THE CHARACTER AND GENERATE AN INTERRUPT.          RST26860
                          2687   *   WHEN THE INTERRUPT OCCURS THE DEVICE ADDRESS AND STATUS ARE TESTED      RST26870
                          2688   *  FOR THE PROPER RESPONSE, AND THE CHARACTER IS READ FROM THE TEST         RST26880
                          2689   *  LINE AND STORED IN RBUF. THIS IS REPEATED UNTILL ALL 20 CHARACTERS       RST26890
                          2690   *  HAVE BEEN TRANSMITTED AND RECEIVED. THE PROGRAM THEN COMPARES            RST26900
                          2691   *  THE DATA RECEIVED WITH THAT TRANSMITTED.                                 RST26910
                          2692   *                                                                           RST26920
                          2693   * HOW TO RUN TEST 8                                                        RST26930
                          2694   *                                                                           RST26940
                          2695   * TYPE: MODE 0                                                             RST26950
                          2696   *       CLOCK ABCD  (ASSUMING 4 CLOCKS PRESENT ON THE SYSTEM )             RST26960
                          2697   *       TEST 8                                                             RST26970
                          2698   *       RUN                                                                RST26980
                          2699   * OPTIONS THAT AFFECT RUNNING OF THIS TEST                                 RST26990
                          2700   *        CDEVN                                                             RST27000
                          2701   *        TDEVN                                                             RST27010
                          2702   *        NOMSG                                                             RST27020
                          2703   *        LOOP                                                              RST27030
                          2704   *        CONTIN                                                            RST27040
                          2705   *        MODE                                                              RST27050
                          2706   *        CLOCK                                                             RST27060
                          2707   *        LPERR                                                             RST27070
                          2708   *                                                                          RST27080
                          2709   ** ERRORS THAT CAN OCCUR IN THIS TEST                                     RST27090
                          2710   * 01-FALSE SYNC HAS OCCURRED                                              RST27100
                          2711   * 36-CHARACTERS TRANSMITTED FROM CNTL TO TEST LINE BUT DID NOT GET A      RST27110
                          2712   *    RECEIVE CHARACTER INTERRUPT ON TEST RCV LINE                         RST27120
                          2713   * 37-RECEIVED CHARACTER GENERATED AN INTERRUPT ON TEST RCV LINE            RST27130
                          2714   *    BUT INTERRUPT ADDRESS INCORRECT                                      RST27140
                          2715   * 38-RECEIVED CHARACTER GENERATED AN INTERRUPT ON TEST RCV LINE            RST27150
                          2716   *    BUT STATUS INCORRECT                                                 RST27160
                          2717   * 49-DATA MISMATCH ON MESSAGE READ FROM TEST RCV LINE OCCURRED.            RST27170
                          2718   *                                                                          RST27180
                          2719   *  THIS TEST RUNS IN HALF DUPLEX ONLY                                      RST27190
                          2720   *                                                                          RST27200
                          2721   *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 3 MINUTES,                    RST27210
                          2722   *  ACTUAL TIME VARIES DEPENDING ON CLOCK (BAUD RATE) SELECTED.             RST27220
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                                2723  *                                                                    RST27230
                                2724  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST27240
      0000 2320                 2725  TEST8    EQU   *                                                     RST27250
2320  41E0 1A56                 2726  TEST82   BAL   RTN4,INITA          INITIALIZE SYSTEM                RST27260
2324  41F0 339E                 2727           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2     RST27270
2328  48C0 1964                 2728           LH    TEMP,MODE+6         CHECK MODE                       RST27280
232C  4230 3286                 2729           BNZ   NOTEST1             IF NOT HALF DUP PRINT CAUTION    RST27290
2330  D2C0 371E                 2730           STB   TEMP,COUNTER        CLEAR COUNTER                    RST27300
2334  4160 3422                 2731  TEST821  BAL   R6,CLKCHG           ADJUST CLOCK                     RST27310
2338  4180 3356                 2732  TEST822  BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH SIDES      RST27320
233C  41F0 339E                 2733           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2     RST27330
2340  DE20 34C0                 2734           OC    CLDEV,DDRW          INIT CNTL LINE                   RST27340
2344  4240 1B7C                 2735           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC RST27350
2348  DE30 34C5                 2736           OC    RDDEV,EDRR          EN INTS ON TEST LINE             RST27360
234C  4160 3340                 2737           BAL   RTN2,DELAY          DELAY 3 MILS                     RST27370
2350  C8C0 34D0                 2738  TEST83   LHI   TEMP,DTBL          SET UP DATA TABLE                RST27380
2354  40C0 3684                 2739           STH   TEMP,TBUF           TBUF=DTBL                        RST27390
2358  C8C0 2DBE                 2740           LHI   TEMP,RMHI           SET UP IF LOOP                   RST27400
235C  40C0 369C                 2741           STH   TEMP,TESTAD         ON ERROR REQUIRED                RST27410
2360  40C0 369A                 2742           STH   TEMP,LPERFLG        SET LOOP FLAG                    RST27420
2364  4150 2DBE                 2743  TEST84   BAL   RTN,RMHI            CALL READ MSG INT DRIVER         RST27430
2368  C8A0 3439                 2744           LHI   ERR2,C'49'          ERROR 49                         RST27440
236C  4180 3238                 2745           BAL   RTN3,CRDTA          CHECK MSG                        RST27450
2370  41F0 1470                 2746           BAL   LINK,TSTBRK         IS BREAK KEY DEPRESSED           RST27460
2374  4160 3292                 2747           BAL   R6,PARCHG           INCREMENT PARAMETERS             RST27470
2378  4300 2338                 2748           B     TEST822             RUN TEST AGAIN                   RST27480
237C  4300 2334                 2749           B     TEST821             GO AND UPDATE CLOCK SELECTED     RST27490
                                2750  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST27500
                                2751  *                                                                    RST27510
                                2752  * TEST 9        READ MSG STATUS MODE TEST - HDX              *      RST27520
                                2753  *                                                                    RST27530
                                2754  * PURPOSE:                                                          RST27540
                                2755  *  RECEIVE MESSAGE OF 20 CHARACTERS AT TEST LINE IN THE STATUS MODE. RST27550
                                2756  *                                                                    RST27560
                                2757  * DESIGN SPECIFICATION:                                             RST27570
                                2758  *  THIS SUBTEST IS RUN IN THE STATUS MODE. A CHARACTER IS TRANSMITTED RST27580
                                2759  *  FROM THE CNTL LINE TO THE TEST LINE FROM THE LOCATION SPECIFIED BY RST27590
                                2760  *  TBUF. THE HARDWARE IS ALLOWED SEVERAL HUNDRED  MILLISECONDS TO    RST27600
                                2761  *  ASSEMBLE THE CHARACTER AND DROP TEST RCV BSY TO A ZERO             RST27610
                                2762  *  WHEN BUSY DROPS THE WHOLE STATUS WORD OF THE TEST RCV LINE IS      RST27620
                                2763  *  TESTED FOR THE PROPER RESPONSE, AND THE CHARACTER IS READ AND STORED RST27630
                                2764  *  IN THE RBUF. THIS IS REPEATED UNTIL 20 CHARACTERS HAVE BEEN       RST27640
                                2765  *  RECEIVED AND STORED. THE PROGRAM THEN COMPARES THE MESSAGE RECEIVED RST27650
                                2766  *  WITH THE MESSAGE TRANSMITTED.                                     RST27660
                                2767  *                                                                    RST27670
                                2768  * HOW TO RUN TEST 9                                                 RST27680
                                2769  *                                                                    RST27690
                                2770  * TYPE: MODE 0                                                      RST27700
                                2771  *       PARA AB  (WHERE AB SPECIFIES PARTICULAR CLOCK AND BIT COMB.) RST27710
                                2772  *       TEST 9                                                      RST27720
                                2773  *       RUN                                                         RST27730
                                2774  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                          RST27740
                                2775  *        CDEVN                                                      RST27750
                                2776  *        TDEVN                                                      RST27760
                                2777  *        NOMSG                                                      RST27770
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                                2778  *        LOOP                                                          RST27780
                                2779  *        CONTIN                                                        RST27790
                                2780  *        MODE                                                          RST27800
                                2781  *        PARA                                                          RST27810
                                2782  *        LPERR                                                         RST27820
                                2783  *                                                                      RST27830
                                2784  ** ERRORS THAT CAN OCCUR IN THIS TEST                                 RST27840
                                2785  * 49-DATA MISMATCH ON MESSAGE READ FROM TEST RCV LINE OCCURRED.        RST27850
                                2786  * 50-CHARACTER TRANSMITTED FROM CNTL LINE TO TEST RCV LINE BUT BSY     RST27860
                                2787  *    STATUS BIT DID NOT GET RESET ON RECEIPT OF CHARACTER             RST27870
                                2788  * 51-BSY STATUS BIT ON TEST RCV LINE CORRECT UPON RECEIPT OF          RST27880
                                2789  *    CHARACTER BUT THE REMAINDER OF STATUS INCORRECT.                 RST27890
                                2790  *                                                                      RST27900
                                2791  *  THIS TEST RUNS IN HALF DUPLEX ONLY                                  RST27910
                                2792  *                                                                      RST27920
                                2793  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 3 SECONDS                 RST27930
                                2794  *                                                                      RST27940
                                2795  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *       RST27950
      0000 2380                 2796  TEST9    EQU   *                                                      RST27960
2380  41E0 1A56                 2797           BAL   RTN4,INITA          INITIALIZE SYSTEM                  RST27970
2384  41F0 339E                 2798           BAL   R15,DISPLAY1       DISPLAY BTESTNO, TDEVN, CMD2       RST27980
2388  48C0 1964                 2799           LH    TEMP,MODE+6        CHECK MODE                         RST27990
238C  4230 3286                 2800           BNZ   NOTEST1            IF NOT HALF DUP PRINT CAUTION      RST28000
2390  4180 3356                 2801           BAL   RTN3,CLERR1        INIT RCV BUSY ON BOTH LINES        RST28010
2394  DE20 34C0                 2802           OC    CLDEV,DDRW         CNTL LINE TO SND MODE              RST28020
2398  4240 1B7C                 2803           BTC   4,FLSYNC           INTERMEDIATE CHECK FOR FALSE SYNC  RST28030
239C  DE30 34BA                 2804           OC    RDDEV,DDRR         TEST LINE TO RCV MODE              RST28040
23A0  C8F0 0003                 2805           LHI   R15,3              LOAD COUNTER                       RST28050
23A4  4160 3340                 2806           BAL   RTN2,DELAY         DELAY                              RST28060
23A8  C8C0 34D0                 2807  TEST93   LHI   TEMP,DTBL         SET UP DATA TABLE                  RST28070
23AC  40C0 3684                 2808           STH   TEMP,TBUF          TBUF=DTBL                          RST28080
23B0  C8C0 2E42                 2809           LHI   TEMP,RMHS          SET UP IF LOOP                     RST28090
23B4  40C0 369C                 2810           STH   TEMP,TESTAD        ON ERROR REQUIRES                  RST28100
23B8  40C0 369A                 2811           STH   TEMP,LPERFLG       SET LOOP FLAG                      RST28110
23BC  4150 2E42                 2812  TEST94   BAL   RTN,RMHS           CALL READ MSG STAT DRIVER          RST28120
23C0  C8A0 3439                 2813           LHI   ERR2,C'49'         ERROR 49                           RST28130
23C4  4180 3238                 2814           BAL   RTN3,CRDTA         CHECK MESSAGE                      RST28140
23C8  4150 33C6                 2815           BAL   RTN,RSTR          RESTORE PARA OPTION                RST28150
23CC  4300 0E50                 2816           B     TSTEND             GOOD TEST END                      RST28160
                                2817  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *       RST28170
                                2818  *                                                                     RST28180
                                2819  * TEST A       TRANS MSG INT MODE TEST - HDX                  *       RST28190
                                2820  *                                                                     RST28200
                                2821  * PURPOSE:                                                           RST28210
                                2822  *  TRANSMIT MESSAGE OF 20 CHARACTERS FROM TEST LINE IN THE INTERRUPT RST28220
                                2823  *  MODE USING EACH OF THE POSSIBLE PARAMETERS.                       RST28230
                                2824  *                                                                     RST28240
                                2825  * DESIGN SPECIFICATION:                                              RST28250
                                2826  *  THIS SUBTEST IS EXECUTED IN THE INTERRUPT MODE. A CHARACTER IS     RST28260
                                2827  *  TRANSMITTED FROM THE TEST LINE TO THE CNTL LINE FROM THE LOCATION  RST28270
                                2828  *  SPECIFIED BY TBUF. THE TEST LINE IS ALLOWED APPROXIMATELY ONE SECOND RST28280
                                2829  *  TO GENERATE A BSY INTERRUPT DURING TRANSMISSION. AFTER EACH        RST28290
                                2830  *  INTERRUPT THE DEVICE ADDRESS AND STATUS ARE TESTED FOR THE PROPER  RST28300
                                2831  *  RESPONSE.                                                         RST28310
                                2832  *   DUE TO THE OPERATION OF THE SND BUSY, THERE IS NO CHARACTER       RST28320
```

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                                2833  *  AVAILABLE ON THE CNTL SIDE AFTER THE FIRST SND BSY INTERRUPT.          RST28330
                                2834  *  HOWEVER AFTER THE SECOND INTERRUPT, THE FIRST CHARACTER IS AVAILABLE  RST28340
                                2835  *  AND THE REST ARE QUEUED IN THE SAME MANNER. ON THE SECOND AND         RST28350
                                2836  *  EVERY INTERRUPT FOLLOWING, THE CHARACTER IS READ FROM THE CNTL LINE   RST28360
                                2837  *  AND STORED IN RBUF. AFTER THE LAST CHARACTER IS SENT AN EXTRA         RST28370
                                2838  *  INTERRUPT RESULTS, BUT THE SEQUENCE OF ACTION IS CHANGED SINCE THE    RST28380
                                2839  *  LAST CHARACTER IS IN THE PROCESS OF BEING ASSEMBLED; THE              RST28390
                                2840  *  PROGRAM DELAYS APPROXIMATELY 400 MILLISECONDS THEN READS              RST28400
                                2841  *  THE LAST CHARACTER. AFTER ALL 20 CHARACTERS HAVE BEEN READ AND        RST28410
                                2842  *  STORED, THE PROGRAM COMPARES THE MESSAGE RECEIVED WITH                RST28420
                                2843  *  THE MESSAGE TRANSMITTED.                                             RST28430
                                2844  *                                                                       RST28440
                                2845  * HOW TO RUN TEST A                                                     RST28450
                                2846  *                                                                       RST28460
                                2847  * TYPE: MODE 0                                                         RST28470
                                2848  *       CLOCK ABCD  (ASSUMING 4 CLOCKS ARE PRESENT ON SYSTEM)          RST28480
                                2849  *       TEST A                                                         RST28490
                                2850  *       RUN                                                            RST28500
                                2851  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                             RST28510
                                2852  *        CDEVN                                                         RST28520
                                2853  *        TDEVN                                                         RST28530
                                2854  *        NOMSG                                                         RST28540
                                2855  *        LOOP                                                          RST28550
                                2856  *        CONTIN                                                        RST28560
                                2857  *        MODE                                                          RST28570
                                2858  *        CLOCK                                                         RST28580
                                2859  *        LPERR                                                         RST28590
                                2860  *                                                                      RST28600
                                2861  ** ERRORS THAT CAN OCCUR IN THIS TEST                                 RST28610
                                2862  * 01-FALSE SYNC HAS OCCURRED                                           RST28620
                                2863  * 42-TRANSITION OF BSY TO NOT BSY DID NOT GENERATE AN INTERRUPT ON     RST28630
                                2864  * 43-TRANSITION OF BSY TO NOT BSY GENERATED AN INTERRUPT ON TEST SND   RST28640
                                2865  *    LINE BUT INTERRUPT ADDRESS INCORRECT                              RST28650
                                2866  * 44-TRANSITION OF BSY TO NOT BSY GENERATED AN INTERRUPT ON TEST SND   RST28660
                                2867  *    LINE BUT STATUS INCORRECT                                         RST28670
                                2868  * 52-DATA MISMATCH ON MESSAGE READ FROM CNTL LINE OCCURRED             RST28680
                                2869  * 53-BSY STATUS BIT ON TEST SND LINE INCORRECT WHEN READY TO           RST28690
                                2870  *    TRANSMIT CHARACTER                                                RST28700
                                2871  *                                                                      RST28710
                                2872  *  THIS TEST RUNS IN HALF DUPLEX ONLY                                  RST28720
                                2873  *                                                                      RST28730
                                2874  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 4 MINUTES,                RST28740
                                2875  *    ACTUAL TIME DEPENDS ON CLOCK (BAUD RATE) SELECTED.                RST28750
                                2876  *                                                                      RST28760
                                2877  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *     RST28770
      0000 23D0                 2878  TESTA    EQU   *                                                      RST28780
23D0  41E0 1A56                 2879  TEST102  BAL   RTN4,INITA          INITIALIZE SYSTEM                 RST28790
23D4  41F0 339E                 2880           BAL   R15,DISPLAY1       DISPLAY BTESTNO, TDEVN, CMD2      RST28800
23D8  48C0 1964                 2881           LH    TEMP,MODE+6        CHECK MODE                        RST28810
23DC  4230 3286                 2882           BNZ   NOTEST1            IF HALF DUP  OK OTERWISE CAUTION  RST28820
23E0  D2C0 371E                 2883           STB   TEMP,COUNTER       CLEAR COUNTER                     RST28830
23E4  4160 3422                 2884  TEST1021 BAL   R6,CLKCHG          ADJUST CLOCK                      RST28840
23E8  4180 3356                 2885  TEST1022 BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH SIDES       RST28850
23EC  41F0 339E                 2886           BAL   R15,DISPLAY1       DISPLAY BTESTNO, TDEVN, CMD2      RST28860
23F0  DE20 34C0                 2887           OC    CLDEV,DDRW         CNTL LINE TO SND MODE             RST28870
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23F4  4240 1B7C  2888          BTC   4,FLSYNC          INTERMEDIATE CHECK FOR FALSE SYNC     RST28880
23F8  DE30 34C6  2889          OC    RDDEV,EDRW        TEST LINE TO EN,SND MODE              RST28890
23FC  4160 3340  2890          BAL   RTN2,DELAY        DELAY                                 RST28900
2400  41F0 3466  2891          BAL   LINK,IN1CLR       CLEAR ONE PENDING INTERRUPT           RST28910
2404  C8C0 34D0  2892  TES104   LHI   TEMP,DTBL         SET UP DATA TABLE                     RST28920
2408  40C0 3684  2893          STH   TEMP,TBUF         TBUF=DTBL                             RST28930
240C  C8C0 2E92  2894          LHI   TEMP,TMHI         SET UP IF LOOP                        RST28940
2410  40C0 369C  2895          STH   TEMP,TESTAD       ON ERROR REQUIRED                     RST28950
2414  40C0 369A  2896          STH   TEMP,LPERFLG      SET LOOP FLAG                         RST28960
2418  4150 2E92  2897  TES105   BAL   RTN,TMHI         CALL TRANS MSG INT DRIVER             RST28970
241C  C8A0 3532  2898          LHI   ERR2,C'52'        ERROR 52                              RST28980
2420  4180 3238  2899          BAL   RTN3,CRDTA        COMPARE TRANS CHAR                    RST28990
2424  41F0 1470  2900          BAL   LINK,TSTBRK       IS BREAK KEY DEPRESSED                RST29000
2428  4160 3292  2901          BAL   R6,PARCHG        UPDATE THE PARAMETERS                 RST29010
242C  4300 23E8  2902          B     TEST1022          DO TEST AGAIN                         RST29020
2430  4300 23E4  2903          B     TEST1021          GO TO UPDATE CLOCK SELECTED           RST29030
                 2904  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *     RST29040
                 2905  *                                                                     RST29050
                 2906  * TEST B       TRANS MSG STATUS MODE TEST - HDX            *        RST29060
                 2907  *                                                                     RST29070
                 2908  * PURPOSE:                                                           RST29080
                 2909  *  TRANSMIT MESSAGE OF 20 CHARACTERS FROM TEST LINE IN THE STATUS MODE.  RST29090
                 2910  *                                                                     RST29100
                 2911  * DESIGN SPECIFICATION:                                             RST29110
                 2912  *  THIS SUBTEST IS EXECUTED IN THE STATUS MODE. A CHARACTER IS       RST29120
                 2913  *  TRANSMITTED FROM THE TEST TO THE CNTL LINE FROM THE LOCATION      RST29130
                 2914  *  SPECIFIED BY TBUF. THE TEST LINE IS ALLOWED SEVERAL HUNDRED      RST29140
                 2915  *  MILLISECONDS TO ACCEPT THE CHARACTER AND DROP BSY, REQUESTING     RST29150
                 2916  *  ANOTHER. WHEN BSY DROPS THE STATUS OF TEST SND LINE IS TESTED     RST29160
                 2917  *  FOR THE PROPER RESPONSE. EACH TIME A CHARACTER IS EXPECTED TO BE  RST29170
                 2918  *  ASSEMBLED AT THE CNTL LINE, IT IS READ AND STORED IN RBUF.       RST29180
                 2919  *  THE CHARACTER TRAIN IS QUEUED AS IN TEST A, THEREFORE, AFTER THE  RST29190
                 2920  *  LAST CHARACTER IS TRANSFERRED AND THE BSY BIT IS DROPPED, THE     RST29200
                 2921  *  PROGRAM DELAYS 400 MILLISECONDS BEFORE READING THE LAST CHARACTER  RST29210
                 2922  *  FROM CNTL LINE. WHEN ALL 20 CHARACTERS HAVE BEEN READ, THE PROGRAM  RST29220
                 2923  *  COMPARES THE MESSAGE READ WITH THE MESSAGE TRANSMITTED.          RST29230
                 2924  *                                                                     RST29240
                 2925  * HOW TO RUN TEST B                                                  RST29250
                 2926  *                                                                     RST29260
                 2927  * TYPE: MODE 0                                                       RST29270
                 2928  *       TEST B                                                       RST29280
                 2929  *       PARA AB  (WHERE AB SPECIFIES PARTICULAR CLOCK AND BIT COMB.)  RST29290
                 2930  *       RUN                                                          RST29300
                 2931  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                           RST29310
                 2932  *        CDEVN                                                       RST29320
                 2933  *        TDEVN                                                       RST29330
                 2934  *        NOMSG                                                       RST29340
                 2935  *        LOOP                                                        RST29350
                 2936  *        CONTIN                                                      RST29360
                 2937  *        MODE                                                        RST29370
                 2938  *        PARA                                                        RST29380
                 2939  *        LPERR                                                       RST29390
                 2940  *                                                                    RST29400
                 2941  ** ERRORS THAT CAN OCCUR IN THIS TEST                              RST29410
                 2942  * 01-FALSE SYNC HAS OCCURRED                                        RST29420
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                                2943  * 52-DATA MISMATCH ON MESSAGE READ FROM CNTL LINE OCCURRED                RST29430
                                2944  * 53-BSY STATUS BIT ON TEST SND LINE INCORRECT WHEN READY TO              RST29440
                                2945  *    TRANSMIT CHARACTER                                                  RST29450
                                2946  * 54-STATUS WORD ON TEST SND LINE INCORRECT WHEN READY TO TRANSMIT        RST29460
                                2947  *    CHARACTER                                                           RST29470
                                2948  *                                                                        RST29480
                                2949  *  THIS TEST RUNS IN HALF DUPLEX ONLY                                    RST29490
                                2950  *                                                                        RST29500
                                2951  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 3 SECONDS                   RST29510
                                2952  *                                                                        RST29520
                                2953  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *      RST29530
      0000 2434                 2954  TESTB    EQU   *                                                        RST29540
2434  41E0 1A56                 2955           BAL   RTN4,INITA          INITIALIZE SYSTEM                    RST29550
2438  41F0 339E                 2956           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2         RST29560
243C  48C0 1964                 2957           LH    TEMP,MODE+6         CHECK MODE                           RST29570
2440  4230 3286                 2958           BNZ   NOTEST1                                                  RST29580
2444  4180 3356                 2959           BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH LINES          RST29590
2448  DE30 34C0                 2960           OC    RDDEV,DDRW          TEST LINE TO SND MODE                RST29600
244C  4240 1B7C                 2961           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC    RST29610
2450  DE20 34C0                 2962           OC    CLDEV,DDRW          CNTL LINE TO SND MODE                RST29620
2454  4160 3340                 2963           BAL   RTN2,DELAY          DELAY 3 MILS                         RST29630
2458  C8C0 34D0                 2964  TES114   LHI   TEMP,DTBL           SET UP DATA TABLE                    RST29640
245C  40C0 3684                 2965           STH   TEMP,TBUF           TBUF=DTBL                            RST29650
2460  C8C0 2F50                 2966           LHI   TEMP,TMHS           SET UP IF LOOP                       RST29660
2464  40C0 369C                 2967           STH   TEMP,TESTAD         ON ERROR REQUIRED                    RST29670
2468  40C0 369A                 2968           STH   TEMP,LPERFLG        SET LOOP FLAG                        RST29680
246C  4150 2F50                 2969  TES115   BAL   RTN,TMHS            CALL TRANS MSG STATUS DRVR           RST29690
2470  C8A0 3532                 2970           LHI   ERR2,C'52'          ERROR 52                             RST29700
2474  4180 3238                 2971           BAL   RTN3,CRDTA          COMPARE TRANS CHAR                   RST29710
2478  4150 33C6                 2972           BAL   RTN,RSTR            RESTORE PARA OPTION                  RST29720
247C  4300 0E50                 2973           B     TSTEND              GOOD TEST END                        RST29730
                                2974  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *      RST29740
                                2975  *                                                                        RST29750
                                2976  * TEST C       INTERRUPT SOURCES (FDX)                        *         RST29760
                                2977  *                                                                        RST29770
                                2978  * PURPOSE:                                                              RST29780
                                2979  *  VERIFY THAT EACH OF THE POSSIBLE INTERRUPT SOURCES CAN GENERATE       RST29790
                                2980  *  INTERRUPTS.                                                          RST29800
                                2981  *                                                                        RST29810
                                2982  * DESIGN SPECIFICATION:                                                 RST29820
                                2983  *  THIS SUBTEST CHECKS EACH OF THE INTERRUPT SOURCES SEPARATELY. WITH    RST29830
                                2984  * EACH INTERRUPT, A TIME OUT OF APPROXIMATELY 3 MILLISECONDS IS ALLOWED  RST29840
                                2985  * BEFORE IT IS DETERMINED THAT THE INTERRUPT DID NOT OCCUR. UPON        RST29850
                                2986  * DETECTION OF AN INTERRUPT, THE DEVICE ADDRESS AND STATUS ARE CHECKED  RST29860
                                2987  * FOR PROPER RESULTS.                                                   RST29870
                                2988  *                                                                        RST29880
                                2989  * HOW TO RUN TEST C                                                     RST29890
                                2990  *                                                                        RST29900
                                2991  * TYPE: MODE 1                                                          RST29910
                                2992  *       TEST C                                                          RST29920
                                2993  *       PARA AB  (WHERE AB SPECIFIES PARTICULAR CLOCK AND BIT COMB.)     RST29930
                                2994  *       RUN                                                             RST29940
                                2995  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                              RST29950
                                2996  *        CDEVN                                                          RST29960
                                2997  *        TDEVN                                                          RST29970
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2998  *        NOMSG                                                    RST29980
2999  *        LOOP                                                     RST29990
3000  *        CONTIN                                                   RST30000
3001  *        MODE                                                     RST30010
3002  *        PARA                                                     RST30020
3003  *        LPERR                                                    RST30030
3004  *                                                                 RST30040
3005  ** ERRORS THAT CAN OCCUR IN THIS TEST                            RST30050
3006  * 01-FALSE SYNC HAS OCCURRED                                      RST30060
3007  * 24-TRANSISTION OF NOT-CAR TO CAR DID NOT GENERATE INTERRUPT ON TEST  RST30070
3008  *    RCV LINE                                                     RST30080
3009  * 25-TRANSITION OF NOT-CAR TO CAR GENERATED AN INTERRUPT ON TEST RCV  RST30090
3010  *    LINE BUT INTERRUPT ADDRESS INCORRECT.                        RST30100
3011  * 26-TRANSITION OF NOT-CAR TO CAR GENERATED AN INTERRUPT ON TEST RCV  RST30110
3012  *    LINE BUT TEST RCV STATUS INCORRECT                           RST30120
3013  * 27-TRANSISTION OF CAR/DSRDY TO NOT(CAR/DSRDY) DID NOT GENERATE   RST30130
3014  *    INTERRUPT ON TEST RCV LINE.                                  RST30140
3015  * 28-TRANSITION OF CAR/DSRDY TO NOT(CAR/DSRDY) GENERATED INTERRUPT ON  RST30150
3016  *    TEST RCV LINE BUT INTERRUPT ADDRESS INCORRECT.               RST30160
3017  * 29-TRANSITION OF CAR/DSRDY TO NOT(CAR/DSRDY) GENERATED INTERRUPT ON  RST30170
3018  *    TEST RCV LINE BUT STATUS INCORRECT                           RST30180
3019  * 30-TRANSITION OF RCR/NOT-RING TO NOT-RCR/RING DID NOT GENERATE   RST30190
3020  *    INTERRUPT ON TEST RCV LINE.                                  RST30200
3021  * 31-TRANSITION OF RCR/NOT-RING TO NOT-RCR/RING GENERATED INTERRUPT ON  RST30210
3022  *      TEST RCV LINE BUT ADDRESS INCORRECT.                       RST30220
3023  * 32-TRANSITION OF RCR/NOT-RING TO NOT-RCR/RING GENERATED INTERRUPT  RST30230
3024  *    ON TEST RCV LINE BUT INTERRUPT ADDRESS INCORRECT             RST30240
3025  * 33-TRANSITION OF NOT RCR TO RCR DID NOT GENERATE AN INTERRUPT ON  RST30250
3026  *    TEST RCV LINE                                                RST30260
3027  * 34-TRANSITION OF RCR TO NOT RCR GENERATED AN INTERRUPT ON TEST RCV  RST30270
3028  *    LINE BUT INTERRUPT ADDRESS INCORRECT                         RST30280
3029  * 35-TRANSITION OF NOT RCR TO RCR GENERATED AN INTERRUPT ON TEST RCV  RST30290
3030  *    LINE BUT STATUS INCORRECT                                    RST30300
3031  * 36-CHARACTERS TRANSMITTED FROM CNTL TO TEST LINE BUT DID NOT GET A  RST30310
3032  *    RECEIVE CHARACTER INTERRUPT ON TEST RCV LINE                 RST30320
3033  * 37-RECEIVED CHARACTER GENERATED AN INTERRUPT ON TEST RCV LINE    RST30330
3034  *    BUT INTERRUPT ADDRESS INCORRECT                              RST30340
3035  * 38-RECEIVED CHARACTER GENERATED AN INTERRUPT ON TEST RCV LINE    RST30350
3036  *    BUT STATUS INCORRECT                                         RST30360
3037  * 42-TRANSITION OF BSY TO NOT BSY DID NOT GENERATE AN INTERRUPT ON  RST30370
3038  * 43-TRANSITION OF BSY TO NOT BSY GENERATED AN INTERRUPT ON TEST SND  RST30380
3039  *    LINE BUT INTERRUPT ADDRESS INCORRECT                         RST30390
3040  * 44-TRANSITION OF BSY TO NOT BSY GENERATED AN INTERRUPT ON TEST SND  RST30400
3041  *    LINE BUT STATUS INCORRECT                                    RST30410
3042  * 45-TRANSITION OF CL2S TO NOT CL2S DID NOT GENERATE AN INTERRUPT ON  RST30420
3043  *    TEST SND LINE.                                               RST30430
3044  * 46-TRANSITION OF CL2S TO NOT CL2S GENERATED AN INTERRUPT ON THE TEST  RST30440
3045  *    SND LINE BUT THE INTERRUPT ADDRESS INCORRECT                 RST30450
3046  * 47-TRANSITION OF CL2S TO NOT CL2S GENERATED AN INTERRUPT ON THE  RST30460
3047  *    TEST SND LINE BUT THE STATUS WAS INCORRECT.                  RST30470
3048  * 48-RING GENERATED AN INTERRUPT ON SND SIDE OF TEST LINE          RST30480
3049  * 71-CNTL RCV BUSY STATUS BIT INCORRECT WHEN CHARACTER ASSEMBLY    RST30490
3050  * 70-CNTL SND BUSY STATUS BIT INCORRECT WHEN READY TO TRANSMIT CHAR.  RST30500
3051  *                                                                 RST30510
3052  *  THIS TEST RUNS IN FULL DUPLEX ONLY                             RST30520
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                                3053  *                                                                    RST30530
                                3054  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 1 SECOND                 RST30540
                                3055  *                                                                    RST30550
                                3056  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST30560
          0000 2480             3057  TESTC    EQU   *                                                     RST30570
2480      41E0 1A56             3058           BAL   RTN4,INITA          INITIALIZE SYSTEM                 RST30580
2484      41F0 339E             3059           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2      RST30590
2488      48C0 1964             3060           LH    TEMP,MODE+6         CHECK MODE                        RST30600
248C      4330 3280             3061           BZ    NOTEST2             IF NOT FULL DUP PRINT CAUTION     RST30610
2490      4180 3356             3062           BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH LINES       RST30620
2494      C8C0 2494             3063  SCARF    LHI   TEMP,SCARF          SET UP IF LOOP                    RST30630
2498      40C0 369C             3064           STH   TEMP,TESTAD         ON ERROR REQUIRED                 RST30640
249C      40C0 369A             3065           STH   TEMP,LPERFLG        SET LOCP FLAG                     RST30650
24A0      4830 3690             3066           LH    RDDEV,TESLIN        RELOAD TEST DEV ADR               RST30660
24A4      0843                  3067           LHR   WRDEV,RDDEV         COPY                              RST30670
24A6      2641                  3068           AIS   WRDEV,1             INCREMENT                         RST30680
24A8      4820 3692             3069           LH    CLDEV,CONLIN        RELOAD CNTL DEV ADR               RST30690
24AC      DE20 34BB             3070           OC    CLDEV,DRR           INIT CNTL LINE                    RST30700
24B0      4240 1B7C             3071           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC RST30710
24B4      2621                  3072           AIS   CLDEV,1             INCREMENT ADDRESS                 RST30720
24B6      DE20 34BF             3073           OC    CLDEV,DRW           OUTPUT COMMAND TO CLDEV           RST30730
24BA      DE30 34CA             3074           OC    RDDEV,EW            OUTPUT COMMAND TO RDDEV           RST30740
24BE      DE40 34C4             3075           OC    WRDEV,ER            OUTPUT COMMSND TO WRDEV           RST30750
24C2      4160 3340             3076           BAL   RTN2,DELAY          DELAY                             RST30760
24C6      41F0 3460             3077           BAL   LINK,IN2CLR         CLEAR TWO PENDING INTERRUPTS      RST30770
24CA      C8C0 24E8             3078           LHI   TEMP,CARF1          NPSW ADDR                         RST30780
24CE      41F0 349E             3079           BAL   LINK,TABINT         INITIALIZE ETPE INTERRUPT TABLE   RST30790
24D2      C8C0 40F0             3080           LHI   TEMP,X'40F0'        ENABLE                            RST30800
24D6      95DC                  3081           EPSR  CHAR,TEMP           PROCESSOR INTERRUPTS              RST30810
24D8      DE20 34C0             3082           OC    CLDEV,DDRW          RAISE DTR IN CNTL LINE            RST30820
24DC      4160 3340             3083           BAL   RTN2,DELAY          DELAY                             RST30830
24E0      C8A0 3234             3084           LHI   ERR2,C'24'          ERROR 24                          RST30840
24E4      4300 110C             3085           B     INTNG               CAR INT DIDNT OCCUR               RST30850
          0000 24E8             3086  CARF1    EQU   *                                                     RST30860
24E8      D100 3778             3087           LM    R0,RSAVE            RESTORE REGISTERS                 RST30870
24EC      41F0 34B0             3088           BAL   LINK,STDAS           LOAD UP INT DEV AND STATUS        RST30880
24F0      0573                  3089           CLHR  DEV,RDDEV           IS DEVICE CORRECT                 RST30890
24F2      4330 24FE             3090           BE    AK121               IF GOOD GO ON                     RST30900
24F6      C8A0 3235             3091           LHI   ERR2,C'25'          ERROR 25                          RST30910
24FA      4300 1120             3092           B     ADRNG1              ADDR INCORRECT                    RST30920
24FE      C480 001B             3093  AK121    NHI   STAT,X'1B'          IS STATUS CORREST                 RST30930
2502      C580 0008             3094           CLHI  STAT,8              IS STATUS CORRECT                 RST30940
2506      4330 2516             3095  TCE26    BE    SK121               IF STATUS GOOD NEXT SECTION       RST30950
250A      C8A0 3236             3096           LHI   ERR2,C'26'          ERROR 26                          RST30960
250E      C8C0 3038             3097           LHI   TEMP,C'08'          SHOULD BE STATUS                  RST30970
2512      4300 1140             3098           B     STANG               STATUS INCORRECT                  RST30980
2516      C8C0 2534             3099  SK121    LHI   TEMP,CARFN1         NPSW ADDR                         RST30990
251A      41F0 349E             3100           BAL   LINK,TABINT         INITIALIZE ETPE INTERRUPT TABLE   RST31000
251E      C8C0 40F0             3101           LHI   TEMP,X'40F0'        ENABLE                            RST31010
2522      95DC                  3102           EPSR  CHAR,TEMP           PROCESSOR INTERRUPTS              RST31020
2524      DE20 34BF             3103           OC    CLDEV,DRW           DROP DTR ON CNTL LINE             RST31030
2528      4160 3340             3104           BAL   RTN2,DELAY          DELAY                             RST31040
252C      C8A0 3237             3105           LHI   ERR2,C'27'          ERROR 27                          RST31050
2530      4300 110C             3106           B     INTNG               CARN INT DIDNT OCCUR              RST31060
          0000 2534             3107  CARFN1   EQU   *                                                     RST31070
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2534  D100 3778          3108          LM    RO,RSAVE          RESTORE REGISTERS                        RST31080
2538  41F0 34B0          3109          BAL   LINK,STDAS        LOAD UP INT DEV AND STATUS               RST31090
253C  0573               3110          CLHR  DEV,RDDEV         IS DEV CORRECT                           RST31100
253E  4330 254A          3111          BE    AK122             IF GOOD GO ON                            RST31110
2542  C8A0 3238          3112          LHI   ERR2,C'28'        ERROR 28                                 RST31120
2546  4300 1120          3113          B     ADRNG1            ADDR INCORRECT                           RST31130
254A  C480 001F          3114  AK122   NHI   STAT,X'1F'        MASK OFF                                 RST31140
254E  C580 000E          3115          CLHI  STAT,X'0E'        IS STATUS CORRECT                        RST31150
2552  4330 2562          3116          BE    SK122             IF GOOD GO ON                            RST31160
2556  C8A0 3239          3117          LHI   ERR2,C'29'        ERROR 29                                 RST31170
255A  C8C0 3045          3118          LHI   TEMP,C'0E'        SHOULD BE STATUS                         RST31180
255E  4300 1140          3119          B     STANG             STATUS INCORRECT                         RST31190
2562  DE20 34BF          3120  SK122   OC    CLDEV,DRW         RAISE RCT IN CNTL LINE                   RST31200
2566  C8C0 2562          3121          LHI   TEMP,SK122        SET UP IF LOOP                           RST31210
256A  40C0 369C          3122          STH   TEMP,TESTAD       ON ERROR REQUIRED                        RST31220
256E  41F0 3466          3123          BAL   LINK,IN1CLR       CLEAR ONE INTERRUPT                      RST31230
2572  C8C0 2590          3124          LHI   TEMP,RNGF1        NPSW ADDR                                RST31240
2576  41F0 349E          3125          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE          RST31250
257A  C8C0 40F0          3126          LHI   TEMP,X'40F0'      ENABLE                                   RST31260
257E  95DC               3127          EPSR  CHAR,TEMP         PROCESSOR INTERRUPTS                     RST31270
2580  DE20 34C1          3128          OC    CLDEV,DW          DROP RCT IN CNTL LINE                    RST31280
2584  4160 3340          3129          BAL   RTN2,DELAY        DELAY 3 MILS                             RST31290
2588  C8A0 3330          3130          LHI   ERR2,C'30'        ERROR 30                                 RST31300
258C  4300 110C          3131          B     INTNG             RING INT DIDNT OCCUR                     RST31310
      0000 2590          3132  RNGF1   EQU   *                                                          RST31320
2590  D100 3778          3133          LM    RO,RSAVE          RESTORE REGISTERS                        RST31330
2594  41F0 34B0          3134          BAL   LINK,STDAS        LOAD UP INT DEV AND STATUS               RST31340
2598  0573               3135          CLHR  DEV,RDDEV         IS DEV CORRECT                           RST31350
259A  4330 25A6          3136          BE    AK123             IF GOOD GO ON                            RST31360
259E  C8A0 3331          3137          LHI   ERR2,C'31'        ERROR 31                                 RST31370
25A2  4300 1120          3138          B     ADRNG1            ADDR INCORRECT                           RST31380
25A6  C480 001F          3139  AK123   NHI   STAT,X'1F'        MASK OFF                                 RST31390
25AA  C580 001F          3140          CLHI  STAT,X'1F'        IS STATUS CORRECT                        RST31400
25AE  4330 25BE          3141          BE    SK123             IF GOOD GO ON                            RST31410
25B2  C8A0 3332          3142          LHI   ERR2,C'32'        ERROR 32                                 RST31420
25B6  C8C0 3146          3143          LHI   TEMP,C'1F'        SHOULD BE STATUS                         RST31430
25BA  4300 1140          3144          B     STANG             STATUS INCORRECT                         RST31440
25BE  C8C0 25E4          3145  SK123   LHI   TEMP,NNT121       NPSW ADDR                                RST31450
25C2  41F0 349E          3146          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE          RST31460
25C6  C8C0 40F0          3147          LHI   TEMP,X'40F0'      ENABLE                                   RST31470
25CA  95DC               3148          EPSR  CHAR,TEMP         PROCESSOR INTERRUPTS                     RST31480
25CC  C8C0 25F0          3149          LHI   TEMP,RCNF1        NPSW ADDR                                RST31490
25D0  41F0 349E          3150          BAL   LINK,TABINT       INITIALIZE ETPE INTERRUPT TABLE          RST31500
25D4  DE20 34BF          3151          OC    CLDEV,DRW         RAISE RCT IN CNTL LINE                   RST31510
25D8  4160 3340          3152          BAL   RTN2,DELAY        DELAY 3 MILS                             RST31520
25DC  C8A0 3333          3153          LHI   ERR2,C'33'        ERROR 33                                 RST31530
25E0  4300 110C          3154          B     INTNG             RCR INT DIDNT OCCUR                      RST31540
      0000 25E4          3155  NNT121  EQU   *                                                          RST31550
25E4  41F0 34B0          3156          BAL   LINK,STDAS        LOAD UP INT DEV AND STATUS               RST31560
25E8  C8A0 3438          3157          LHI   ERR2,C'48'        ERROR 48                                 RST31570
25EC  4300 1114          3158          B     NINTNG            INT SHOULDN'T HAVE OCCURRED              RST31580
      0000 25F0          3159  RCNF1   EQU   *                                                          RST31590
25F0  D100 3778          3160          LM    RO,RSAVE          RESTORE REGISTERS                        RST31600
25F4  41F0 34B0          3161          BAL   LINK,STDAS        LOAD UP INT DEV AND STATUS               RST31610
25F8  0573               3162          CLHR  DEV,RDDEV         IS DEV CERRECT                           RST31620
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25FA  4330 2606          3163           BE    AK124              IF GOOD GO ON                                RST31630
25FE  C8A0 3334          3164           LHI   ERR2,C'34'         ERROR  34                                    RST31640
2602  4300 1120          3165           B     ADRNG1             ADDR INCORRECT                               RST31650
2606  C480 001F          3166  AK124    NHI   STAT,X'1F'         MASK OFF                                     RST31660
260A  C580 000E          3167           CLHI  STAT,X'0E'         IS STATUS CORRECT                            RST31670
260E  4330 261E          3168           BE    SK124              IF GOOD GO ON                                RST31680
2612  C8A0 3335          3169           LHI   ERR2,C'35'         ERROR 35                                     RST31690
2616  C8C0 3045          3170           LHI   TEMP,C'0E'         SHOULD BE STATUS                             RST31700
261A  4300 1140          3171           B     STANG              STATUS INCCRRECT                             RST31710
      0000 261E          3172  SK124    EQU   *                                                               RST31720
261E  C8C0 261E          3173           LHI   TEMP,SK124         SET UP IF LOOP                               RST31730
2622  40C0 369C          3174           STH   TEMP,TESTAD        ON ERROR REQUIRED                            RST31740
2626  9B3C               3175           RDR   RDDEV,TEMP         SET RCV BUSY                                 RST31750
2628  DE20 34C0          3176           OC    CLDEV,DDRW         OUTPUT COMMAND YO CLDEV                      RST31760
262C  DE30 34C6          3177           OC    RDDEV,EDRW         OUTPUT COMMAND TO RDDEV                      RST31770
2630  4160 3340          3178           BAL   RTN2,DELAY                                                      RST31780
2634  41F0 3460          3179           BAL   LINK,IN2CLR         CLEAR 2 PENDING INTERRUPT                    RST31790
2638  C8C0 265A          3180           LHI   TEMP,RBSYF1         NPSW ADDR                                    RST31800
263C  41F0 349E          3181           BAL   LINK,TABINT         INITIALIZE ETPE INTERRUPT TABLE              RST31810
2640  C8C0 40F0          3182           LHI   TEMP,X'40F0'       ENABLE                                       RST31820
2644  95DC               3183           EPSR  CHAR,TEMP          PROCESSOR INTERRUPTS                         RST31830
2646  DA20 34CC          3184           WD    CLDEV,FOX          TRANS CHAR TO TEST LINE                      RST31840
264A  C800 0190          3185           LHI   R0,400            SET UP FOR 400 MILS DELAY                    RST31850
264E  4160 3348          3186           BAL   RTN2,DELAYA        DELAY                                        RST31860
2652  C8A0 3336          3187           LHI   ERR2,C'36'         ERRPR 36                                     RST31870
2656  4300 110C          3188           B     INTNG              RBSY INT DIDNT OCCUR                         RST31880
      0000 265A          3189  RBSYF1   EQU   *                                                               RST31890
265A  4830 3690          3190           LH    RDDEV,TESLIN       LOAD TDEVN                                   RST31900
265E  41F0 34B0          3191           BAL   LINK,STDAS         LOAD UP INT DEV AND STAUS                    RST31910
2662  9B3C               3192           RDR   RDDEV,TEMP         INIT READ BSY                                RST31920
2664  0573               3193           CLHR  DEV,RDDEV          IS DEVICE CORRECT                            RST31930
2666  4330 2672          3194           BE    AK125              IF GOOD GO ON                                RST31940
266A  C8A0 3337          3195           LHI   ERR2,C'37'         ERROR 37                                     RST31950
266E  4300 1120          3196           B     ADRNG1             ADDR INCORRECT                               RST31960
2672  C580 0000          3197  AK125    CLHI  STAT,0             IS STATUS CORRECT                            RST31970
2676  4330 2686          3198           BE    SK125A             IF GOOD GO ON                                RST31980
267A  C8A0 3338          3199           LHI   ERR2,C'38'         ERROR 38                                     RST31990
267E  C8C0 3030          3200           LHI   TEMP,C'00'         SHOULD BE STATUS                             RST32000
2682  4300 1140          3201           B     STANG              STATUS INCORRECT                             RST32010
      0000 2686          3202  SK125A   EQU   *                                                               RST32020
2686  4820 3692          3203           LH    CLDEV,CONLIN       LOAD CDEVN                                   RST32030
268A  2621               3204           AIS   CLDEV,1            INCREMENT ADDRESS                            RST32040
268C  9D28               3205           SSR   CLDEV,STAT         SENSE STATUS ON CLEV+1                       RST32050
268E  4380 269A          3206           BFC   8,SK125            BRANCH IF NOT BUSY                           RST32060
2692  C8A0 3730          3207           LHI   ERR2,C'70'         ERROR 70                                     RST32070
2696  4300 110C          3208           B     INTNG              ERROR PRINT SEQUENCE                         RST32080
269A  C8C0 26BC          3209  SK125    LHI   TEMP,C2SF1         LOAD VECTOR ADDRESS                          RST32090
269E  41F0 349E          3210           BAL   LINK,TABINT        INITIALIZE ETPE INTERRUPT TABLE              RST32100
26A2  C8C0 40F0          3211           LHI   TEMP,X'40F0'       ENABLE                                       RST32110
26A6  95DC               3212           EPSR  CHAR,TEMP          PROCESSOR INTERRUPTS                         RST32120
26A8  DE20 34BA          3213           OC    CLDEV,DDRR         DROP RQ2S IN CNTL LINE                       RST32130
26AC  C800 0032          3214           LHI   R0,50              SET UP FOR 50 MILS DELAY                     RST32140
26B0  4160 3348          3215           BAL   RTN2,DELAYA        DELAY                                        RST32150
26B4  C8A0 3435          3216           LHI   ERR2,C'45'         ERROR 45                                     RST32160
26B8  4300 110C          3217           B     INTNG              CL2SN INT DIDNT OCCUR                        RST32170
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                0000 26BC          3218 C2SF1   EQU   *                                                    RST32180
26BC            4840 3690          3219         LH    WRDEV,TESLIN       LOAD UP TDEVN                     RST32190
26C0            2641               3220         AIS   WRDEV,1            ADD ONE TO WRDEV 19               RST32200
26C2            41F0 34B0          3221         BAL   LINK,STDAS         LOAD UP INT DEV AND STATUS        RST32210
26C6            0574               3222         CLHR  DEV,WRDEV          IS DEVICE CORRECT                 RST32220
26C8            4330 26D4          3223         BE    AK126              IF GOOD GO ON                     RST32230
26CC            C8A0 3436          3224         LHI   ERR2,C'46'         ERROR 46                          RST32240
26D0            4300 1128          3225         B     ADRNG2             ADDR INCORRECT                    RST32250
26D4            C580 0048          3226 AK126   CLHI  STAT,X'48'         IS STATUS CORRECT                 RST32260
26D8            4330 26E8          3227         BE    SK126              IF GOOD GO ON                     RST32270
26DC            C8A0 3437          3228         LHI   ERR2,C'47'         ERROR 47                          RST32280
26E0            C8C0 3438          3229         LHI   TEMP,C'48'         SHOULD BE STATUS                  RST32290
26E4            4300 1138          3230         B     STANGO             T SND STAT NG                     RST32300
                0000 26E8          3231 SK126   EQU   *                                                    RST32310
26E8            C8C0 269A          3232         LHI   TEMP,SK125         SET UP IF LOOP                    RST32320
26EC            40C0 369C          3233         STH   TEMP,TESTAD        ON ERROR REQUIRED                 RST32330
26F0            4820 3692          3234         LH    CLDEV,CONLIN       RESTORE DESTROYED REGISTER        RST32340
26F4            DE20 34C0          3235         OC    CLDEV,DDRW         RAISE RQ2S IN CNTL LINE           RST32350
26F8            4160 3340          3236         BAL   RTN2,DELAY         DELAY 3 MILS                      RST32360
26FC            41F0 3466          3237         BAL   LINK,IN1CLR        CLEAR ONE PENDING INTERRUPTS      RST32370
2700            C8C0 2722          3238         LHI   TEMP,WBSYF1        NPSW ADDR                         RST32380
2704            41F0 349E          3239         BAL   LINK,TABINT        INITIALIZE ETPE INTERRUPT TABLE   RST32390
2708            DA40 34CC          3240         WD    WRDEV,FOX          TRANS CHAR                        RST32400
270C            C8C0 40F0          3241         LHI   TEMP,X'40F0'       ENABLE                            RST32410
2710            95DC               3242         EPSR  CHAR,TEMP          PROCESSOR INTERRUPTS              RST32420
2712            C800 0005          3243         LHI   R0,5               SET UP FOR 5 MILS DELAY           RST32430
2716            4160 3348          3244         BAL   RTN2,DELAYA        DELAY 5 MILS                      RST32440
2718            C8A0 3432          3245         LHI   ERR2,C'42'         ERROR 42                          RST32450
271E            4300 110C          3246         B     INTNG              WBSY INT DIDNT OCCUR              RST32460
                0000 2722          3247 WBSYF1  EQU   *                                                    RST32470
2722            41F0 34B0          3248         BAL   LINK,STDAS         LOAD UP INT DEV AND STATUS        RST32480
2726            0574               3249         CLHR  DEV,WRDEV          IS DEVICE CORRECT                 RST32490
2728            4330 2734          3250         BE    AK127              IF DEVUCE GOOD GO ON              RST32500
272C            C8A0 3433          3251         LHI   ERR2,C'43'         ERROR 43                          RST32510
2730            4300 1128          3252         B     ADRNG2             ADDR INCORRECT                    RST32520
2734            C580 0000          3253 AK127   CLHI  STAT,0             IS STATUS CORRECT                 RST32530
2738            4330 2748          3254         BE    SK127A             IF GOOD GO ON                     RST32540
273C            C8A0 3434          3255         LHI   ERR2,C'44'         ERROR 44                          RST32550
2740            C8C0 3030          3256         LHI   TEMP,C'00'         SHOULD BE STATUS                  RST32560
2744            4300 1138          3257         B     STANGO             T SND STAT NG                     RST32570
2748            DE20 34BA          3258 SK127A  OC    CLDEV,DDRR         CNTL LINE TO RCV MODE             RST32580
274C            C800 0190          3259         LHI   R0,400             SET UP FOR 400 MILS DELAY         RST32590
2750            4160 3348          3260         BAL   RTN2,DELAYA        DELAY                             RST32600
2754            4820 3692          3261         LH    CLDEV,CONLIN       LOAD CDEVN                        RST32610
2758            9D28               3262         SSR   CLDEV,STAT         SENSE STATUS ON CDEV              RST32620
275A            9B2C               3263         RDR   CLDEV,TEMP         INIT BSY                          RST32630
275C            C480 0008          3264         NHI   STAT,8             MASK OFF                          RST32640
2760            4330 276C          3265         BZ    SK127              BRANCH IF BSY =0                  RST32650
2764            C8A0 3731          3266         LHI   ERR2,C'71'         ERROR 71                          RST32660
2768            4300 110C          3267         B     INTNG              ERROR PRINT SEQUENCE              RST32670
                0000 276C          3268 SK127   EQU   *                                                    RST32680
276C            4150 33C6          3269         BAL   RTN,RSTR           RESTORE PARAMETERS                RST32690
2770            4300 0E50          3270         B     TSTEND             GOOD TEST END                     RST32700
                                   3271 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST32710
                                   3272 *                                                                  RST32720
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3273  * TEST D       RCV/SND MESSAGE INT MODE  (FDX)              *          RST32730
3274  *                                                                       RST32740
3275  * PURPOSE:                                                             RST32750
3276  *  RECEIVE AND TRANSMIT A MESSAGE OF 20 CHARACTERS IN THE INTERRUPT     RST32760
3277  *  MODE USING ALL POSSIBLE COMBINATIONS OF PARAMETERS.                  RST32770
3278  *                                                                       RST32780
3279  * DESIGN SPECIFICATION:                                                RST32790
3280  *  THIS SUBTEST IS EXECUTED IN THE INTERRUPT MODE. A CHARACTER IS       RST32800
3281  *  TRANSMITTED FROM BOTH THE CNTL AND TEST LINES SIMULTANEOUSLY FROM    RST32810
3282  *  THE LOCATION SPECIFIED BY TBUF. THE HARDWARE IS ALLOWED              RST32820
3283  *  APPROXIMATELY 400 MILLISECONDS TO GENERATE AN INTERRUPT. CHARACTERS  RST32830
3284  *  ARE TRANSMITTED WITH EACH SND BSY INTERRUPT FROM THE TEST LINE,AND   RST32840
3285  *  CHARACTERS ARE READ WITH EACH RCV BSY INTERRUPT FROM THE TEST LINE.   RST32850
3286  *  CHARACTERS READ FROM TEST LINE ARE STORED IN RBUF AND CHARACTERS      RST32860
3287  *  READ FROM THE CNTL LINES ARE STORED IN RBUF1. THE SEQUENCE OF ACTION RST32870
3288  *  IS TRANSMIT CHARACTER; ALLOW TEST RCV BSY INTERRUPT TO OCCUR READ    RST32880
3289  *  CHARACTER AND STORE, ALLOW TEST SND BSY INTERRUPT TO OCCUR AND        RST32890
3290  *  TRANSMIT THE CHARACTER. AFTER 20 CHARACTERS HAVE BEEN RECEIVED FROM  RST32900
3291  *  BOTH LINES THE PROGRAM COMPARES THE DATA TRANSMITTED WITH            RST32910
3292  *  THE DATA RECEIVED FROM BOTH LINES.                                   RST32920
3293  *                                                                       RST32930
3294  * HOW TO RUN TEST D                                                    RST32940
3295  *                                                                       RST32950
3296  * TYPE: MODE 1                                                         RST32960
3297  *       CLOCK ABCD  (ASSUMING 4 CLOCKS PRESENT ON THE SYSTEM )         RST32970
3298  *       TEST D                                                         RST32980
3299  *       RUN                                                            RST32990
3300  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                             RST33000
3301  *        CDEVN                                                         RST33010
3302  *        TDEVN                                                         RST33020
3303  *        NOMSG                                                         RST33030
3304  *        LOOP                                                          RST33040
3305  *        CONTIN                                                        RST33050
3306  *        MODE                                                          RST33060
3307  *        CLOCK                                                         RST33070
3308  *        LPERR                                                         RST33080
3309  *                                                                      RST33090
3310  ** ERRORS THAT CAN OCCUR IN THIS TEST                                 RST33100
3311  * 01-FALSE SYNC HAS OCCURRED                                           RST33110
3312  * 36-CHARACTERS TRANSMITTED FROM CNTL TO TEST LINE BUT DID NOT GET A   RST33120
3313  *    RECEIVE CHARACTER INTERRUPT ON TEST RCV LINE                      RST33130
3314  * 37-RECEIVED CHARACTER GENERATED AN INTERRUPT ON TEST RCV LINE        RST33140
3315  *    BUT INTERRUPT ADDRESS INCORRECT                                   RST33150
3316  * 38-RECEIVED CHARACTER GENERATED AN INTERRUPT ON TEST RCV LINE        RST33160
3317  *    BUT STATUS INCORRECT                                              RST33170
3318  * 49-DATA MISMATCH ON MESSAGE READ FROM TEST RCV LINE OCCURRED.        RST33180
3319  * 52-DATA MISMATCH ON MESSAGE READ FROM CNTL LINE OCCURRED             RST33190
3320  * 67-CNTL SND STATUS INCORRECT WHEN READY TO TRANSMIT CHARACTER        RST33200
3321  * 70-CNTL SND BUSY STATUS BIT INCORRECT WHEN READY TO TRANSMIT CHAR.   RST33210
3322  * 71-CNTL RCV BUSY STATUS BIT INCORRECT WHEN CHARACTER ASSEMBLY        RST33220
3323  * 72-TRANSISTION OF BSY TO NOT-BSY ON TEST SND LINE DID NOT GENERATE   RST33230
3324  *    AN INTERRUPT                                                      RST33240
3325  * 73-TRANSISTION OF BSY TO NOT-BSY ON THE TEST SND LINE CAUSED         RST33250
3326  *    INTERRUPT, BUT ADDRESS INCORRECT                                  RST33260
3327  * 74-TRANSITION OF BSY TO NOT BSY ON THE TEST SND LINE CAUSED          RST33270
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                        3328  *    INTERRUPT,BUT STATUS INCORRECT                                        RST33280
                        3329  * 75-CNTL RCV STATUS NOT CORRECT WHEN CHARACTER RECEIVED                   RST33290
                        3330  *                                                                         RST33300
                        3331  *  THIS TEST RUNS IN FULL DUPLEX ONLY                                     RST33310
                        3332  *                                                                         RST33320
                        3333  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 3 MINUTES,                   RST33330
                        3334  *    ACTUAL TIME DEPENDS ON CLOCK (BAUD RATE) SELECTED.                   RST33340
                        3335  *                                                                         RST33350
                        3336  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *   RST33360
   0000 2774            3337  TESTD    EQU   *                                                        RST33370
2774 41E0 1A56          3338  TEST131  BAL   RTN4,INITA          INITIALIZE SYSTEM                    RST33380
2778 41F0 339E          3339           BAL   R15,DISPLAY1       DISPLAY BTESTNO, TDEVN, CMD2         RST33390
277C 48C0 1964          3340           LH    TEMP,MODE+6        CHECK MODE                           RST33400
2780 4330 3280          3341           BZ    NOTEST2            IF HALF DUP PRINT CAUTION            RST33410
2784 27C1               3342           SIS   TEMP,1             DECREMENT COUNTER                    RST33420
2786 D2C0 371E          3343           STB   TEMP,COUNTER       LOAD COUNTER                         RST33430
278A 4160 3422          3344  TEST1311 BAL   R6,CLKCHG          ADJUST CLOCK                         RST33440
   0000 278E            3345  CLR      EQU   *                                                        RST33450
278E 4180 3356          3346  TEST1312 BAL   RTN3,CLERR1        INIT RCV BUSY ON BOTH SIDES          RST33460
2792 41F0 339E          3347           BAL   R15,DISPLAY1       DISPLAY BTESTNO, TDEVN, CMD2         RST33470
2796 C8C0 278E          3348           LHI   TEMP,CLR           LOAD LOOP ADDRESS                    RST33480
279A 40C0 369C          3349           STH   TEMP,TESTAD        ON ERROR REQUIRED                    RST33490
279E 40C0 369A          3350           STH   TEMP,LPERFLG       SET LOOP FLAG                        RST33500
27A2 DE30 34C5          3351           OC    RDDEV,EDRR         ENABLE TEST RCV INT                  RST33510
27A6 4240 1B7C          3352           BTC   4,FLSYNC           INTERMEDIATE CHECK FOR FALSE SYNC    RST33520
27AA DE40 34C6          3353           OC    WRDEV,EDRW         ENABLE TEST SND INT                  RST33530
27AE DE20 34BA          3354           OC    CLDEV,DDRR         DIS CNTL INTS                        RST33540
27B2 DE20 34C0          3355           OC    CLDEV,DDRW         DIS,DTR,RCT,WRITE                    RST33550
27B6 C8C0 34D0          3356           LHI   TEMP,DTBL          TBUF=DTBL                            RST33560
27BA 40C0 3684          3357           STH   TEMP,TBUF          SET UP DATA TABLE                    RST33570
27BE 4150 2FD6          3358  TES132   BAL   RTN,RMFI           READ MSG FDX DRIVER                  RST33580
27C2 C8A0 3439          3359           LHI   ERR2,C'49'         ERROR 49                             RST33590
27C6 4180 3238          3360           BAL   RTN3,CRDTA         CHECK DATA READ BY T LINE            RST33600
27CA C8A0 3532          3361           LHI   ERR2,C'52'         ERROR 52                             RST33610
27CE 4180 3244          3362           BAL   RTN3,CRDTB         CHECK DATA READ BY C LINE            RST33620
27D2 41F0 1470          3363           BAL   LINK,TSTBRK        IS BREAK KEY DEPRESSED               RST33630
27D6 4160 3292          3364           BAL   R6,PARCHG          UPDATE PARAMETERS                    RST33640
27DA 4300 278E          3365           B     TEST1312           DO TEST AGAIN                        RST33650
27DE 4300 278A          3366           B     TEST1311           UPDATE CLOCK AND GO                  RST33660
                        3367  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *   RST33670
                        3368  *                                                                         RST33680
                        3369  * TEST E       RCV/SND MESSAGE STATUS MODE  (FDX)          *            RST33690
                        3370  *                                                                         RST33700
                        3371  * PURPOSE:                                                               RST33710
                        3372  *  RECEIVE AND TRANSMIT A MESSAGE OF 20 CHARACTERS IN THE STATUS MODE.   RST33720
                        3373  *                                                                         RST33730
                        3374  * DESIGN SPECIFICATION:                                                  RST33740
                        3375  *  THIS SUBTEST EXECUTES IN THE STATUS MODE. A CHARACTER IS TRANSMITTED  RST33750
                        3376  *  FROM BOTH THE CNTL AND TEST LINES SIMULTANEOUSLY FROM THE LOCATION    RST33760
                        3377  *  SEPCIFIED BY TBUF. THE TEST LINE IS ALLOWED SEVERAL HUNDRED          RST33770
                        3378  *  MILLISECONDS TO EITHER BE READY TO TRANSMIT ANOTHER CHARACTER OR      RST33780
                        3379  *  HAVE A CHARACTER ASSEMBLED ON THE RCV SIDE. THE SEQUENCE OF ACTION    RST33790
                        3380  *  IS: TRANSMIT A CHARACTER; WAIT FOR TEST RCV BSY TO DROP; READ AND     RST33800
                        3381  *  STORE CHARACTER, WAIT FOR TEST SND BSY TO DROP, AND TRANSMIT          RST33810
                        3382  *  A CHARACTER.                                                          RST33820
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                                3383  *   CHARACTERS READ FROM THE TEST LINE ARE STORED IN RBUF, CHARACTERS     RST33830
                                3384  *  READ FROM CNTL LINES ARE STORED IN RBUF1. AFTER 20 CHARACTERS HAVE    RST33840
                                3385  *  BEEN READ FROM EACH LINE, THE PROGRAM COMPARES THE MESSAGE READ       RST33850
                                3386  *  WITH THE MESSAGE RECEIVED.                                           RST33860
                                3387  *                                                                       RST33870
                                3388  * HOW TO RUN TEST E                                                     RST33880
                                3389  *                                                                       RST33890
                                3390  * TYPE: MODE 1                                                         RST33900
                                3391  *       PARA AB  (WHERE AB SPECIFIES PARTICULAR CLOCK AND BIT COMB.)    RST33910
                                3392  *       TEST E                                                         RST33920
                                3393  *       RUN                                                            RST33930
                                3394  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                              RST33940
                                3395  *        CDEVN                                                         RST33950
                                3396  *        TDEVN                                                         RST33960
                                3397  *        NOMSG                                                         RST33970
                                3398  *        LOOP                                                          RST33980
                                3399  *        CONTIN                                                        RST33990
                                3400  *        MODE                                                          RST34000
                                3401  *        PARA                                                          RST34010
                                3402  *        LPERR                                                         RST34020
                                3403  *                                                                      RST34030
                                3404  ** ERRORS THAT CAN OCCUR IN THIS TEST                                 RST34040
                                3405  * 01-FALSE SYNC HAS OCCURRED                                           RST34050
                                3406  * 49-DATA MISMATCH ON MESSAGE READ FROM TEST RCV LINE OCCURRED.        RST34060
                                3407  * 50-CHARACTER TRANSMITTED FROM CNTL LINE TO TEST RCV LINE BUT BSY    RST34070
                                3408  *    STATUS BIT DID NOT GET RESET ON RECEIPT OF CHARACTER              RST34080
                                3409  * 51-BSY STATUS BIT ON TEST RCV LINE CORRECT UPON RECEIPT OF           RST34090
                                3410  *    CHARACTER BUT THE REMAINDER OF STATUS INCORRECT.                  RST34100
                                3411  * 52-DATA MISMATCH ON MESSAGE READ FROM CNTL LINE OCCURRED             RST34110
                                3412  * 53-BSY STATUS BIT ON TEST SND LINE INCORRECT WHEN READY TO           RST34120
                                3413  *    TRANSMIT CHARACTER                                               RST34130
                                3414  * 54-STATUS WORD ON TEST SND LINE INCORRECT WHEN READY TO TRANSMIT     RST34140
                                3415  *    CHARACTER                                                        RST34150
                                3416  * 67-CNTL SND STATUS INCORRECT WHEN READY TO TRANSMIT CHARACTER        RST34160
                                3417  * 70-CNTL SND BUSY STATUS BIT INCORRECT WHEN READY TO TRANSMIT CHAR.   RST34170
                                3418  * 71-CNTL RCV BUSY STATUS BIT INCORRECT WHEN CHARACTER ASSEMBLY       RST34180
                                3419  *                                                                      RST34190
                                3420  *  THIS TEST RUNS IN FULL DUPLEX ONLY                                 RST34200
                                3421  *                                                                      RST34210
                                3422  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 3 SECONDS                RST34220
                                3423  *                                                                      RST34230
                                3424  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST34240
      0000 27E2                 3425  TESTE    EQU   *                                                     RST34250
27E2  41E0 1A56                 3426           BAL   RTN4,INITA          INITIALIZE SYSTEM                RST34260
27E6  41F0 339E                 3427           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2     RST34270
27EA  48C0 1964                 3428           LH    TEMP,MODE+6         CHECK MODE                       RST34280
27EE  4330 3280                 3429           BZ    NOTEST2             IF HALF DUP PRINT CAUTION        RST34290
27F2  4180 3356                 3430           BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH LINES      RST34300
27F6  C8C0 34D0                 3431           LHI   TEMP,DTBL           SET UP DATA TABLE                RST34310
27FA  40C0 3684                 3432           STH   TEMP,TBUF           MSG POINTER                      RST34320
27FE  C8C0 3124                 3433           LHI   TEMP,RMFS           SET UP IF LOOP                   RST34330
2802  40C0 369C                 3434           STH   TEMP,TESTAD         ON ERROR REQUIRED                RST34340
2806  40C0 369A                 3435           STH   TEMP,LPERFLG        SET LOOP FLAG                    RST34350
280A  DE30 34BA                 3436  TES142   OC    RDDEV,DDRR          INIT BOTH LINES                  RST34360
280E  4240 1B7C                 3437           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC RST34370
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2812  DE40 34C0          3438          OC    WRDEV,DDRW          DIS,DTR,RCT,WRITE                    RST34380
2816  4820 3692          3439          LH    CLDEV,CONLIN        LOAD UP CDEVN OPTION                 RST34390
281A  DE20 34BA          3440          OC    CLDEV,DDRR          OUTPUT COMMAND TO CLDEV              RST34400
281E  DE20 34C0          3441          OC    CLDEV,DDRW          DIS,DTR,RCT,WRITE                    RST34410
2822  4160 3340          3442          BAL   RTN2,DELAY          DELAY                                RST34420
2826  4150 3124          3443          BAL   RTN,RMFS            READ MSG FDX SUB                     RST34430
282A  C8A0 3439          3444          LHI   ERR2,C'49'          ERROR 49                             RST34440
282E  4180 3238          3445          BAL   RTN3,CRDTA          COMPARE READ DATA                    RST34450
2832  C8A0 3532          3446          LHI   ERR2,C'52'          ERROR 52                             RST34460
2836  4180 3244          3447          BAL   RTN3,CRDTB          COMPARE WRITE DATA                   RST34470
283A  4150 33C6          3448          BAL   RTN,RSTR            RESTORE PARAMETERS                   RST34480
283E  4300 0E50          3449          B     TSTEND              GOOD TEST END                        RST34490
                         3450  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *      RST34500
                         3451  *                                                                      RST34510
                         3452  * TEST F       TRANS LINE BRK TEST                          *         RST34520
                         3453  *                                                                      RST34530
                         3454  * PURPOSE:                                                            RST34540
                         3455  *  TEST TRANSMIT LINE BREAK FUNCTION OF THE TEST LINE.                 RST34550
                         3456  *                                                                      RST34560
                         3457  * DESIGN SPECIFICATION:                                               RST34570
                         3458  *  THIS SUBTEST VERIFIES THE OPERATION OF THE OPERATION OF THE        RST34580
                         3459  *  TRANS LBRK FUNCTION OF THE TEST LINE.                              RST34590
                         3460  *   THE TRANS LBRK FUNCTION IS ACTIVATED ON THE TEST LINE; IMMEDIATELY RST34600
                         3461  *  FOLLOWING A NON ZERO CHARACTER IS TRANSMITTED FROM THE TEST TO      RST34610
                         3462  *  CNTL LINE. A SECOND NON ZERO CHARACTER IS THEN TRANSMITTED WHEN     RST34620
                         3463  *  THE TEST SND BSY DROPS. AT THIS POINT, THE CNTL LINE IS PUT IN     RST34630
                         3464  *  THE RCV MODE AND THE PROGRAM INTERROGATES THE CNTL RCV BSY UNTIL    RST34640
                         3465  *  IT DROPS, INDICATING AN ASSEMBLY OF THE FIRST CHARACTER.           RST34650
                         3466  *  THE TRANS LBRK IS IMMEDIATELY DEACTIVATED TO ALLOW THE SECOND      RST34660
                         3467  *  CHARACTER TO BE ASSEMBLED. THE STATUS FROM THE CNTL RCV LINE IS     RST34670
                         3468  *  CHECKED FOR A FRAMING ERROR, AND THE CHARACTER RECEIVED IS CHECKED  RST34680
                         3469  *  FOR ALL ZEROS. THE PROGRAM THEN WAITS FOR THE SECOND CHARACTER TO   RST34690
                         3470  *  BE ASSEMBLED. THE STATUS SHOULD BE CLEARED OF THE LINE BREAK       RST34700
                         3471  *  CONDITION AND THE CHARACTER SHOULD BE NON-ZERO DATA.               RST34710
                         3472  *                                                                      RST34720
                         3473  * HOW TO RUN TEST F                                                   RST34730
                         3474  *                                                                      RST34740
                         3475  * TYPE: TEST F                                                        RST34750
                         3476  *       PARA AB  (WHERE AB SPECIFIES PARTICULAR CLOCK AND BIT COMB.)   RST34760
                         3477  *       RUN                                                           RST34770
                         3478  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                            RST34780
                         3479  *        CDEVN                                                        RST34790
                         3480  *        TDEVN                                                        RST34800
                         3481  *        NOMSG                                                        RST34810
                         3482  *        LOOP                                                         RST34820
                         3483  *        CONTIN                                                       RST34830
                         3484  *        MODE                                                         RST34840
                         3485  *        PARA                                                         RST34850
                         3486  *                                                                      RST34860
                         3487  ** ERRORS THAT CAN OCCUR IN THIS TEST                                RST34870
                         3488  * 01-FALSE SYNC HAS OCCURRED                                          RST34880
                         3489  * 53-BSY STATUS BIT ON TEST SND LINE INCORRECT WHEN READY TO          RST34890
                         3490  *    TRANSMIT CHARACTER                                             RST34900
                         3491  * 55-STATUS OF CNTL RCV LINE INCORRECT UPON ASSEMBLY OF LINE BREAK    RST34910
                         3492  *    CHARACTER.                                                     RST34920
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                                3493  * 56-STATUS OF CNTL RCV LINE CORRECT FOR LINE BREAK CHARACTER BUT        RST34930
                                3494  *    DATA CHARACTER NOT 0.                                               RST34940
                                3495  * 57-ON SUBSEQUENT CHARACTER AFTER LINE BREAK CNTL RCV STATUS DID NOT    RST34950
                                3496  *    RECOVER                                                             RST34960
                                3497  * 58-CNTL RCV LINE DID NOT RECEIVE CORRECT CHARACTER AFTER LINE BREAK    RST34970
                                3498  * 71-CNTL RCV BUSY STATUS BIT INCORRECT WHEN CHARACTER ASSEMBLY          RST34980
                                3499  *                                                                        RST34990
                                3500  *  THIS TEST MAY BE RUN IN HALF OR FULL DUPLEX                          RST35000
                                3501  *                                                                        RST35010
                                3502  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 3 SECONDS                  RST35020
                                3503  *                                                                        RST35030
                                3504  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    RST35040
      0000 2842                 3505  TESTF    EQU   *                                                        RST35050
2842  41E0 1A56                 3506           BAL   RTN4,INITA          INITIALIZE SYSTEM                   RST35060
2846  41F0 339E                 3507           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2        RST35070
284A  4180 3356                 3508           BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH LINES         RST35080
      0000 284E                 3509  ITM0     EQU   *                                                        RST35090
284E  DE30 34BA                 3510           OC    RDDEV,DDRR          TEST LINE TO RCV MODE               RST35100
2852  4240 1B7C                 3511           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC   RST35110
2856  DE20 34BA                 3512           OC    CLDEV,DDRR          CNTL LINE TO RCV MODE               RST35120
285A  DE40 34C0                 3513           OC    WRDEV,DDRW          DIS,DTR,RCT,WRITE                   RST35130
285E  DE20 34C0                 3514           OC    CLDEV,DDRW          DIS,DTR,RCT,WRITE                   RST35140
2862  9B2C                      3515           RDR   CLDEV,TEMP          INIT READ BUSY                      RST35150
2864  DE30 34C7                 3516  TLBM1    OC    RDDEV,DDRLW         ACTIVATE TRANS LINE BRK             RST35160
2868  DA40 34CC                 3517           WD    WRDEV,FOX           TRANS CHAR                          RST35170
286C  C8C0 7FFF                 3518  LBW1     LHI   TEMP,X'7FFF'        LOAD TIMEOUT                        RST35180
2870  0ACC                      3519           AAR   TEMP,TEMP           DOUBLE IT                           RST35190
      0000 2872                 3520  LBW12    EQU   *                                                        RST35200
2872  9D48                      3521           SSR   WRDEV,STAT          SENSE STATUS ON WRDEV               RST35210
2874  4380 2886                 3522           BFC   8,LBW2              WHEN BUSY DROPS BRANCH TO LBW 2     RST35220
2878  27C1                      3523           SIS   TEMP,1              DECREMENT TEMP                      RST35230
287A  4380 2872                 3524           BNC   LBW12               SENSE AGAIN                         RST35240
287E  C8A0 3533                 3525           LHI   ERR2,C'53'          ERROR 53                            RST35250
2882  4300 110C                 3526           B     INTNG               ERROR PRINT SEQUENCE                RST35260
2886  DE20 34BA                 3527  LBW2     OC    CLDEV,DDRR          CNTL LINE TO RCV MODE               RST35270
288A  4200 0000                 3528           NOP   0                   NO OP DELAY                         RST35280
288E  C8C0 7FFF                 3529  LBW2A    LHI   TEMP,X'7FFF'        LOAD TIMEOUT                        RST35290
2892  0ACC                      3530           AAR   TEMP,TEMP           DOUBLE IT                           RST35300
      0000 2894                 3531  LBW2A2   EQU   *                                                        RST35310
2894  9D28                      3532           SSR   CLDEV,STAT          SENSE STATUS ON CLDEV               RST35320
2896  4380 28A8                 3533           BFC   8,LBW2B             BRANCH IF NOT BUSY                  RST35330
289A  27C1                      3534           SIS   TEMP,1              DECREMENT TEMP                      RST35340
289C  4380 2894                 3535           BNC   LBW2A2              SENSE AGAIN                         RST35350
28A0  C8A0 3731                 3536           LHI   ERR2,C'71'          ERROR 71                            RST35360
28A4  4300 110C                 3537           B     INTNG               ERROR PRINT SEQUENCE                RST35370
28A8  DB20 368A                 3538  LBW2B    RD    CLDEV,SVECHA        READ CHAR                           RST35380
28AC  DE30 34C0                 3539           OC    RDDEV,DDRW          OUT OF TRANS LBRK MODE              RST35390
28B0  9D28                      3540           SSR   CLDEV,STAT          SENSE STATUS ON CLDEV               RST35400
28B2  C480 00BF                 3541           NHI   STAT,X'BF'          MASK OFF                            RST35410
28B6  C580 002C                 3542           CLHI  STAT,X'2C'          IS STATUS CORRECT                   RST35420
28BA  4330 28CA                 3543           BE    SK151               IF GOOD GO ON                       RST35430
28BE  C8A0 3535                 3544           LHI   ERR2,C'55'          ERROR 55                            RST35440
28C2  C8C0 3243                 3545           LHI   TEMP,C'2C'          SHOULD BE STATUS                    RST35450
28C6  4300 1148                 3546           B     ST1NG               C RCV STAT NG                       RST35460
      0000 28CA                 3547  SK151    EQU   *                                                        RST35470
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28CA   DA40 34CC          3548           WD    WRDEV,FOX          WRITE DATA 2ND CHAR                    RST35480
28CE   D3B0 368A          3549           LB    DATAR,SVECHA       SAVE CHARACTER                         RST35490
28D2   C5B0 0000          3550           CLHI  DATAR,0            IS DATA CORRECT                        RST35500
28D6   4330 28F0          3551  TFE56    BE    CK151              DOES DATA CHECK OUT                    RST35510
28DA   C8A0 3536          3552           LHI   ERR2,C'56'         ERROR 56                               RST35520
28DE   2400               3553           LIS   R0,0               ZERO OUT R0                            RST35530
28E0   4000 368A          3554           STH   R0,SVECHA          ZERO OUT SAVE CHARACTER                RST35540
       0000 28E4          3555  BEXT15   EQU   *                                                         RST35550
28E4   4160 11A6          3556           BAL   RTN2,ERROR1        SET UP FOR ERROR PRINT                 RST35560
28E8   4160 120C          3557           BAL   RTN2,ERROR7        SET UP ERROR 7                         RST35570
28EC   4300 1190          3558           B     NGEND              CHAR INCORRECT                         RST35580
28F0   C8C0 7FFF          3559  CK151    LHI   TEMP,X'7FFF'        LOAD TIMEOUT                           RST35590
28F4   0ACC               3560           AAR   TEMP,TEMP          DOUBLE IT                              RST35600
       0000 28F6          3561  CK1512   EQU   *                                                         RST35610
28F6   9D28               3562           SSR   CLDEV,STAT         SENSE STATUS ON CLDEV                  RST35620
28F8   4380 290A          3563           BFC   8,CK151A           BRANCH IF NOT BUSY                     RST35630
28FC   27C1               3564           SIS   TEMP,1             DECREMENT TEMP                         RST35640
28FE   4380 28F6          3565           BNC   CK1512             SENSE AGAIN                            RST35650
2902   C8A0 3731          3566           LHI   ERR2,C'71'         ERROR 71                               RST35660
2906   4300 110C          3567           B     INTNG              ERROR PRINT SEQUENCE                   RST35670
290A   DB20 368A          3568  CK151A   RD    CLDEV,SVECHA       READ SECOND CHAR                       RST35680
290E   C580 0000          3569           CLHI  STAT,0             IS STATUS CORRECT                      RST35690
2912   4330 2922          3570           BE    SK152              IF GOOD GO ON                          RST35700
2916   C8A0 3537          3571           LHI   ERR2,C'57'         ERROR 57                               RST35710
291A   C8C0 3030          3572           LHI   TEMP,C'00'         SHOULD BE STATUS                       RST35720
291E   4300 1148          3573           B     ST1NG              C RCV STAT NG                          RST35730
2922   2400               3574  SK152    LIS   R0,0               ZERO OUT R0                            RST35740
2924   D400 368A          3575           CLB   R0,SVECHA          IS DATA ZERO                         R RST35750
2928   4230 2944          3576           BNE   EXIT15             IF NOT EXIT                            RST35760
292C   D3B0 368A          3577           LB    DATAR,SVECHA       LOAD CHARACTER                         RST35770
2930   D3C0 34CC          3578           LB    TEMP,FOX           LOAD FF                                RST35780
2934   41E0 330E          3579           BAL   RTN4,BITSB         CONVERT                                RST35790
2938   D2C0 368A          3580           STB   TEMP,SVECHA        STORE INTO SAVE CHARACTER              RST35800
293C   C8A0 3538          3581           LHI   ERR2,C'58'         ERROR 58                               RST35810
2940   4300 28E4          3582           B     BEXT15             CHAR INCORRECT.                        RST35820
2944   4150 33C6          3583  EXIT15   BAL   RTN,RSTR           RESTORE PARAMETERS                     RST35830
2948   4300 0E50          3584           B     TSTEND             GOOD TEST END                          RST35840
                          3585  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  RST35850
                          3586  *                                                                       RST35860
                          3587  * TEST 10       FAULT DETECTION TEST                              *     RST35870
                          3588  *                                                                       RST35880
                          3589  * PURPOSE:                                                             RST35890
                          3590  *  FAULT DETECTION TEST; PARITY,RECEIVE LINE BREAK, AND OVERFLOW       RST35900
                          3591  *  DETECTION OF TEST LINE.                                            RST35910
                          3592  *                                                                       RST35920
                          3593  * DESIGN SPECIFICATION:                                               RST35930
                          3594  *  THIS SUBTEST IS SEPARATED INTO 3 SECTION;                          RST35940
                          3595  *                                                                       RST35950
                          3596  *   PARITY ERROR DETECTION- IN THIS SECTION A CLOCK IS SELECTED, 8     RST35960
                          3597  *    DATA BITS, ONE STOP BIT, AND ODD PARITY FOR THE TEST LINE, AND    RST35970
                          3598  *   INVERTS THE PARITY FOR THE CNTL LINE.                              RST35980
                          3599  *     A CHARACTER IS TRANSMITTED FROM THE CNTL TO TEST LINE FROM       RST35990
                          3600  *    THE LOCATION SPECIFIED BY TBUF. THE TEST ALLOWS SEVERAL           RST36000
                          3601  *    HUNDRED MILLISECONDS FOR THE CHARACTER TO BE ASSEMBLED AT THE TEST RST36010
                          3602  *    LINE. WHEN THE TEST RCV BSY DROPS,INDICATING CHARACTER ASSEMBLED, RST36020
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3603  *    THE STATUS IS CHECKED TO INSURE A PARITY ERROR INDICATION. THIS      RST36030
3604  *    IS PERFORMED FOR A MESSAGE OF 20 CHARACTERS. AFTER ALL 20            RST36040
3605  *    CHARACTERS HAVE BEEN RECEIVED, THE PARITY OPTION OF EACH LINE        RST36050
3606  *    IS INVERTED SUCH THAT TEST=EVEN PARITY; CNTL= ODD PARITY. THE        RST36060
3607  *    MESSAGE IS REPEATED UNDER NEW PARITY SELECTION.                      RST36070
3608  *                                                                         RST36080
3609  *                                                                         RST36090
3610  *    RECEIVE LINE BREAK- THIS SECTION VERIFIES THE DETECTION OF A         RST36100
3611  *     LINE BREAK CHARACTER BEING RECEIVED AT THE TEST LINE. THE           RST36110
3612  *    TRANSMIT LINE BREAK FUNCTION IS ACTIVATED IN THE CNTL LINE           RST36120
3613  *    AND IMMEDIATELY AFTER, A NON-ZERO CHARACTER IS TRANSMITTED FROM      RST36130
3614  *    THE CNTL LINE TO THE TEST LINE. WHEN CNTL LINE IS READY TO ACCEPT    RST36140
3615  *    ANOTHER CHARACTER, A SECOND NON-ZERO CHARACTER IS TRANSMITTED:       RST36150
3616  *     MODE 1- INTERRUPTS ARE ALLOWED ON THE TEST RCV LINE. THE LINE       RST36160
3617  *     IS ALLOWED  APPROXIMATELY ONE SECOND TO ASSEMBLE THE CHARACTERS,    RST36170
3618  *      ON THE INTERRUPT THE ADDRESS IS CHECKED.                           RST36180
3619  *     MODE 2- THE TEST RCV BSY IS INTERROGATED TO DETERMINE WHEN          RST36190
3620  *      THE CHARACTER HAS BEEN ASSEMBLED.                                  RST36200
3621  *   UPON THE RECEIPT OF THE FIRST CHARACTER, THE TRANS LBRK MODE IS        RST36210
3622  *    DEACTIVATED IN THE CNTL LINE. THE STATUS OF THE TEST RCV LINE IS     RST36220
3623  *   TESTED FOR A FRAMING ERROR AND THE CHARACTER READ SHOULD BE ZERO.     RST36230
3624  *    THE TEST THEN WAITS FOR THE NEXT CHARACTER TO BE ASSEMBLED,          RST36240
3625  *   AT WHICH TIME A NON-ERROR STATUS SHOULD RESULT ALONG WITH A NON-      RST36250
3626  *     ZERO CHARACTER.                                                     RST36260
3627  *                                                                         RST36270
3628  *                                                                         RST36280
3629  *   OVERFLOW - THIS SECTION VERIFIES THE DETECTION OF THE OVER FLOW       RST36290
3630  *    ERROR CONDITION IN THE TEST LINE. THREE DIFFERENT CHARACTERS ARE     RST36300
3631  *    TRANSMITTED FROM THE CNTL LINE TO THE TEST LINE, IN SUCCESSION       RST36310
3632  *    (CHARACTER=1,2 AND 4 RESPECTIVELY). THE TEST INTERROGATES THE        RST36320
3633  *    TEST RCV STATUS LOOKING FOR AN OVERFLOW ERROR CONDITION. IT ALLOWS   RST36330
3634  *    THE LINE SEVERAL HUNDRED MILLISECONDS. AS SOON AS THE OVERFLOW       RST36340
3635  *     STATUS IS DETECTED, THE TEST DELAYS AN ADDITIONAL AMOUNT OF TIME    RST36350
3636  *    THEN READS THE CHARACTER IN THE OUTPUT BUFFER. THIS                  RST36360
3637  *    CHARACTER SHOULD BE THE SECOND CHARACTER TRANSMITTED. THE TEST       RST36370
3638  *    THEN WAIT FOR THE ASSEMBLY OF THE THIRD CHARACTER. AT THIS           RST36380
3639  *    POINT, THE STATUS SHOULD RECOVER TO A NON-OVFL CONDITION.            RST36390
3640  *                                                                         RST36400
3641  * HOW TO RUN TEST 10                                                      RST36410
3642  *                                                                         RST36420
3643  * TYPE: TEST 10                                                          RST36430
3644  *       PARA AB  (WHERE AB SPECIFIES PARTICULAR CLOCK AND BIT COMB.)      RST36440
3645  *       RUN                                                               RST36450
3646  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                                RST36460
3647  *        CDEVN                                                            RST36470
3648  *        TDEVN                                                            RST36480
3649  *        NOMSG                                                            RST36490
3650  *        LOOP                                                             RST36500
3651  *        CONTIN                                                           RST36510
3652  *        MODE                                                             RST36520
3653  *        PARA                                                             RST36530
3654  *        LPERR                                                            RST36540
3655  *                                                                         RST36550
3656  ** ERRORS THAT CAN OCCUR IN THIS TEST                                    RST36560
3657  * 01-FALSE SYNC HAS OCCURRED                                             RST36570
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                                3658  * 36-CHARACTERS TRANSMITTED FROM CNTL TO TEST LINE BUT DID NOT GET A      RST36580
                                3659  *    RECEIVE CHARACTER INTERRUPT ON TEST RCV LINE                        RST36590
                                3660  * 50-CHARACTER TRANSMITTED FROM CNTL LINE TO TEST RCV LINE BUT BSY        RST36600
                                3661  *    STATUS BIT DID NOT GET RESET ON RECEIPT OF CHARACTER                RST36610
                                3662  * 59-TEST RCV STATUS INCORRECT UPON RECEIPT OF CHARACTER WITH INCORRECT  RST36620
                                3663  *    PARITY                                                             RST36630
                                3664  * 60-RECEIPT OF LINE BREAK CHARACTER IN TEST RCV LINE PRODUCED          RST36640
                                3665  *    INCORRECT STATUS AND/OR INCORRECT DATA.                            RST36650
                                3666  * 61-TEST RCV LINE DID NOT RECOVER ON CHARACTER FOLLOWING THE LINE BRK   RST36660
                                3667  *    CHARACTER (EITHER STATUS DID NOT RECOVER OR DATA CHAR INCORRECT)    RST36670
                                3668  * 62-TEST RCV LINE RECEIVED TWO CHARACTERS WITHOUT READING FIRST BUT     RST36680
                                3669  *    STATUS WAS INCORRECT (OV STATUS SHOULD BE SET)                     RST36690
                                3670  * 63-THE OVERFLOW CHARACTER WAS NOT IN THE READ BUFFER WHEN READ.       RST36700
                                3671  * 64-AFTER OVERFLOW CHARACTER WAS READ FROM THE TEST RCV LINE, THE      RST36710
                                3672  *    NEXT CHARACTER ASSEMBLED DID NOT RESET THE ERROR STATUS.           RST36720
                                3673  * 70-CNTL SND BUSY STATUS BIT INCORRECT WHEN READY TO TRANSMIT CHAR.    RST36730
                                3674  * 71-CNTL RCV BUSY STATUS BIT INCORRECT WHEN CHARACTER ASSEMBLY         RST36740
                                3675  *                                                                       RST36750
                                3676  *  THIS TEST MAY BE RUN IN HALF OR FULL DUPLEX                         RST36760
                                3677  *                                                                       RST36770
                                3678  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 3 SECONDS                 RST36780
                                3679  *                                                                       RST36790
                                3680  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *      RST36800
      0000 294C                 3681  TEST10   EQU   *                                                       RST36810
294C  41E0 1A56                 3682           BAL   RTN4,INITA          INITIALIZE SYSTEM                   RST36820
2950  41F0 339E                 3683           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2        RST36830
2954  D370 3694                 3684           LB    PAR,CMD2SET         LOAD UP PARA OPTION                 RST36840
2958  C670 0004                 3685           OHI   PAR,X'4'            MAKE SURE BIT IS SET                RST36850
295C  4160 32B8                 3686           BAL   R6,LASCI            SET UP FOR PRINT                    RST36860
2960  41F0 339E                 3687           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2        RST36870
2964  4180 3356                 3688           BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH LINES         RST36880
2968  C8C0 29B0                 3689           LHI   TEMP,SELPAR1        SET UP IF LOOP                      RST36890
296C  40C0 369C                 3690           STH   TEMP,TESTAD         ON ERROR REQUIRED                   RST36900
2970  40C0 369A                 3691           STH   TEMP,LPERFLG        SET LOOP FLAG                       RST36910
2974  C8C0 34D0                 3692  DFNST    LHI   TEMP,DTBL           SET UP DATA TABLE                   RST36920
2978  40C0 3684                 3693           STH   TEMP,TBUF           DTBL= TBUF                          RST36930
297C  4820 3692                 3694           LH    CLDEV,CONLIN        LOAD UP CDEVN                       RST36940
2980  DE20 34C0                 3695           OC    CLDEV,DDRW          SET UP RCV SIDES                    RST36950
2984  4240 1B7C                 3696           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC   RST36960
2988  DE30 34BA                 3697           OC    RDDEV,DDRR          OUTPUT COMMAND TO RDDEV             RST36970
298C  48C0 1964                 3698           LH    TEMP,MODE+6         CHECK MODE                          RST36980
2990  4330 299E                 3699           BZ    FLM11               IF HALF DUP SKIP DOWN               RST36990
2994  DE40 34C0                 3700           OC    WRDEV,DDRW          SETUP SND SIDES                     RST37000
2998  2621                      3701           AIS   CLDEV,1             INCREMENT ADDRESS                   RST37010
299A  DE20 34C0                 3702           OC    CLDEV,DDRW          OUTPUT COMMAND TO CLDEV+1           RST37020
299E  4160 3340                 3703  FLM11    BAL   RTN2,DELAY          DELAY 3 MILS                        RST37030
29A2  2400                      3704           LIS   R0,0                LOAD REGISTER0 WITH ZERO            RST37040
29A4  4000 3702                 3705           STH   R0,EXITF            STORE 0 IN EXIT FLAG                RST37050
29A8  4300 29B0                 3706           B     SELPAR1             GO ON TO NEXT SECTION               RST37060
                                3707  *                                                                       RST37070
29AC  4160 32B8                 3708  SELPAR   BAL   RTN2,LASCI          LOAD ASCII                          RST37080
                                3709  *                                                                       RST37090
      0000 29B0                 3710  SELPAR1  EQU   *                   PARITY DETECTION TEST               RST37100
29B0  DE30 3694                 3711           OC    RDDEV,CMD2SET       OUTPUT COMMAND TO RDDEV             RST37110
29B4  D3C0 3694                 3712           LB    TEMP,CMD2SET        LOAD UP PARA OPTION                 RST37120
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29B8  C7C0 0002          3713           XHI   TEMP,2              INV PARITY                                  RST37130
29BC  41F0 339E          3714           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2                RST37140
29C0  9E2C               3715           OCR   CLDEV,TEMP          OUTPUT COMMAND TO CLDEV                     RST37150
29C2  0B99               3716  RPAR     SHR   R9,R9               ZERO OUT R9                                 RST37160
29C4  48A0 3684          3717           LH    R10,TBUF            LOAD INDEX VALUE                            RST37170
29C8  DA2A 0000          3718  RPAR6    WD    CLDEV,0(R10)        WRITE DATA  CLDEV                           RST37180
29CC  26A1               3719           AIS   R10,1               INCREMENT BY 1                              RST37190
29CE  C8C0 7FFF          3720  RPAR1    LHI   TEMP,X'7FFF'        LOAD TIMEOUT                                RST37200
29D2  0ACC               3721           AAR   TEMP,TEMP           DOUBLE IT                                   RST37210
29D4  9D38               3722  RPAR0    SSR   RDDEV,STAT          SENSE STATUS ON RDDEV                       RST37220
29D6  4380 29E8          3723           BFC   8,RPAR1A            BR IF NOT BUSY                              RST37230
29DA  27C1               3724           SIS   TEMP,1              DECREMENT TEMP                              RST37240
29DC  4380 29D4          3725           BNC   RPAR0               SENSE AGAIN                                 RST37250
29E0  C8A0 3530          3726           LHI   ERR2,C'50'          ERROR 50                                    RST37260
29E4  4300 110C          3727           B     INTNG               ERROR PRINT SEQUENCE                        RST37270
29E8  9B3B               3728  RPAR1A   RDR   RDDEV,DATAR         READ DATA  RDDEV                            RST37280
29EA  C580 0044          3729           CLHI  STAT,X'44'          PAR FAIL?                                   RST37290
29EE  4230 2A26          3730  T10E59   BNE   RPAR2               IF STATUS GOOD NEXT SECTION                 RST37300
29F2  2691               3731           AIS   R9,1                INCR CNT                                    RST37310
29F4  C590 0014          3732           CLHI  R9,20               CNT=LIMIT?                                  RST37320
29F8  4330 2A00          3733           BE    TSEXTF              YES,BRANCH                                  RST37330
29FC  4300 29C8          3734           B     RPAR6               REPEAT                                      RST37340
2A00  48C0 3678          3735  TSEXTF   LH    TEMP,PRFLG          PRFLG SET ?                                 RST37350
2A04  4330 2A0C          3736           BZ    TSEXITF1            TEST FLAG                                   RST37360
2A08  4300 2C58          3737           B     EXTT16              EXIT TEST                                   RST37370
2A0C  48C0 3702          3738  TSEXITF1 LH    TEMP,EXITF          TEST FLAG                                   RST37380
2A10  4230 2A44          3739           BNZ   LBK                 YES,BRANCH                                  RST37390
2A14  24C1               3740  TSEXITF  LIS   TEMP,1              LOAD UP ONR                                 RST37400
2A16  40C0 3702          3741           STH   TEMP,EXITF          STORE ONE INTO EXIT FLAG                    RST37410
2A1A  D370 3694          3742           LB    PAR,CMD2SET         LOAD UP PARA OPTION                         RST37420
2A1E  C770 0002          3743           XHI   PAR,2               INV PARITY                                  RST37430
2A22  4300 29AC          3744           B     SELPAR              REPEAT PARITY TEST                          RST37440
2A26  D3B9 FFFF          3745  RPAR2    LB    DATAR,-1(R9)        FETCH FAIL CHAR                             RST37450
2A2A  40B0 368A          3746           STH   DATAR,SVECHA        SAVE DATA                                   RST37460
2A2E  D370 3694          3747           LB    PAR,CMD2SET         LOAD UP PARA OPTION                         RST37470
2A32  C8A0 3539          3748           LHI   ERR2,C'59'          ERROR 59                                    RST37480
2A36  24C1               3749           LIS   TEMP,1              TEMP= 1                                     RST37490
2A38  40C0 3678          3750           STH   TEMP,PRFLG          STORE ONE INTO PARITY FLAG                  RST37500
2A3C  C8C0 3434          3751           LHI   TEMP,C'44'          LOAD 44 FOR PRINT                           RST37510
2A40  4300 1140          3752           B     STANG               ERROR PRINT SEQUENCE                        RST37520
                         3753  *                                                                               RST37530
                         3754  *                                 RECEIVE LINE BREAK TEST                     RST37540
2A44  DE20 3694          3755  LBK      OC    CLDEV,CMD2SET       RESTORE CHAR FORMAT                         RST37550
2A48  DE20 34C0          3756           OC    CLDEV,DDRW          CNTL LINE TO SND MODE                       RST37560
2A4C  DE30 34C6          3757           OC    RDDEV,EDRW          TESTL LINE TO SND MODE                      RST37570
2A50  4180 3356          3758           BAL   RTN3,CLERR1         CLEAR ERRORS                                RST37580
2A54  C8C0 2A44          3759           LHI   TEMP,LBK            SET UP IF LOOP                              RST37590
2A58  40C0 369C          3760           STH   TEMP,TESTAD         ON ERROR REQUIRED                           RST37600
2A5C  41F0 3466          3761           BAL   LINK,IN1CLR         CLEAR ONE PENDING INTERRUPT                 RST37610
2A60  DE30 34C0          3762  LBK0     OC    RDDEV,DDRW          DIS INTS                                    RST37620
2A64  DE20 34C7          3763           OC    CLDEV,DDRLW         ACTIVATE TRANS LBK                          RST37630
2A68  DA20 34CC          3764           WD    CLDEV,FOX           SEND CHAR                                   RST37640
2A6C  C8C0 7FFF          3765  LBK1     LHI   TEMP,X'7FFF'        LOAD TIMEOUT                                RST37650
2A70  0ACC               3766           AAR   TEMP,TEMP           DOUBLE IT                                   RST37660
2A72  9D28               3767  LBK1A    SSR   CLDEV,STAT          SENSE STATUS ON CLDEV                       RST37670
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2A74  4380 2A86      3768          BFC   8,LBK24          WHEN BUSY DROPS BRANCH TO LBK24     RST37680
2A78  27C1           3769          SIS   TEMP,1           DECREMENT TEMP                      RST37690
2A7A  4380 2A72      3770          BNC   LBK1A            SENSE AGAIN                         RST37700
2A7E  C8A0 3731      3771          LHI   ERR2,C'71'       ERROR 71                            RST37710
2A82  4300 110C      3772          B     INTNG            ERROR PTINT SEQUENCE                RST37720
      0000 2A86      3773  LBK24   EQU   *                                                    RST37730
2A86  DA20 34CC      3774          WD    CLDEV,FOX        SEND 2ND CHAR                       RST37740
      0000 2A8A      3775  LBK2    EQU   *                                                    RST37750
2A8A  48C0 1964      3776          LH    TEMP,MODE+6      CHECK MODE                          RST37760
2A8E  4230 2AC4      3777          BNZ   LBK2A            BRANCH IF MODE 2                    RST37770
2A92  C8C0 2AB4      3778          LHI   TEMP,INT161      NPSW ADDR                           RST37780
2A96  41F0 349E      3779          BAL   LINK,TABINT      INITIALIZE ETPE INTERRUPT TABLE     RST37790
2A9A  DE30 34C5      3780          OC    RDDEV,EDRR       ENABLE INTS                         RST37800
2A9E  C8C0 40F0      3781          LHI   TEMP,X'40F0'     ENABLE                              RST37810
2AA2  95DC           3782          EPSR  CHAR,TEMP        PROCESSOR INTERRUPTS                RST37820
2AA4  C800 0100      3783          LHI   R0,X'100'        LOAD UP 100 MILS COUNT              RST37830
2AA8  4160 3348      3784          BAL   RTN2,DELAYA      DELAY 100 MILS                      RST37840
2AAC  C8A0 3336      3785          LHI   ERR2,C'36'       ERROR 36                            RST37850
2AB0  4300 110C      3786          B     INTNG            ERROR PRINT SEQUENCE                RST37860
      0000 2AB4      3787  INT161  EQU   *                                                    RST37870
2AB4  4830 3690      3788          LH    RDDEV,TESLIN     LOAD UP TDEVN                       RST37880
2AB8  41F0 34B0      3789          BAL   LINK,STDAS       LOAD UP INT DEV AND STATUS          RST37890
2ABC  DE30 34BA      3790          OC    RDDEV,DDRR       DIS INTS                            RST37900
2AC0  4300 2ADE      3791          B     LBK2B            HALF DUPLEX GO ON                   RST37910
      0000 2AC4      3792  LBK2A   EQU   *                                                    RST37920
2AC4  C8C0 7FFF      3793          LHI   TEMP,X'7FFF'     LOAD TIMEOUT                        RST37930
2AC8  0ACC           3794          AAR   TEMP,TEMP        DOUBLE IT                           RST37940
      0000 2ACA      3795  LBK2A2  EQU   *                                                    RST37950
2ACA  9D38           3796          SSR   RDDEV,STAT       IS RDDEV BUSY ?                     RST37960
2ACC  4380 2ADE      3797          BFC   8,LBK2B          NO                                  RST37970
2AD0  27C1           3798          SIS   TEMP,1           DECREMENT TEMP                      RST37980
2AD2  4380 2ACA      3799          BNC   LBK2A2           SENSE AGAIN                         RST37990
2AD6  C8A0 3530      3800          LHI   ERR2,C'50'       ERROR 50                            RST38000
2ADA  4300 110C      3801          B     INTNG            ERROR PRINT SEQUENCE                RST38010
      0000 2ADE      3802  LBK2B   EQU   *                                                    RST38020
2ADE  4820 3692      3803          LH    CLDEV,CONLIN     LOAD UP CDEVN                       RST38030
2AE2  4890 1964      3804          LH    SAVER,MODE+6     CHECK MODE                          RST38040
2AE6  4330 2AEC      3805          BZ    LBK2C            IF HALF DUPLEX, SKIP                RST38050
2AEA  2621           3806          AIS   CLDEV,1          INCREMENT ADDRESS                   RST38060
2AEC  DE20 34C0      3807  LBK2C   OC    CLDEV,DDRW       OUTPUT COMMAND TO CDEVN             RST38070
2AF0  9B3B           3808          RDR   RDDEV,DATAR      READ CHAR                           RST38080
2AF2  C480 00BF      3809          NHI   STAT,X'BF'       MASK OFF                            RST38090
2AF6  C580 0024      3810          CLHI  STAT,X'24'       IS STATUS CORRECT                   RST38100
2AFA  4230 2B06      3811          BTC   3,LBK3           IF BAD STATUS GO TO ERROR           RST38110
2AFE  C5B0 0000      3812          CLHI  DATAR,0          IS DATA CORRECT                     RST38120
2B02  4330 2B22      3813          BFC   3,LBK4           IF GOOD GO ON                       RST38130
      0000 2B06      3814  LBK3    EQU   *                                                    RST38140
2B06  40B0 368A      3815          STH   DATAR,SVECHA     STORE DATA IN PRINT                 RST38150
2B0A  2411           3816          LIS   R1,1             R1 =1                               RST38160
2B0C  4010 3680      3817          STH   R1,LBFLG         STORE ONE IN LBFLAG                 RST38170
2B10  C8A0 3630      3818          LHI   ERR2,C'60'       ERROR 60                            RST38180
2B14  C8C0 3234      3819          LHI   TEMP,C'24'       PRINT 24                            RST38190
2B18  2411           3820          LIS   R1,1             LOAD 1 INTO R1                      RST38200
2B1A  4010 3680      3821          STH   R1,LBFLG         STORE ONE INTO LBFLAG               RST38210
2B1E  4300 1140      3822          B     STANG            STATUS INCORRECT                    RST38220
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                0000 2B22          3823  LBK4     EQU   *                                                    RST38230
2B22            DA20 34CC          3824  LB4C     WD    CLDEV,FOX          WRITE DATA  CLDEV              RST38240
2B26            C8C0 7FFF          3825            LHI   TEMP,X'7FFF'       LOAD TIMEOUT                    RST38250
2B2A            0ACC               3826            AAR   TEMP,TEMP         DOUBLE IT                       RST38260
2B2C            9D38               3827  LB4E     SSR   RDDEV,STAT        SENSE STATUS ON RDDEV           RST38270
2B2E            4380 2B40          3828            BFC   8,LBK4A           BR IF NOT BUSY                  RST38280
2B32            27C1               3829            SIS   TEMP,1            DECREMENT TEMP                  RST38290
2B34            4380 2B2C          3830            BNC   LB4E              SENSE AGAIN                     RST38300
2B38            C8A0 3530          3831            LHI   ERR2,C'50'        ERROR 50                        RST38310
2B3C            4300 110C          3832            B     INTNG             ERROR PRINT SEQUENCE            RST38320
2B40            9B3B               3833  LBK4A    RDR   RDDEV,DATAR        READ CHAR                       RST38330
2B42            9D38               3834            SSR   RDDEV,STAT        CHECK STAT                      RST38340
2B44            C580 0008          3835            CLHI  STAT,8            IS IT BUSY                      RST38350
2B48            4230 2B54          3836            BNE   LBK5              IF NOT BUSY GO TO ERROR         RST38360
2B4C            C5B0 0000          3837            CLHI  DATAR,0           IS DATA CORRECT                 RST38370
2B50            4230 2B6A          3838            BNE   LBK6              GOOD GO ON                      RST38380
                0000 2B54          3839  LBK5     EQU   *                                                    RST38390
2B54            40B0 368A          3840            STH   DATAR,SVECHA      SAVE DATA                       RST38400
2B58            2411               3841            LIS   R1,1              LOAD 1 INTO R1                  RST38410
2B5A            4010 3680          3842            STH   R1,LBFLG          STORE ONE INTO LBFLAG           RST38420
2B5E            C8A0 3631          3843            LHI   ERR2,C'61'        ERROR 61                        RST38430
2B62            C8C0 3038          3844            LHI   TEMP,C'08'        SHOULD BE STATUS                RST38440
2B66            4300 1140          3845            B     STANG             STATUS INCORRECT                RST38450
                0000 2B6A          3846  LBK6     EQU   *                                                    RST38460
2B6A            48C0 3680          3847            LH    TEMP,LBFLG        CHECK LB FLAG                   RST38470
2B6E            4330 2B76          3848            BZ    OVFL              IF ZERO GO TO NEXT SECTION      RST38480
2B72            4300 2C58          3849            B     EXTT16            EXIT TEST                       RST38490
                                   3850  *                                                                  RST38500
                0000 2B76          3851  OVFL     EQU   *                 * OVERFLOW TEST                   RST38510
2B76            C8C0 2B7E          3852            LHI   TEMP,OVFL1        SET UP IF LOOP                  RST38520
2B7A            40C0 369C          3853            STH   TEMP,TESTAD       ON ERROR REQUIRED               RST38530
                0000 2B7E          3854  OVFL1    EQU   *                                                    RST38540
2B7E            DE30 34C0          3855            OC    RDDEV,DDRW        TEST LINE TO SND MODE           RST38550
2B82            4180 3356          3856            BAL   RTN3,CLERR1        INIT RCV BUSY ON BOTH LINES     RST38560
2B86            C8C0 7FFF          3857  OVFL1A   LHI   TEMP,X'7FFF'       LOAD TIMEOUT                    RST38570
2B8A            0ACC               3858            AAR   TEMP,TEMP         DOUBLE IT                       RST38580
                0000 2B8C          3859  OVFL1A2  EQU   *                                                    RST38590
2B8C            9D28               3860            SSR   CLDEV,STAT        SENSE STATUS ON CLDEV           RST38600
2B8E            4380 2BA0          3861            BFC   8,OVFL2.4         CHECK FOR BUSY                  RST38610
2B92            27C1               3862            SIS   TEMP,1            DECREMENT TEMP                  RST38620
2B94            4380 2B8C          3863            BNC   OVFL1A2           SENSE AGAIN                     RST38630
                0000 2B98          3864  OVFL210  EQU   *                                                    RST38640
2B98            C8A0 3730          3865            LHI   ERR2,C'70'        ERROR Z70                       RST38650
2B9C            4300 110C          3866            B     INTNG             ERROR PRINT SEQUENCE            RST38660
2BA0            2411               3867  OVFL2.4  LIS   R1,1              LOAD 1 INTO R1                  RST38670
2BA2            9A21               3868            WDR   CLDEV,R1          WRITE DATA  CLDEV               RST38680
2BA4            C8C0 7FFF          3869  OVFL2    LHI   TEMP,X'7FFF'       LOAD TIMEOUT                    RST38690
2BA8            0ACC               3870            AAR   TEMP,TEMP         DOUBLE IT                       RST38700
                0000 2BAA          3871  OVFL22   EQU   *                                                    RST38710
2BAA            9D28               3872            SSR   CLDEV,STAT        SENSE STATUS ON CLDEV           RST38720
2BAC            4380 2BBA          3873            BFC   8,OVFL36          WHEN BUSY DROPS BRANCH TO OVFL 36 RST38730
2BB0            27C1               3874            SIS   TEMP,1            DECREMENT TEMP                  RST38740
2BB2            4380 2BAA          3875            BNC   OVFL22            SENSE AGAIN                     RST38750
2BB6            43C0 2B98          3876            B     OVFL210           ERROR SEQUENCE                  RST38760
                0000 2BBA          3877  OVFL36   EQU   *                                                    RST38770
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2BBA  C8C0 0002          3878          LHI   TEMP,2              LOAD 2 INTO TEMP                        RST38780
2BBE  9A2C               3879          WDR   CLDEV,TEMP          TRANS SECOND CHAR                       RST38790
2BC0  C8C0 7FFF          3880  OVFL3   LHI   TEMP,X'7FFF'        LOAD TIMEOUT                            RST38800
2BC4  0ACC               3881          AAR   TEMP,TEMP           DOUBLE IT                               RST38810
      0000 2BC6          3882  OVFL32  EQU   *                                                           RST38820
2BC6  9D28               3883          SSR   CLDEV,STAT          SENSE STATUS ON CLDEV                   RST38830
2BC8  4380 2BD6          3884          BFC   8,OVFL46            WHEN BUSY DROPS BRANCH TO OVFL46        RST38840
2BCC  27C1               3885          SIS   TEMP,1              DECREMENT TEMP                          RST38850
2BCE  4380 2BC6          3886          BNC   OVFL32              SENSE AGAIN                             RST38860
2BD2  4300 2B98          3887          B     OVFL210             ERROR PRINT SEQUENCE                    RST38870
      0000 2BD6          3888  OVFL46  EQU   *                                                           RST38880
2BD6  C8C0 0004          3889          LHI   TEMP,4              LOAD 4 INTO TEMP                        RST38890
2BDA  4200 0000          3890          NOP                                                               RST38900
2BDE  0BCC               3891  OVFL4   SHR   TEMP,TEMP           SET UP BXLE REGS                        RST38910
2BE0  24D1               3892          LIS   R13,1               INCREMENT VALUE                         RST38920
2BE2  C8E0 7FFF          3893          LHI   R14,X'7FFF'         LIMIT                                   RST38930
2BE6  DE30 34BA          3894          OC    RDDEV,DDRR          TEST LINE TO RCV MODE                   RST38940
2BEA  9D38               3895  OVFL4A  SSR   RDDEV,STAT          SENSE STATUS ON RDDEV                   RST38950
2BEC  C580 0084          3896          CLHI  STAT,X'84'          OVERFLOW SET?                           RST38960
2BF0  4330 2C04          3897          BE    OVFL5               YES, BRANCH                             RST38970
2BF4  C1C0 2BEA          3898          BXLE  TEMP,OVFL4A         REPEAT                                  RST38980
2BF8  C8A0 3632          3899          LHI   ERR2,C'62'          ERROR 62                                RST38990
2BFC  C8C0 3834          3900          LHI   TEMP,C'84'          SHOULD BE STATUS                        RST39000
2C00  4300 2C50          3901          B     OVSNG               ERROR  SEQUENCE                         RST39010
      0000 2C04          3902  OVFL5   EQU   *                                                           RST39020
2C04  4160 3340          3903          BAL   RTN2,DELAY          DELAY                                   RST39030
2C08  9A2C               3904          WDR   CLDEV,TEMP                                                  RST39040
2C0A  9B3B               3905          RDR   RDDEV,DATAR         READ DATA                               RST39050
2C0C  C5B0 0002          3906          CLHI  DATAR,2             DATA=2ND CHAR?                          RST39060
2C10  4330 2C22          3907          BE    OVFL6               YES,BRANCH                              RST39070
2C14  2411               3908          LIS   R1,1                LOAD ONE INTO R1                        RST39080
2C16  4010 3682          3909          STH   R1,OVFLG            STORE ONE INTO OVER FLCW FLAG           RST39090
2C1A  C8A0 3633          3910          LHI   ERR2,C'63'          ERROR 63                                RST39100
2C1E  4300 110C          3911          B     INTNG               OVFL CHAR NOT ASMBLD                    RST39110
2C22  C8C0 7FFF          3912  OVFL6   LHI   TEMP,X'7FFF'        LOAD TIMEOUT                            RST39120
2C26  0ACC               3913          AAR   TEMP,TEMP           DOUBLE IT                               RST39130
      0000 2C28          3914  OVFL62  EQU   *                                                           RST39140
2C28  9D38               3915          SSR   RDDEV,STAT          SENSE STATUS ON RDDEV                   RST39150
2C2A  4380 2C3C          3916          BFC   8,OVFL6A            BR IF NOT BUSY                          RST39160
2C2E  27C1               3917          SIS   TEMP,1              DECREMENT TEMP                          RST39170
2C30  4380 2C28          3918          BNC   OVFL62              SENSE AGAIN                             RST39180
2C34  C8A0 3530          3919          LHI   ERR2,C'50'          ERROR 50                                RST39190
2C38  4300 110C          3920          B     INTNG               ERROR PRINT SEQUENCE                    RST39200
2C3C  9B3B               3921  OVFL6A  RDR   RDDEV,DATAR         READ CHAR                               RST39210
2C3E  C580 0000          3922          CLHI  STAT,0              STAT CLEARED?                           RST39220
2C42  4330 2C58          3923          BE    EXTT16              YES GO                                  RST39230
2C46  C8A0 3634          3924          LHI   ERR2,C'64'          ERROR 64                                RST39240
2C4A  C8C0 3030          3925          LHI   TEMP,C'00'          SHOULD BE STATUS                        RST39250
2C4E  2411               3926          LIS   R1,1                LOAD ONE INTO R1                        RST39260
2C50  4010 3682          3927  OVSNG   STH   1,OVFLG             STORE ONE INTO OV FLAG                  RST39270
2C54  4300 1140          3928          B     STANG               ERROR PRINT SEQUENCE                    RST39280
2C58  4150 33C6          3929  EXTT16  BAL   RTN,RSTR           RESTORE PARAMETERS                      RST39290
2C5C  4300 0E50          3930          B     TSTEND              GOOD TEST END                           RST39300
                         3931  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * RST39310
                         3932  *                                                                         RST39320
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                                3933  * TEST 11       ECHOPLEX TEST                                    *          RST39330
                                3934  *                                                                          RST39340
                                3935  * PURPOSE:                                                                 RST39350
                                3936  *  TRANSMIT A MESSAGE OF 20 CHARACTERS FROM CNTL TO TEST LINE WITH TEST    RST39360
                                3937  *  LINE IN EPX MODE; AND RECEIVE CHARACTERS AT CNTL LINE.                  RST39370
                                3938  *                                                                          RST39380
                                3939  * DESIGN SPECIFICATION:                                                   RST39390
                                3940  *  THIS SUBTEST VERIFIES THE OPERATION OF THE EPX CONTROL FUNCTION         RST39400
                                3941  *  OF THE TEST LINE.                                                      RST39410
                                3942  *   THE TEST LINE IS PLACED IN THE EPX/SND MODE AND THE CNTL LINE          RST39420
                                3943  *  IS PLACED IN THE SND MODE. A CHARACTER IS TRANSMITTED FROM THE          RST39430
                                3944  *  CNTL TO TEST LINE FROM THE LOCATION SPECIFIED BY TBUF. THE              RST39440
                                3945  *  EPX FUNCTION SHOULD SEND THE CHARACTER BACK AUTOMATICALLY. THE TEST     RST39450
                                3946  *  ALLOWS APPROXIMATELY 50 MILLISECONDS FOR THE CHARACTER TO BE            RST39460
                                3947  *  ASSEMBLED IN THE CNTL LINE.(MODE 1 TURNS THE CNTL LINE TO THE RCV       RST39470
                                3948  *  MODE). THE STATUS WORD OF THE CNTL RCV LINE SHOULD INDICATE A           RST39480
                                3949  *  CHARACTER READY TO BE READ WITH A NON-ERROR CONDITION.  THE             RST39490
                                3950  *  CHARACTER IS READ INTO RBUF FROM CNTL LINE. THE CNTL LINE IS PUT        RST39500
                                3951  *  BACK IN THE SND MODE AND A SECOND CHARACTER IS TRANSMITTED.             RST39510
                                3952  *  THIS IS REPEATED UNTIL 20 CHARACTERS HAVE BEEN READ AN STORED.          RST39520
                                3953  *  THE PROGRAM THEN CHECKS THE MESSAGE READ WITH THAT TRANSMITTED.         RST39530
                                3954  *                                                                          RST39540
                                3955  * HOW TO RUN TEST 11                                                      RST39550
                                3956  *                                                                          RST39560
                                3957  * TYPE: TEST 11                                                           RST39570
                                3958  *       PARA AB  (WHERE AB SPECIFIES PARTICULAR CLOCK AND BIT COMB.)       RST39580
                                3959  *       RUN                                                               RST39590
                                3960  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                                RST39600
                                3961  *        CDEVN                                                            RST39610
                                3962  *        TDEVN                                                            RST39620
                                3963  *        NOMSG                                                            RST39630
                                3964  *        LOOP                                                             RST39640
                                3965  *        CONTIN                                                           RST39650
                                3966  *        MODE                                                             RST39660
                                3967  *        PARA                                                             RST39670
                                3968  *        LPERR                                                            RST39680
                                3969  *                                                                         RST39690
                                3970  ** ERRORS THAT CAN OCCUR IN THIS TEST                                    RST39700
                                3971  * 01-FALSE SYNC HAS OCCURRED                                             RST39710
                                3972  * 65-W/TEST LINE IN ECHOPLEX MODE A CHARACTER IS RECEIVED AT              RST39720
                                3973  *    CNTL RCV SIDE, STATUS IS INCORRECT                                  RST39730
                                3974  * 66-CHARACTERS RECEIVED BY CNTL RCV LINE IN EPX MODE NOT CORRECT         RST39740
                                3975  * 70-CNTL SND BUSY STATUS BIT INCORRECT WHEN READY TO TRANSMIT CHAR.      RST39750
                                3976  *                                                                         RST39760
                                3977  *  THIS TEST MAY BE RUN IN HALF OR FULL DUPLEX                           RST39770
                                3978  *                                                                         RST39780
                                3979  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 3 SECONDS                   RST39790
                                3980  *                                                                         RST39800
                                3981  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *     RST39810
      0000 2C60                 3982  TEST11   EQU   *                                                        RST39820
2C60  41E0 1A56                 3983           BAL   RTN4,INITA          INITIALIZE SYSTEM                   RST39830
2C64  41F0 339E                 3984           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2        RST39840
2C68  4180 3356                 3985  T17      BAL   RTN3,CLERR1         INIT RCV BUSY ON BOTH LINES         RST39850
2C6C  DE20 34C0                 3986           OC    CLDEV,DDRW          OUTPUT COMMAND TO CLDEV             RST39860
2C70  4240 1B7C                 3987           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC   RST39870
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2C74  DE40 34C9          3988          OC    WRDEV,DDREW        ECHOPLEX MODE                          RST39880
2C78  4160 3340          3989  T17M1   BAL   RTN2,DELAY        DELAY 3 MILS                           RST39890
2C7C  C8C0 2C68          3990          LHI   TEMP,T17          SET UP IF LOOP                         RST39900
2C80  40C0 369C          3991          STH   TEMP,TESTAD       ON ERROR REQUIRED                      RST39910
2C84  40C0 369A          3992          STH   TEMP,LPERFLG      SET LOOP FLAG                          RST39920
2C88  C8C0 34D0          3993  D17S1   LHI   TEMP,DTBL         SET UP DATA TABLE                      RST39930
2C8C  40C0 3684          3994          STH   TEMP,TBUF         TBUF=DTBL                              RST39940
2C90  48A0 3684          3995          LH    R10,TBUF          SET UP INDEX VALUE                     RST39950
2C94  0B99               3996          SHR   R9,R9             ZERO COUNT                             RST39960
2C96  48C0 1964          3997  RPX0    LH    TEMP,MODE+6       CHECK MODE                             RST39970
2C9A  4330 2CA0          3998          BZ    RPX0A             IF HALF DUPLEX, SKIP                   RST39980
2C9E  2621               3999          AIS   CLDEV,1           INCREMENT ADDRESS                      RST39990
2CA0  C8C0 7FFF          4000  RPX0A   LHI   TEMP,X'7FFF'       LOAD TIMEOUT                           RST40000
2CA4  0ACC               4001          AAR   TEMP,TEMP         DOUBLE IT                              RST40010
2CA6  9D28               4002  RPX0B   SSR   CLDEV,STAT        SENSE STATUS ON CLDEV + 1              RST40020
2CA8  4380 2CBA          4003          BFC   8,RPX1            BR IF NOT BUSY                         RST40030
2CAC  27C1               4004          SIS   TEMP,1            DECREMENT TEMP                         RST40040
2CAE  4380 2CA6          4005          BNC   RPX0B             SENSE AGAIN                            RST40050
2CB2  C8A0 3730          4006          LHI   ERR2,C'70'        ERROR 70                               RST40060
2CB6  4300 110C          4007          B     INTNG             ERROR PRINT SEQUENCE                   RST40070
2CBA  DA2A 0000          4008  RPX1    WD    CLDEV,0(R10)      WRITE DATA  CLDEV + 1                  RST40080
2CBE  C800 012C          4009          LHI   R0,300            LOAD UP 300                            RST40090
2CC2  4160 3348          4010          BAL   RTN2,DELAYA       DELAY 300 MILS                         RST40100
2CC6  48C0 1964          4011          LH    TEMP,MODE+6       CHECK MODE                             RST40110
2CCA  4230 2CDA          4012          BNZ   T17M2             BRANCH IF MODE 2.                      RST40120
2CCE  DE20 34BA          4013          OC    CLDEV,DDRR        CNTL LINE TO RCV MODE                  RST40130
2CD2  C800 0032          4014          LHI   R0,50             LOAD UP FOR 50 MILS DELAY              RST40140
2CD6  4160 3348          4015          BAL   RTN2,DELAYA       DELAY 50 MILS                          RST40150
2CDA  48C0 1964          4016  T17M2   LH    TEMP,MODE+6       CHECK MODE                             RST40160
2CDE  4330 2CE4          4017          BZ    T17M3             IF HALF DUPLEX,SKIP                    RST40170
2CE2  2721               4018          SIS   CLDEV,1           DECREMENT BACK TO CLDEV                RST40180
2CE4  9D28               4019  T17M3   SSR   CLDEV,STAT        SENSE STATUS ON CLDEV                  RST40190
2CE6  C580 0000          4020          CLHI  STAT,0            IS STATUS 0                            RST40200
2CEA  4330 2CFA          4021  T11E65  BE    S17OK1            IF STATUS GOOD NEXT SECTION            RST40210
2CEE  C8A0 3635          4022          LHI   ERR2,C'65'        ERROR 65                               RST40220
2CF2  C8C0 3030          4023          LHI   TEMP,C'00'        SHOULD BE STATUS                       RST40230
2CF6  4300 1148          4024          B     ST1NG             STATUS NOT ZERO                        RST40240
2CFA  DB29 3738          4025  S17OK1  RD    CLDEV,RBUF(R9)    READ CHAR                              RST40250
2CFE  9B3C               4026          RDR   RDDEV,TEMP        CLEAR RCV BUSY                         RST40260
2D00  4300 2D10          4027          B     D17S2             GO AGAIN                               RST40270
2D04  DE20 34C0          4028  NLM17   OC    CLDEV,DDRW        CNTL LINE TO SND MODE                  RST40280
2D08  4160 3340          4029          BAL   RTN2,DELAY        DELAY 3                                RST40290
2D0C  4300 2C96          4030          B     RPX0              REPEAT                                 RST40300
2D10  26A1               4031  D17S2   AIS   R10,1            INCREMENT R10                          RST40310
2D12  2691               4032          AIS   R9,1              INCREMENT R9                           RST40320
2D14  C590 0014          4033          CLHI  R9,20             COMPARE TO LIMIT                       RST40330
2D18  4230 2D04          4034          BNE   NLM17             GO AGAIN                               RST40340
2D1C  DE30 34BA          4035          OC    RDDEV,DDRR        TEST LINE OUT OF EPX MODE              RST40350
2D20  C8A0 3636          4036          LHI   ERR2,C'66'        ERROR 66                               RST40360
2D24  4180 3238          4037          BAL   RTN3,CRDTA        COMPARE DATA                           RST40370
2D28  4150 33C6          4038          BAL   RTN,RSTR          RESTORE PARAMETERS                     RST40380
2D2C  4300 0E50          4039          B     TSTEND            GOOD TEST END                          RST40390
                         4040  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *      RST40400
                         4041  *                                                                      RST40410
                         4042  * TEST12        TURN LINE TO RCV WHILE TRANSMITTING (HDX)    *        RST40420
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                                4043  *                                                                      RST40430
                                4044  * PURPOSE:                                                             RST40440
                                4045  *  TURN TEST LINE TO RCV MODE WHILE IT IS IN THE PROCESS OF TRANSMIT-  RST40450
                                4046  *  TING 2 CHAR. VERIFY BOTH CHAR. WERE TRANSMITTED BEFORE THE LINE     RST40460
                                4047  *  ACTUALLY REVERSED.                                                  RST40470
                                4048  *                                                                      RST40480
                                4049  * DESIGN SPECIFICATION:                                               RST40490
                                4050  *  THIS SUBTEST CHECKS THE ABILITY OF THE TEST LINE TO CONTINUE        RST40500
                                4051  *  TRANSFERRING A CHARACTER AFTER IT IS COMMANDED TO THE RCV MODE.     RST40510
                                4052  *   BOTH THE TEST AND CNTL LINES ARE PUT IN THE SND MODE. TWO          RST40520
                                4053  *  CONSECUTIVE CHARACTERS ARE TRANSMITTED FROM THE TEST TO CNTL LINE,  RST40530
                                4054  *  IMMEDIATELY AFTER THE SECOND CHARACTER IS ACCEPTED BY THE TEST LINE RST40540
                                4055  *  THE TEST LINE IS COMMANDED TO THE RCV MODE. THE CNTL SND BUSY IS    RST40550
                                4056  *  THEN INTERROGATED FOR SEVERAL HUNDRED MILLISECONDS. AS SOON, AS IT  RST40560
                                4057  *  BECOMES BUSY (INDICATING RQ2S DEACTIVATING FROM THE TEST LINE),     RST40570
                                4058  *  THE CNTL RCV STATUS WORD IS CHECKED. IT SHOULD HAVE AN OVERFLOW     RST40580
                                4059  *  CONDITION WHICH MEANS THAT IT RECEIVED TWO CHARACTERS WITHOUT       RST40590
                                4060  *  ERRORS.                                                             RST40600
                                4061  *                                                                      RST40610
                                4062  * HOW TO RUN TEST 12                                                  RST40620
                                4063  *                                                                      RST40630
                                4064  * TYPE: MODE 0                                                        RST40640
                                4065  *       PARA AB  (WHERE AB SPECIFIES PARTICULAR CLOCK AND BIT COMB.)   RST40650
                                4066  *       TEST 12                                                       RST40660
                                4067  *       RUN                                                           RST40670
                                4068  * OPTIONS THAT AFFECT RUNNING OF THIS TEST                            RST40680
                                4069  *        CDEVN                                                        RST40690
                                4070  *        TDEVN                                                        RST40700
                                4071  *        NOMSG                                                        RST40710
                                4072  *        LOOP                                                         RST40720
                                4073  *        CONTIN                                                       RST40730
                                4074  *        MODE                                                         RST40740
                                4075  *        PARA                                                         RST40750
                                4076  *                                                                     RST40760
                                4077  ** ERRORS THAT CAN OCCUR IN THIS TEST                                RST40770
                                4078  * 01-FALSE SYNC HAS OCCURRED                                          RST40780
                                4079  * 53-BSY STATUS BIT ON TEST SND LINE INCORRECT WHEN READY TO          RST40790
                                4080  *    TRANSMIT CHARACTER                                              RST40800
                                4081  * 69-TEST LINE FAILED TO MAINTAIN RQ2S ACTIVE AFTER BEING PUT IN RCV  RST40810
                                4082  *    MODE WHILE DATA TRANSFER FROM TEST LINE WAS BEING CARRIED OUT    RST40820
                                4083  * 71-CNTL RCV BUSY STATUS BIT INCORRECT WHEN CHARACTER ASSEMBLY       RST40830
                                4084  *                                                                     RST40840
                                4085  *  THIS TEST RUNS IN HALF DUPLEX ONLY                                RST40850
                                4086  *                                                                     RST40860
                                4087  *  APPROXIMATE TIME TO COMPLETE THIS TEST IS 1 SECOND                RST40870
                                4088  *                                                                     RST40880
                                4089  * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *   RST40890
          0000 2D30             4090  TEST12   EQU   *                                                     RST40900
2D30      41E0 1A56             4091           BAL   RTN4,INITA          INITIALIZE SYSTEM                 RST40910
2D34      41F0 339E             4092           BAL   R15,DISPLAY1        DISPLAY BTESTNO, TDEVN, CMD2      RST40920
2D38      48C0 1964             4093           LH    TEMP,MODE+6        CHEK MODE                         RST40930
2D3C      4230 3286             4094           BNZ   NOTEST1            IF FULL DUP PRINT CAUTION         RST40940
2D40      4180 3356             4095           BAL   RTN3,CLERR1        INIT RCV BUSY ON BOTH LINES       RST40950
2D44      DE30 34C0             4096           OC    RDDEV,DDRW         TEST LINE TO SND MODE             RST40960
2D48      4240 1B7C             4097           BTC   4,FLSYNC            INTERMEDIATE CHECK FOR FALSE SYNC RST40970
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2D4C  DE20 34C0          4098           OC    CLDEV,DDRW        CNTL LINE TO SND MODE                RST40980
2D50  4160 3340          4099           BAL   RTN2,DELAY       DELAY 3 MILS                         RST40990
2D54  2400               4100           LIS   R0,0             LOAD 0 INTO R0                       RST41000
2D56  9A30               4101           WDR   RDDEV,R0          WRITE DATA  RDDEV                    RST41010
2D58  C8C0 7FFF          4102  TRNR1    LHI   TEMP,X'7FFF'      LOAD TIMEOUT                         RST41020
2D5C  0ACC               4103           AAR   TEMP,TEMP         DOUBLE IT                            RST41030
      0000 2D5E          4104  TRNR12   EQU   *                                                      RST41040
2D5E  9D38               4105           SSR   RDDEV,STAT        SENSE STATUS ON RDDEV                RST41050
2D60  4380 2D72          4106           BFC   8,TRNR2           BR IF NOT BUSY                       RST41060
2D64  27C1               4107           SIS   TEMP,1            DECR DEL COUNT                       RST41070
2D66  4380 2D5E          4108           BNC   TRNR12            SENSE AGAIN                          RST41080
2D6A  C8A0 3533          4109           LHI   ERR2,C'53'        ERROR 53                             RST41090
2D6E  4300 110C          4110           B     INTNG             ERROR PRINT SEQUENCE                 RST41100
2D72  2411               4111  TRNR2    LIS   R1,1              LOAD ONE INTO R1                     RST41110
2D74  9A31               4112           WDR   RDDEV,R1          TRANS SECOND CHAR                    RST41120
2D76  DE30 34BA          4113           OC    RDDEV,DDRR        TURN TEST LINE TO RCV                RST41130
2D7A  C8C0 7FFF          4114  TRNR3    LHI   TEMP,X'7FFF'      LOAD TIMEOUT                         RST41140
2D7E  0ACC               4115           AAR   TEMP,TEMP         DOUBLE IT ('FFFE')                   RST41150
2D80  0ACC               4116           AAR   TEMP,TEMP         DOUBLE AGAIN (SPEC. FOR 32 BIT)      RST41160
                         4117  *                                '1FFFC' FOR 32,  'FFFC' FOR 16       RST41170
2D82  9D28               4118  TRNR31   SSR   CLDEV,STAT        SENSE STATUS ON CLDEV                RST41180
2D84  4280 2D96          4119           BTC   8,TRNR42          IF BUSY SET BRANCH TO TRNR42         RST41190
2D88  27C1               4120           SIS   TEMP,1            DECREMENT TEMP                       RST41200
2D8A  4380 2D82          4121           BNC   TRNR31            SENSE AGAIN                          RST41210
2D8E  C8A0 3731          4122           LHI   ERR2,C'71'        ERROR 71                             RST41220
2D92  4300 110C          4123           B     INTNG             ERROR PRINT SEQUENCE                 RST41230
      0000 2D96          4124  TRNR42   EQU   *                                                      RST41240
2D96  9B2B               4125           RDR   CLDEV,DATAR       READ DATA  CLDEV                     RST41250
2D98  DE20 34BA          4126  TRNR4    OC    CLDEV,DDRR        CNTL LINE TO RCV MODE                RST41260
2D9C  4200 0000          4127           NOP   0                 NO OP DELAY                          RST41270
2DA0  9D28               4128           SSR   CLDEV,STAT        SENSE STATUS ON CLDEV                RST41280
2DA2  C580 008C          4129           CLHI  STAT,X'8C'        IS STATUS 8C                         RST41290
2DA6  4330 2DB6          4130  T12E69   BE    EXT18             GOOD TEST EXIT                       RST41300
2DAA  C8A0 3639          4131           LHI   ERR2,C'69'        ERROR 69                             RST41310
2DAE  C8C0 3843          4132           LHI   TEMP,C'8C'        SHOULD BE STATUS                     RST41320
2DB2  4300 1148          4133           B     ST1NG             DID NOT RECEIVE 2 CHARS              RST41330
2DB6  4150 33C6          4134  EXT18    BAL   RTN,RSTR          RESTORE PARAMETERS                   RST41340
2DBA  4300 0E50          4135           B     TSTEND            GOOD TEST END                        RST41350
                         4136  *********                                                            RST41360
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                                4138  *        READ MESSAGE INT DRIVER                                        RST41380
                                4139  *                                                                       RST41390
2DBE                            4140  RMHI     DS    0                  LABEL                               RST41400
2DBE   41F0 3466                4141           BAL   LINK,IN1CLR        CLEAR ONE INTERRUPTS                RST41410
2DC2   48A0 3684                4142           LH    R10,TBUF           LOAD INDEX                          RST41420
2DC6   2490                     4143           LIS   R9,0               ZERO OUT R9                         RST41430
2DC8   C8C0 2DF6                4144           LHI   TEMP,BSNH          SET NEW PSW (BSNH)                  RST41440
2DCC   41F0 349E                4145           BAL   LINK,TABINT        INITIALIZE ETPE INTERRUPT TABLE     RST41450
2DD0   9B3C                     4146  RPT1     RDR   RDDEV,TEMP         INIT BUSY                           RST41460
2DD2   DA2A 0000                4147           WD    CLDEV,0(R10)       WRITE DATA  CLDEV                   RST41470
2DD6   4090 3688                4148           STH   R9,SVECNT          SAVE CNT REG                        RST41480
2DDA   C8C0 40F0                4149           LHI   TEMP,X'40F0'       ENABLE                              RST41490
2DDE   95DC                     4150           EPSR  CHAR,TEMP          PROCESSOR INTERRUPTS                RST41500
2DE0                            4151  RMHI3    DS    0                  LABEL                               RST41510
2DE0   C800 03E8                4152           LHI   R0,1000            LOAD UP 1000                        RST41520
2DE4   4160 3348                4153           BAL   RTN2,DELAYA        DELAY 1000 MILS                     RST41530
2DE8   C8C0 00F0                4154           LHI   TEMP,X'F0'         DISABLE                             RST41540
2DEC   95DC                     4155           EPSR  CHAR,TEMP          PROCESSOR INTERRUPTS                RST41550
2DEE                            4156  RMHI5    DS    0                  LABEL                               RST41560
2DEE   C8A0 3336                4157           LHI   ERR2,C'36'         ERROR 36                            RST41570
2DF2   4300 110C                4158           B     INTNG              ERROR PRINT SEQUENCE                RST41580
       0000 2DF6                4159  BSNH     EQU   *                                                       RST41590
2DF6   4830 3690                4160           LH    RDDEV,TESLIN       RESTORE DEVICE ADDRESS              RST41600
2DFA   4820 3692                4161           LH    CLDEV,CONLIN       LOAD CDEVN                          RST41610
2DFE   41F0 34B0                4162           BAL   LINK,STDAS         LOAD UP INT DEV AND STATUS          RST41620
2E02   0573                     4163           CLHR  DEV,RDDEV          CHECK INT DEV                       RST41630
2E04   4230 2E22                4164           BNE   BSNH2              GO TO DEVICE ADDRESS ERROR          RST41640
2E08   C580 0000                4165           CLHI  STAT,X'00'         CHECK STATUS                        RST41650
2E0C   4230 2E2A                4166  T8E38    BNE   BSNH3              IF BAD STATUS GO TO ERROR           RST41660
2E10   DB39 3738                4167           RD    RDDEV,RBUF(R9)     READ CHAR                           RST41670
2E14                            4168  BSNH1    DS    0                  LABEL                               RST41680
2E14   2691                     4169           AIS   R9,1               INCREMENT R9                        RST41690
2E16   26A1                     4170           AIS   R10,1              INCREMENT R10                       RST41700
2E18   4590 34CE                4171           CLH   R9,BUFLIM          LIMIT YET                           RST41710
2E1C   4230 2DD0                4172           BNE   RPT1               GO AGAIN                            RST41720
2E20   0305                     4173           BR    RTN                NORMAL RETURN                       RST41730
2E22                            4174  BSNH2    DS    0                  LABEL                               RST41740
2E22   C8A0 3337                4175           LHI   ERR2,C'37'         ERROR 37                            RST41750
2E26   4300 1120                4176           B     ADRNG1             ERROR PRINT SEQUENCE                RST41760
2E2A                            4177  BSNH3    DS    0                  LABEL                               RST41770
2E2A   C8A0 3338                4178           LHI   ERR2,C'38'         ERROR 38                            RST41780
2E2E                            4179  BSNH4    DS    0                  LABEL                               RST41790
2E2E   D3C9 34D0                4180           LB    TEMP,DTBL(R9)      LOAD BYTE FROM DATA TABLE           RST41800
2E32   41E0 330E                4181           BAL   RTN4,BITSB          MASK TEMP                           RST41810
2E36   40C0 368A                4182           STH   TEMP,SVECHA        STORE CHARACTER                     RST41820
2E3A   C8C0 3030                4183           LHI   TEMP,X'3030'       LOAD 0                              RST41830
2E3E   4300 1140                4184           B     STANG              ERROR PRINT SEQUENCE                RST41840
                                4185  *********                                                             RST41850
                                4186  *        READ MESSAGE STATUS DRIVER                                   RST41860
                                4187  *                                                                       RST41870
2E42                            4188  RMHS     DS    0                  LABEL                               RST41880
2E42   48A0 3684                4189           LH    R10,TBUF           LOAD IXDEX                          RST41890
2E46   2490                     4190           LIS   R9,0               ZERO OUT R9                         RST41900
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2E48  9B3C           4191  RPT2    RDR   RDDEV,TEMP          INIT BUSY                                RST41910
2E4A  DA2A 0000      4192        WD    CLDEV,0(R10)        WRITE DATA                               RST41920
2E4E  C8F0 7FFF      4193        LHI   R15,X'7FFF'          LOAD UP R15                              RST41930
2E52  0AFF           4194        AAR   R15,R15             DOUBLE IT                                RST41940
2E54  4830 3690      4195        LH    RDDEV,TESLIN        RESTORE DEVICE ADDRESS                   RST41950
2E58  9D38           4196  RMHS2A  SSR   RDDEV,STAT          IS RDSA BUSY ?                           RST41960
2E5A  4380 2E70      4197        BFC   8,RMHS3             NO                                       RST41970
2E5E  4200 0000      4198        NOP   0                   NO OP DELAY                              RST41980
2E62  27F1           4199        SIS   R15,1               DECREMENT R15                            RST41990
2E64  4380 2E58      4200        BNC   RMHS2A              SENSE AGAIM                              RST42000
2E68  C8A0 3530      4201        LHI   ERR2,C'50'          ERROR 50                                 RST42010
2E6C  4300 110C      4202        B     INTNG               ERROR PRINT SEQUENCE                     RST42020
2E70                 4203  RMHS3   DS    0                   LABEL                                    RST42030
2E70  C580 0000      4204        CLHI  STAT,X'00'          CHECK STATUS                             RST42040
2E74  4330 2E80      4205  T9E51   BE    RMHS4               IF STATUS GOOD NEXT SECTION              RST42050
2E78  C8A0 3531      4206        LHI   ERR2,C'51'          ERROR 51                                 RST42060
2E7C  4300 2E2E      4207        B     BSNH4                                                        RST42070
2E80                 4208  RMHS4   DS    0                   LABEL                                    RST42080
2E80  DB39 3738      4209        RD    RDDEV,RBUF(R9)      READ DATA  RDDEV                         RST42090
2E84                 4210  RMHS5   DS    0                   LABEL                                    RST42100
2E84  2691           4211        AIS   R9,1                INCREMENT R9                             RST42110
2E86  26A1           4212        AIS   R10,1               INCREMENT R10                            RST42120
2E88  4590 34CE      4213        CLH   R9,BUFLIM           LIMIT YET                                RST42130
2E8C  4230 2E48      4214        BTC   3,RPT2                                                       RST42140
2E90  0305           4215        BR    RTN                 NORMAL RETURN                            RST42150
                     4216  *********                                                                RST42160
                     4217  *       TRANSMIT MESSAGE INT DRIVER                                      RST42170
                     4218  *                                                                        RST42180
2E92                 4219  TMHI    DS    0                   LABEL                                    RST42190
2E92  48A0 3684      4220        LH    R10,TBUF            LOAD INDEX                               RST42200
2E96  2490           4221        LIS   R9,0                ZERO OUT R9                              RST42210
2E98  2400           4222        LIS   R0,0                ZERO OUT R0                              RST42220
2E9A  4000 36A0      4223        STH   R0,LAST             ZERO OUT LAST                            RST42230
2E9E  2601           4224        AIS   R0,1                INCREMENT R0                             RST42240
2EA0  4000 36A2      4225        STH   R0,FIRST2           STORE ONE INTO FIRST2                    RST42250
2EA4  C8C0 2ED8      4226        LHI   TEMP,BNH            SET NEW PSW (BNH)                        RST42260
2EA8  41F0 349E      4227        BAL   LINK,TABINT         INITIALIZE ETPE INTERRUPT TABLE          RST42270
2EAC  9D38           4228        SSR   RDDEV,STAT          SENSE STATUS ON RDDEV                    RST42280
2EAE  4380 2EBE      4229        BFC   8,RPT3              CHECK FOR BUSY                           RST42290
2EB2  C8A0 3533      4230        LHI   ERR2,C'53'          ERROR 53                                 RST42300
2EB6  C8C0 3030      4231        LHI   TEMP,X'3030'        LOAD 0                                   RST42310
2EBA  4300 1138      4232        B     STANG0              ERROR PRINT SEQUENCE                     RST42320
2EBE                 4233  RPT3    DS    0                   LABEL                                    RST42330
2EBE  DA3A 0000      4234        WD    RDDEV,0(R10)        WRITE DATA                               RST42340
2EC2  C8C0 40F0      4235        LHI   TEMP,X'40F0'          ENABLE                                   RST42350
2EC6  95DC           4236        EPSR  CHAR,TEMP           PROCESSOR INTERRUPTS                     RST42360
2EC8                 4237  TMHI2   DS    0                   LABEL                                    RST42370
2EC8  C800 03E8      4238        LHI   R0,1000             LOAD 1000 FOR DELAY                      RST42380
2ECC  4160 3348      4239        BAL   RTN2,DELAYA         DELAY                                    RST42390
2ED0  C8A0 3432      4240        LHI   ERR2,C'42'          ERROR 42                                 RST42400
2ED4  4300 110C      4241        B     INTNG               ERROR PRINT SEQUENCE                     RST42410
      0000 2ED8      4242  BNH     EQU   *                                                          RST42420
2ED8  4830 3690      4243        LH    RDDEV,TESLIN        LOAD UP TDEVN                            RST42430
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2EDC  41F0 34B0        4244          BAL   LINK,STDAS          LOAD UP DEV AND STATUS FROM INT      RST42440
2EE0  0573             4245          CLHR  DEV,RDDEV           CHECK INT DEV                        RST42450
2EE2  4330 2EEE        4246          BFC   3,BNH1              IF GOOD GO ON                        RST42460
2EE6  C8A0 3433        4247          LHI   ERR2,C'43'          ERROR 43                             RST42470
2EEA  4300 1120        4248          B     ADRNG1              ERROR PRINT SEQUENCE                 RST42480
2EEE                   4249  BNH1    DS    0                   LABEL                                RST42490
2EEE  C580 0000        4250          CLHI  STAT,X'00'          CHECK STATUS                         RST42500
2EF2  4330 2F10        4251  TAE44   BFC   3,BNH2              IF STATUS GOOD NEXT SECTION          RST42510
2EF6  C8A0 3434        4252          LHI   ERR2,C'44'          ERROR 44                             RST42520
2EFA                   4253  BNH6    DS    0                   LABEL                                RST42530
2EFA  089A             4254          LHR   R9,R10              LOAD R10 INTO R9                     RST42540
2EFC  D3C9 34D0        4255          LB    TEMP,DTBL(R9)       LOAD BYTE FROM DATA TABLE            RST42550
2F00  41E0 330E        4256          BAL   RTN4,BITSB          CONVERT                              RST42560
2F04  40C0 368A        4257          STH   TEMP,SVECHA         SAVE CHARACTER                       RST42570
2F08  C8C0 3030        4258          LHI   TEMP,C'00'           LOAD 0                               RST42580
2F0C  4300 1138        4259          B     STANGO              ERROR PRINT SEQUENCE                 RST42590
2F10                   4260  BNH2    DS    0                   LABEL                                RST42600
2F10  4820 3692        4261          LH    CLDEV,CONLIN        RESTORE DESTROYED REGISTER           RST42610
2F14  DB29 3738        4262          RD    CLDEV,RBUF(R9)      READ DATA   CLDEV                    RST42620
2F18  48C0 36A0        4263          LH    TEMP,LAST           IS LAST=1 ?                          RST42630
2F1C  0235             4264          BNZR  RTN                 NORMAL RETURN                        RST42640
2F1E                   4265  BNH3    DS    0                   LABEL                                RST42650
2F1E  26A1             4266          AIS   R10,1               INCREMENT COUNTER                    RST42660
2F20  48C0 36A2        4267          LH    TEMP,FIRST2         TEST FIRST2 FLAG                     RST42670
2F24  4330 2F32        4268          BZ    BNH4                NO GO ON TO BNH4                     RST42680
2F28                   4269  BNH5    DS    0                   LABEL                                RST42690
2F28  2400             4270          LIS   R0,0                LOAD 0 INTO R0                       RST42700
2F2A  4000 36A2        4271          STH   R0,FIRST2           STORE ZERO INTO FIRST2               RST42710
2F2E  4300 2EBE        4272          B     RPT3                                                     RST42720
2F32                   4273  BNH4    DS    0                   LABEL                                RST42730
2F32  2691             4274          AIS   R9,1                INCREMENT R9                         RST42740
2F34  C590 0013        4275          CLHI  R9,X'13'            IS IT 13 YET                         RST42750
2F38  4230 2EBE        4276          BTC   3,RPT3              IF YES GO ON                         RST42760
2F3C  2401             4277          LIS   R0,1                LOAD ONE INT R0                      RST42770
2F3E  4000 36A0        4278          STH   R0,LAST             STORE ONE INTO LAST                  RST42780
2F42  C800 0190        4279          LHI   R0,400              LOAD UP FOR 400 MILS DELAY           RST42790
2F46  4160 3348        4280          BAL   RTN2,DELAYA         DELAY                                RST42800
2F4A  9D38             4281          SSR   RDDEV,STAT          SENSE STATUS ON RDDEV                RST42810
2F4C  4300 2EEE        4282          B     BNH1                                                     RST42820
                       4283  *********                                                            RST42830
                       4284  *       TRANSMIT MESSAGE STATUS DRIVER                               RST42840
                       4285  *                                                                    RST42850
2F50                   4286  TMHS    DS    0                   LABEL                                RST42860
2F50  48A0 3684        4287          LH    R10,TBUF            LOAD INDEX VALUE                     RST42870
2F54  2490             4288          LIS   R9,0                LOAD 0 INTO R9                       RST42880
2F56  4090 36A0        4289          STH   R9,LAST             STORE ZERO INTO LAST                 RST42890
2F5A  2411             4290          LIS   R1,1                LOAD UP 1                            RST42900
2F5C  4010 36A2        4291          STH   R1,FIRST2           STORE ONE INTO FIRST2                RST42910
2F60  9D38             4292          SSR   RDDEV,STAT          IS BUSY ?                            RST42920
2F62  4380 2F5E        4293          BFC   8,RPT4                                                   RST42930
2F66                   4294  TMHS1   DS    0                   LABEL                                RST42940
2F66  C8A0 3533        4295          LHI   ERR2,C'53'          ERROR 53                             RST42950
2F6A  4300 110C        4296          B     INTNG               ERROR PRINT SEQUNCE                  RST42960
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2F6E                    4297  RPT4    DS    0                LABEL                                    RST42970
2F6E   DA3A 0000        4298          WD    RDDEV,0(R10)     WRITE DATA  RDDEV                        RST42980
2F72                    4299  TMHS2   DS    0                LABEL                                    RST42990
2F72   C8F0 7FFF        4300          LHI   R15,X'7FFF'       LOAD TIMEOUT                             RST43000
2F76   0AFF             4301          AAR   R15,R15           DOUBLE IT                                RST43010
2F78                    4302  TMHS3   DS    0                LABEL                                    RST43020
2F78   9D38             4303          SSR   RDDEV,STAT       IS BUSY ?                                RST43030
2F7A   4380 2F8C        4304          BFC   8,TMHS4                                                    RST43040
2F7E   4200 0000        4305          NOP   0                NO OP DELAY                              RST43050
2F82   27F1             4306          SIS   R15,1            DECREMENT R15                            RST43060
2F84   4380 2F78        4307          BNC   TMHS3            SENSE AGAIN                              RST43070
2F88   4300 2F66        4308          B     TMHS1            ERROR SEQUENCE                           RST43080
2F8C                    4309  TMHS4   DS    0                LABEK                                    RST43090
2F8C   C580 0000        4310          CLHI  STAT,X'00'       CHECK STATUS                             RST43100
2F90   4330 2F9C        4311  TBE54   BFC   3,TMHS5           IF STATUS GOOD NEXT SECTION              RST43110
2F94   C8A0 3534        4312          LHI   ERR2,C'54'       ERROR 54                                 RST43120
2F98   4300 2EFA        4313          B     BNH6             ERROR PRINT SEQUENCE                     RST43130
2F9C                    4314  TMHS5   DS    0                LABEL                                    RST43140
2F9C   DB29 3738        4315          RD    CLDEV,RBUF(R9)   READ DATA  CLDEV                        RST43150
2FA0   48C0 36A0        4316          LH    TEMP,LAST        IS LAST=1 ?                              RST43160
2FA4   0235             4317          BNZR  RTN              NORMAL RETURN                            RST43170
2FA6                    4318  TMHS7   DS    0                LABEL                                    RST43180
2FA6   26A1             4319          AIS   R10,1            INCREMENT R10                            RST43190
2FA8   48C0 36A2        4320          LH    TEMP,FIRST2      IS FIRST=1                               RST43200
2FAC   4330 2FBA        4321          BZ    TMHS8            NO                                       RST43210
2FB0   2400             4322          LIS   R0,0             LOAD REGISTERO WITH ZERO                 RST43220
2FB2   4000 36A2        4323          STH   R0,FIRST2        STORE ZERO INTO FIRST2                   RST43230
2FB6   4300 2F6E        4324          B     RPT4             GO AGAIN                                 RST43240
2FBA                    4325  TMHS8   DS    0                LABEL                                    RST43250
2FBA   2691             4326          AIS   R9,1             INCREMENT R9                             RST43260
2FBC   C590 0013        4327          CLHI  R9,X'13'         LIMIT YET                                RST43270
2FC0   4230 2F6E        4328          BTC   3,RPT4           GO AGAIN                                 RST43280
2FC4   2411             4329          LIS   R1,1             LOAD 1 INTO R1                           RST43290
2FC6   4010 36A0        4330          STH   R1,LAST          STORE ONE INTO LAST                      RST43300
2FCA   C800 0190        4331          LHI   R0,400           LOAD UP FOR 400 MILS DELAY               RST43310
2FCE   4160 3348        4332          BAL   RTN2,DELAYA      DELAY                                    RST43320
2FD2   4300 2F72        4333          B     TMHS2                                                     RST43330
                        4334  *********                                                               RST43340
                        4335  *       FULL DUPLEX MESSAGE INT DRIVER                                  RST43350
                        4336  *                                                                       RST43360
2FD6                    4337  RMFI    DS    0                LABEL                                    RST43370
2FD6   41F0 3460        4338          BAL   LINK,IN2CLR       CLEAR TWO PENDING INTERRUPTS             RST43380
2FDA   48A0 3684        4339          LH    R10,TBUF         LOAD UP INDEX VALUE                      RST43390
2FDE   0B99             4340          SHR   R9,R9            ZERO OUT R9                              RST43400
2FE0   4820 3692        4341  RMFII   LH    CLDEV,CONLIN     LOAD UP CDEVN OPIION                     RST43410
2FE4   2621             4342          AIS   CLDEV,1          INCREMENT TO TX SIDE                     RST43420
2FE6   4840 3690        4343          LH    WRDEV,TESLIN     LOAD UP TDEVN OPIION                     RST43430
2FEA   2641             4344          AIS   WRDEV,1          INCREMENT TO TX SIDE                     RST43440
2FEC   C8C0 3012        4345          LHI   TEMP,TFINT        LOAD VECTOR TABLE                        RST43450
2FF0   41F0 349E        4346          BAL   LINK,TABINT      INITIALIZE ETPE INTERRUPT TABLE          RST43460
2FF4   C8C0 40F0        4347          LHI   TEMP,X'40F0'     ENABLE                                   RST43470
2FF8   95DC             4348          EPSR  CHAR,TEMP        PROCESSOR INTERRUPTS                     RST43480
2FFA   DA2A 0000        4349          WD    CLDEV,0(R10)     WRITE DATA   CLDEV                       RST43490
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2FFE  DA4A 0000        4350           WD     WRDEV,0(R10)       WRITE DATA   WRDEV                                  RST43500
3002  C800 0096        4351           LHI    R0,150             LOAD UP FOR 150 MILS DELAY                             RST43510
3006  4160 3348        4352           BAL    RTN2,DELAYA        DELAY                                                  RST43520
300A  C8A0 3732        4353           LHI    ERR2,C'72'         ERROR 72                                               RST43530
300E  4300 110C        4354           B      INTNG              TEST SND SIDE DIDNT INT                                RST43540
      0000 3012        4355  TFINT    EQU    *                                                                         RST43550
3012  41F0 34B0        4356           BAL    LINK,STDAS         LOAD UP INT DEV AND STATUS                             RST43560
3016  0574             4357           CLHR   DEV,WRDEV          IS DEVICE CORRECT                                      RST43570
3018  4330 3024        4358           BE     AK131              GOOD GO ON                                             RST43580
301C  C8A0 3733        4359           LHI    ERR2,C'73'         ERROR 73                                               RST43590
3020  4300 1128        4360           B      ADRNG2             INT ADDR INCORRECT                                     RST43600
3024  C580 0000        4361  AK131    CLHI   STAT,0             IS STATUS 0                                            RST43610
3028  4330 3038        4362  TDE74    BE     SK131              IF STATUS GOOD NEXT SECTION                            RST43620
302C  C8A0 3734        4363           LHI    ERR2,C'74'         ERROR 74                                               RST43630
3030  C8C0 3030        4364           LHI    TEMP,C'00'         SHOULD BE STATUS                                       RST43640
3034  4300 1138        4365           B      STANG0             TEST SND STAT INCORRECT                                RST43650
3038  4820 3692        4366  SK131    LH     CLDEV,CONLIN       LOAD UP CDEVN OPTION                                   RST43660
303C  2621             4367           AIS    CLDEV,1            INCREMENT ADDRESS                                      RST43670
303E  C8C0 7FFF        4368           LHI    TEMP,X'7FFF'       LOAD TIMEOUT                                           RST43680
3042  0ACC             4369           AAR    TEMP,TEMP          DOUBLE IT                                              RST43690
      0000 3044        4370  SK1314   EQU    *                                                                         RST43700
3044  9D28             4371           SSR    CLDEV,STAT         SENSE STATUS ON CLDEV                                  RST43710
3046  4380 3058        4372           BFC    8,SK131B           BRANCH IF NOT BUSY                                     RST43720
304A  27C1             4373           SIS    TEMP,1             DECREMENT TEMP                                         RST43730
304C  4380 3044        4374           BNC    SK1314             SENSE AGAIN                                            RST43740
3050  C8A0 3730        4375           LHI    ERR2,C'70'         ERROR 70                                               RST43750
3054  4300 110C        4376           B      INTNG              ERROR PRINT SEQUENCE                                   RST43760
3058  2721             4377  SK131B   SIS    CLDEV,1            DECREMENT TO ORIGINAL VALUE                            RST43770
305A  C580 0000        4378           CLHI   STAT,0             IS STATUS 0                                            RST43780
305E  4330 306E        4379           BE     RP1318             GOOD GO ON                                             RST43790
3062  C8A0 3637        4380           LHI    ERR2,C'67'         ERROR 67                                               RST43800
3066  C8C0 3030        4381  SK131A8  LHI    TEMP,C'00'         SHOULD BE STATUS                                       RST43810
306A  4300 1150        4382           B      ST2NG              CNTL SND STAT INCORRECT                                RST43820
      0000 306E        4383  RP1318   EQU    *                                                                         RST43830
306E  C8C0 308C        4384           LHI    TEMP,RFINT         LOAD UP VECTOR ADDRESS                                 RST43840
3072  41F0 349E        4385           BAL    LINK,TABINT        INITIALIZE ETPE INTERRUPT TABLE                        RST43850
3076  C8C0 40F0        4386           LHI    TEMP,X'40F0'       ENABLE                                                 RST43860
307A  95DC             4387           EPSR   CHAR,TEMP          PROCESSOR INTERRUPTS                                   RST43870
307C  C800 0190        4388           LHI    R0,400             LOAD UP FOR 400 MILS DELAY                             RST43880
3080  4160 3348        4389           BAL    RTN2,DELAYA        DELAY                                                  RST43890
3084  C8A0 3336        4390           LHI    ERR2,C'36'         ERROR 36                                               RST43900
3088  4300 110C        4391           B      INTNG              TEST RCV DIDNT INT                                     RST43910
      0000 308C        4392  RFINT    EQU    *                                                                         RST43920
308C  4830 3690        4393           LH     RDDEV,TESLIN       LOAD UP TDEVN OPTION                                   RST43930
3090  4820 3692        4394           LH     CLDEV,CONLIN       LOAD UP CDEVN OPTION                                   RST43940
3094  41F0 34B0        4395           BAL    LINK,STDAS         LOAD UP INT DEV AND STATUS                             RST43950
3098  0573             4396           CLHR   DEV,RDDEV          IS DEVICE CORRECT                                      RST43960
309A  4330 30A6        4397           BE     AK132              GOOD GO ON                                             RST43970
309E  C8A0 3337        4398           LHI    ERR2,C'37'         ERROR 37                                               RST43980
30A2  4300 1120        4399           B      ADRNG1             INT ADDR INCORRECT                                     RST43990
30A6  DB39 3738        4400  AK132    RD     RDDEV,RBUF(R9)     READ DATAV  RDDEV                                      RST44000
30AA  C580 0000        4401           CLHI   STAT,0             IS STATUS ZERO                                         RST44010
30AE  4330 30D0        4402           BE     SK132              IF GOOD GO ON                                          RST44020
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30B2  2400           4403          LIS   R0,0              LOAD REGISTERO WITH ZERO          RST44030
30B4  4000 36A2      4404          STH   R0,TFLAG          RESET TFLAG                       RST44040
30B8  D3C9 34D0      4405          LB    TEMP,DTBL(R9)     LOAD BYTE FROM DATA TABLE         RST44050
30BC  41E0 330E      4406          BAL   RTN4,BITSB        MASK BITS                         RST44060
30C0  40C0 368A      4407          STH   TEMP,SVECHA       SAVE CHAR                         RST44070
30C4  C8A0 3338      4408          LHI   ERR2,C'38'        ERROR 38                          RST44080
      0000 30C8      4409  SK1328  EQU   *                                                   RST44090
30C8  C8C0 3030      4410          LHI   TEMP,C'00'        SHOULD BE STATUS                  RST44100
30CC  4300 1140      4411          B     STANG             TEST RCV STAT INCORRECT           RST44110
30D0  C8C0 7FFF      4412  SK132   LHI   TEMP,X'7FFF'      LOAD TIMEOUT                      RST44120
30D4  0ACC           4413          AAR   TEMP,TEMP         DOUBLE IT                         RST44130
      0000 30D6      4414  SK1322  EQU   *                                                   RST44140
30D6  9D28           4415          SSR   CLDEV,STAT        SENSE STATUS ON CLDEV             RST44150
30D8  4380 30EA      4416          BFC   8,SK132B          BR IF NOT BUSY                    RST44160
30DC  27C1           4417          SIS   TEMP,1            DECREMENT TEMP                    RST44170
30DE  4380 30D6      4418          BNC   SK1322            SENSE AGAIN                       RST44180
30E2  C8A0 3731      4419          LHI   ERR2,C'71'        ERROR 71                          RST44190
30E6  4300 110C      4420          B     INTNG             ERROR PRINT SEQUENCE              RST44200
30EA  DB29 370A      4421  SK132B  RD    CLDEV,RBUF1(R9)   READ DATA  CLDEV                 RST44210
30EE  C580 0000      4422          CLHI  STAT,0            IS STATUS 0                       RST44220
30F2  4330 3114      4423          BE    SK132A            GOOD GO ON                        RST44230
30F6  2400           4424          LIS   R0,0              LOAD REGISTERO WITH ZERO          RST44240
30F8  4000 36A2      4425          STH   R0,TFLAG          ZERO OUT TFLAG                    RST44250
30FC  D3C9 34D0      4426          LB    TEMP,DTBL(R9)     LOAD BYTE FROM DATA TABLE         RST44260
3100  41E0 330E      4427          BAL   RTN4,BITSB        MASK BITS                         RST44270
3104  40C0 368A      4428          STH   TEMP,SVECHA       SAVE CHARACTER                    RST44280
3108  C8A0 3735      4429          LHI   ERR2,C'75'        ERROR 75                          RST44290
      0000 310C      4430  SK132A8 EQU   *                                                   RST44300
310C  C8C0 3030      4431          LHI   TEMP,C'00'        SHOULD BE STATUS                  RST44310
3110  4300 1148      4432          B     ST1NG             CNTL RCV STAT INCORRECT           RST44320
      0000 3114      4433  SK132A  EQU   *                                                   RST44330
3114  2691           4434  DN131   AIS   R9,1              INCREMENT R9                      RST44340
3116  C590 0014      4435          CLHI  R9,20             LIMIT YET                         RST44350
311A  4335 0000      4436          BE    0(RTN)            YES,EXIT                          RST44360
311E  26A1           4437          AIS   R10,1             INCREMENT R10                     RST44370
3120  4300 2FE0      4438          B     RMFII             LOOP TIL ALL 20 DONE              RST44380
                     4439  *********                                                         RST44390
                     4440  *       FULL DUPLEX MESSAGE STATUS DRIVER                         RST44400
                     4441  *                                                                 RST44410
3124                 4442  RMFS    DS    0                 LABEL                             RST44420
3124  4820 3692      4443          LH    CLDEV,CONLIN      LOAD UP CDEVN OPTION              RST44430
3128  48A0 3684      4444          LH    R10,TBUF          LOAD INDEX                        RST44440
312C  0B99           4445          SHR   R9,R9             ZERO OUT R9                       RST44450
312E  DA2A 0000      4446          WD    CLDEV,0(R10)      WRITE DATA   CLDEV                RST44460
3132  DA4A 0000      4447          WD    WRDEV,0(R10)      WRITE DATA   WRDEV               RST44470
3136  C8D0 7FFF      4448  RP14    LHI   R13,X'7FFF'       LOAD TIMEOUT                      RST44480
313A  0ADD           4449          AAR   R13,R13           DOUBLE IT                         RST44490
313C  9D48           4450  RFS2    SSR   WRDEV,STAT        SENSE STATUS ON WRDEV             RST44500
313E  4380 3150      4451          BFC   8,RFS3            BRANCH IF NOT BUSY                RST44510
3142  27D1           4452          SIS   R13,1             DECREMENT R13                     RST44520
3144  4380 313C      4453          BNC   RFS2              LOOP                              RST44530
3148  C8A0 3533      4454          LHI   ERR2,C'53'        ERROR 53                          RST44540
314C  4300 110C      4455          B     INTNG             TEST SND BSY NOT RESET            RST44550
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3150  C580 0000          4456  RFS3    CLHI  STAT,0              IS STATUS OP                          RST44560
3154  4330 3160          4457          BE    SK141               GOOD GO ON                            RST44570
3158  C8A0 3534          4458          LHI   ERR2,C'54'          ERROR 54                              RST44580
315C  4300 30C8          4459          B     SK1328                                                    RST44590
3160  C8C0 7FFF          4460  SK141   LHI   TEMP,X'7FFF'        LOAD TIMEOUT                          RST44600
3164  0ACC               4461          AAR   TEMP,TEMP           DOUBLE IT                             RST44610
3166  2621               4462          AIS   CLDEV,1             INCRENENT ADDRESS                     RST44620
3168  9D28               4463  SK141C  SSR   CLDEV,STAT          CNTL SND STATUS                       RST44630
316A  4380 317C          4464          BFC   8,SK141B            BR IF NOT BUSY                        RST44640
316E  27C1               4465          SIS   TEMP,1              DECREMENT TEMP                        RST44650
3170  4380 3168          4466          BNC   SK141C              SENSE AGAIN                           RST44660
3174  C8A0 3730          4467          LHI   ERR2,C'70'          ERROR 70                              RST44670
3178  4300 110C          4468          B     INTNG               ERROR PRINT SEQUENCE                  RST44680
317C  2721               4469  SK141B  SIS   CLDEV,1             RESTORE CLDEV                         RST44690
317E  C580 0000          4470          CLHI  STAT,0              IS STATUS 0                           RST44700
3182  4330 318E          4471  TEE67   BE    SK141A              IF STATUS GOOD NEXT SECTION           RST44710
3186  C8A0 3637          4472          LHI   ERR2,C'67'          ERROR 67                              RST44720
318A  4300 3066          4473          B     SK131A8                                                   RST44730
      0000 318E          4474  SK141A  EQU   *                                                         RST44740
318E  26A1               4475          AIS   R10,1               INCREMENT R10                         RST44750
3190  48C0 3684          4476          LH    TEMP,TBUF           LOAD INDEX                            RST44760
3194  CAC0 0013          4477          AHI   TEMP,19             INCREMENT                             RST44770
3198  05CA               4478          CLHR  TEMP,R10            LIMIT YET                             RST44780
319A  4380 31A2          4479          BFC   8,RFS4              NO,BRANCH                             RST44790
319E  4300 31AA          4480          B     RFS48                                                     RST44800
31A2  DA2A 0000          4481  RFS4    WD    CLDEV,0(R10)        WRITE DATA  CLDEV                    RST44810
31A6  DA4A 0000          4482          WD    WRDEV,0(R10)        WRITE DATA  WRDEV                     RST44820
      0000 31AA          4483  RFS48   EQU   *                                                         RST44830
31AA  C8D0 7FFF          4484          LHI   R13,X'7FFF'         LOAD TIMEOUT                          RST44840
31AE  0ADD               4485          AAR   R13,R13             DOUBLE IT                             RST44850
31B0  9D38               4486  RFS5    SSR   RDDEV,STAT          SENSE STATUS OM RDDEV                 RST44860
31B2  4380 31C4          4487          BFC   8,RFS6              TEST FOR BUSY                         RST44870
31B6  27D1               4488          SIS   R13,1               DECREMENT R13                         RST44880
31B8  4380 31B0          4489          BNC   RFS5                LOOP                                  RST44890
31BC  C8A0 3530          4490          LHI   ERR2,C'50'          ERROR 50                              RST44900
31C0  4300 110C          4491          B     INTNG               ERROR PRINT SEQUENCE                  RST44910
31C4  DB39 3738          4492  RFS6    RD    RDDEV,RBUF(R9)      READ DATA  RDDEV                      RST44920
31C8  C580 0000          4493          CLHI  STAT,0              IS STATUS ZERO                        RST44930
31CC  4330 31EA          4494          BE    SK142                                                     RST44940
31D0  2411               4495          LIS   R1,1                R1=1                                  RST44950
31D2  4010 36A2          4496          STH   R1,TFLAG            STORE ONE INTO TFLAG                  RST44960
31D6  D3C9 34D0          4497          LB    TEMP,DTBL(R9)       LOAD BYTE FROM DATA TABLE             RST44970
31DA  41E0 330E          4498          BAL   RTN4,BITSB          MASK BITS                             RST44980
31DE  40C0 368A          4499          STH   TEMP,SVECHA         SAVE CHARACTER                        RST44990
31E2  C8A0 3531          4500          LHI   ERR2,C'51'          ERROR 51                              RST45000
31E6  4300 30C8          4501          B     SK1328                                                    RST45010
31EA  C8C0 7FFF          4502  SK142   LHI   TEMP,X'7FFF'        LOAD TIMEOUT                          RST45020
31EE  0ACC               4503          AAR   TEMP,TEMP           DOUBLE IT                             RST45030
      0000 31F0          4504  SK1422  EQU   *                                                         RST45040
31F0  9D28               4505          SSR   CLDEV,STAT          CNTL RCV STAT                         RST45050
31F2  4380 3204          4506          BFC   8,SK142B            BR IF NOT BUSY                        RST45060
31F6  27C1               4507          SIS   TEMP,1              DECREMENT TEMP                        RST45070
31F8  4230 31F0          4508          BNE   SK1422              SENSE AGAIN                           RST45080
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31FC C8A0 3731 4509          LHI   ERR2,C'71'          ERROR 71                          RST45090
3200 4300 110C 4510          B     INTNG               ERROR PRINT SEQUENCE              RST45100
3204 DB29 370A 4511 SK142B   RD    CLDEV,RBUF1(R9)     READ DATA  CLDEV               RST45110
3208 C580 0000 4512          CLHI  STAT,0              IS STATUS 0                       RST45120
320C 4330 322A 4513          BE    SK142A              GOOD GO ON                        RST45130
3210 2400      4514          LIS   R0,0                LOAD 0                            RST45140
3212 4000 36A2 4515          STH   R0,TFLAG            STORE ZERO INTO TFLAG             RST45150
3216 D3C9 34D0 4516          LB    TEMP,DTBL(R9)       LOAD BYTE FRLM DATA TABLE         RST45160
321A 41E0 330E 4517          BAL   RTN4,BITSB          MASK                              RST45170
321E 40C0 368A 4518          STH   TEMP,SVECHA         SAVE CHARACTER                    RST45180
3222 C8A0 3531 4519          LHI   ERR2,C'51'          ERROR 51                          RST45190
3226 4300 310C 4520          B     SK132A8                                               RST45200
     0000 322A 4521 SK142A   EQU   *                                                   RST45210
322A 2691      4522 DN14     AIS   R9,1                INCREMENT R9                      RST45220
322C C590 0014 4523          CLHI  R9,20               LIMIT YET                         RST45230
3230 4335 0000 4524          BE    0(RTN)              YES,EXIT                          RST45240
3234 4300 3136 4525          B     RP14                NEXT CHAR                         RST45250
               4526 *********                                                           RST45260
               4527 *         COMPARE READ DATA SUBROUTINE                              RST45270
               4528 *                                                                   RST45280
3238 C8C0 3738 4529 CRDTA    LHI   TEMP,RBUF           COMPARE W/ RBUF                   RST45290
323C 40C0 325C 4530          STH   TEMP,BFCG+2                                         RST45300
3240 4300 324C 4531          B     CRDT                                                RST45310
3244 C8C0 370A 4532 CRDTB    LHI   TEMP,RBUF1          COMPARE W/RBUF1                   RST45320
3248 40C0 325C 4533          STH   TEMP,BFCG+2                                         RST45330
     0000 324C 4534 CRDT     EQU   *                                                   RST45340
324C 2490      4535          LIS   R9,0                ZERO OUT R9                       RST45350
     0000 324E 4536 CRDT1    EQU   *                                                   RST45360
324E D3C9 34D0 4537          LB    TEMP,DTBL(R9)                                       RST45370
3252 41E0 330E 4538          BAL   RTN4,BITSB          BIT MASK                          RST45380
3256 40C0 368A 4539          STH   TEMP,SVECHA         SAVE SHOULD BE CHAR               RST45390
325A D3B9 3738 4540 BFCG     LB    DATAR,RBUF(R9)                                      RST45400
325E 05CB      4541          CLHR  TEMP,DATAR          COMPARE CHAR                      RST45410
3260 4230 3270 4542          BNE   CRDT2                                               RST45420
3264 2691      4543          AIS   R9,1                INCREMENT R9                      RST45430
3266 4590 34CE 4544          CLH   R9,BUFLIM           LIMIT YET                         RST45440
326A 0338      4545          BER   RTN3                NORMAL RETURN                     RST45450
326C 4300 324E 4546          B     CRDT1                                               RST45460
     0000 3270 4547 CRDT2    EQU   *                                                   RST45470
3270 CD90 0001 4548          SLHL  R9,1                                                RST45480
3274 4160 11A6 4549          BAL   RTN2,ERROR1         ERROR MSG                         RST45490
3278 4160 120C 4550          BAL   RTN2,ERROR7         PAR & CHAR MSG                    RST45500
327C 4300 1190 4551          B     NGEND               ERROR PRINT SEQUENCE              RST45510
               4552 ********                                                            RST45520
               4553 *                                                                   RST45530
               4554 *    HDX/FDX CAUTION PRINT                                          RST45540
               4555 *                                                                   RST45550
3280 C850 35E8 4556 NOTEST2  LHI   R5,WRONG1           LOAD MESSAGE                      RST45560
3284 2303      4557          BS    NOTEST              COMMON BRANCH                     RST45570
3286 C850 3614 4558 NOTEST1  LHI   R5,WRONG2           LOAD MESSAGE                      RST45580
328A 41F0 1304 4559 NOTEST   BAL   LINK,PRINT          PRINT CAUTION                     RST45590
328E 4300 0E84 4560          B     KEEP71              GO TO SELECT NEXT TEST            RST45600
               4561 *********                                                           RST45610
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SUBROUTINES AND CONSTANTS

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                        4562  *        CHANGE PARAMETERS SUBROUTINE                                    RST45620
                        4563  *                                                                        RST45630
        0000 3292       4564  PARCHG   EQU   *                                                        RST45640
3292    D370 3694       4565           LB    PAR,CMD2SET         LOAD UP PARA OPTION                  RST45650
3296    08C7            4566           LHR   TEMP,PAR            SET IT UP                            RST45660
3298    C4C0 003F       4567           NHI   TEMP,X'3F'          MASK OFF LOWER 6 BITS                RST45670
329C    C5C0 003E       4568           CLHI  TEMP,X'3E'          LIMIT YET                            RST45680
32A0    4336 0004       4569           BE    4(R6)               IF LIMT CHANGE CLOCK                 RST45690
        0000 32A4       4570  CHGPR1   EQU   *                                                        RST45700
32A4    C4C0 0006       4571           NHI   TEMP,X'06'          TEST 2ND AND 3RD BITS OF CMD2        RST45710
32A8    4330 32B4       4572           BZ    CHGPR2              IF ZERO ADD 4                        RST45720
32AC    CA70 0002       4573           AHI   PAR,2               PAR=PAR+2                            RST45730
32B0    4300 32B8       4574           B     LASCI               SET UP FOR PRINT                     RST45740
32B4    CA70 0004       4575  CHGPR2   AHI   PAR,4               PAR=PAR+4                            RST45750
        0000 32B8       4576  LASCI    EQU   *                                                        RST45760
32B8    D270 3694       4577           STB   PAR,CMD2SET         CMD2=PAR                             RST45770
32BC    08C7            4578           LHR   TEMP,PAR            TEMP=PAR                             RST45780
32BE    C4C0 00C0       4579           NHI   TEMP,X'C0'          MASK BIT SPEED                       RST45790
32C2    CCC0 0006       4580           SRHL  TEMP,6              SHIFT RIGHT 6 BITS                   RST45800
32C6    CAC0 0030       4581           AHI   TEMP,X'30'                                               RST45810
32CA    D2C0 359F       4582           STB   TEMP,BITSPD         SAVE BIT SPEED ASCII                 RST45820
32CE    08C7            4583           LHR   TEMP,PAR            TEMP=PAR                             RST45830
32D0    C4C0 0030       4584           NHI   TEMP,X'30'          MASK DATA BITS                       RST45840
32D4    CCC0 0004       4585           SRHL  TEMP,4              SHIFT RIGHT 4 BITS                   RST45850
32D8    CAC0 0035       4586           AHI   TEMP,X'35'                                               RST45860
32DC    D2C0 35A7       4587           STB   TEMP,DATANO         SAVE DATA BITS ASCII                 RST45870
32E0    08C7            4588           LHR   TEMP,PAR            TEMP=PAR                             RST45880
32E2    C4C0 0008       4589           NHI   TEMP,8              MASK STOP BITS                       RST45890
32E6    CCC0 0003       4590           SRHL  TEMP,3              SHIFT RIGHT 3 BITS                   RST45900
32EA    CAC0 0031       4591           AHI   TEMP,X'31'                                               RST45910
32EE    D2C0 35AD       4592           STB   TEMP,STOPNO         SAVE STOP BITS ASCII                 RST45920
32F2    08C7            4593           LHR   TEMP,PAR                                                 RST45930
32F4    C4C0 0006       4594           NHI   TEMP,X'06'          MASK PARITY                          RST45940
32F8    CCC0 0001       4595           SRHL  TEMP,1              SHIFT RIGHT 1 BIT                    RST45950
32FC    D39C 34E4       4596           LB    R9,PART(TEMP)                                            RST45960
3300    D290 35B3       4597           STB   R9,PARITY                                                RST45970
3304    DE30 3694       4598           OC    RDDEV,CMD2SET                                            RST45980
3308    DE20 3694       4599           OC    CLDEV,CMD2SET                                            RST45990
330C    0306            4600           BR    R6                                                       RST46000
                        4601  ***************                                                         RST46010
                        4602  *        BITS MASK DATA SUBROUTINE                                       RST46020
                        4603  *                                                                        RST46030
        0000 330E       4604  BITSB    EQU   *                                                        RST46040
330E    D3F0 35A7       4605           LB    CNT2,DATANO                                              RST46050
3312    C5F0 0038       4606           CLHI  CNT2,X'38'                                               RST46060
3316    4330 3336       4607           BE    CRBR2                                                    RST46070
331A    C5F0 0037       4608           CLHI  CNT2,X'37'                                               RST46080
331E    4330 3332       4609           BE    CRBR1                                                    RST46090
3322    C5F0 0036       4610           CLHI  CNT2,X'36'                                               RST46100
3326    4330 3338       4611           BE    CRBR3                                                    RST46110
332A    C4C0 001F       4612           NHI   TEMP,X'1F'          5 BITS MARK                          RST46120
332E    4300 3336       4613           B     CRBR2                                                    RST46130
        0000 3332       4614  CRBR1    EQU   *                                                        RST46140
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3332  C4C0 007F      4615           NHI   TEMP,X'7F'          7 BITS MASK                          RST46150
      0000 3336      4616  CRBR2    EQU   *                                                      RST46160
3336  030E           4617           BR    RTN4                                                   RST46170
3338  C4C0 003F      4618  CRBR3    NHI   TEMP,X'3F'          6 BITS MASK                          RST46180
333C  4300 3336      4619           B     CRBR2                                                  RST46190
                     4620  *********                                                            RST46200
                     4621  *                                                                    RST46210
                     4622  * DELAY SUBROUTINE  *** DELAY ***                                    RST46220
                     4623  *                                                                    RST46230
                     4624  *                                                                    RST46240
3340  C800 0003      4625  DELAY    LHI   R0,3                LOAD STANDARD DELAY CONSTANT         RST46250
3344  4A00 3696      4626           AH    R0,DELPLUS          ADDITIONAL DELAY IF REQUIRED         RST46260
3348  41F0 1298      4627  DELAYA   BAL   LINK,TIMER          GO TO TIME OUT LOOP                  RST46270
334C  0306           4628           BR    RTN2                RETURN                               RST46280
                     4629  *                                                                    RST46290
334E  DA40 34CC      4630  CLERR    WD    WRDEV,FOX           TRANS CHAR FORM TEST LINE            RST46300
3352  DA20 34CC      4631           WD    CLDEV,FOX           TRANS CHAR FROM CNTL LINE            RST46310
3356  C800 0190      4632  CLERR1   LHI   R0,400             LOAD UP FOR 4000 MILS DELAY          RST46320
335A  4160 3348      4633           BAL   RTN2,DELAYA         DELAY                                RST46330
335E  9B3C           4634           RDR   RDDEV,TEMP          INTI READ BUSY                       RST46340
3360  9B2C           4635           RDR   CLDEV,TEMP          INTI READ BUSY                       RST46350
3362  0308           4636           BR    RTN3                RETURN                               RST46360
                     4637  *********                                                            RST46370
                     4638  *         FROM BINARY TO BCD CONVERSION SUBROUTINE                   RST46380
                     4639  *                                                                    RST46390
3364  2490           4640  HEXCON   LIS   R9,0                                                  RST46400
3366  24D0           4641           LIS   R13,0                                                  RST46410
3368  24E0           4642           LIS   R14,0                                                  RST46420
336A  08CB           4643  HEXCN1   LHR   TEMP,DATAR                                            RST46430
336C  CCCD 0000      4644           SRHL  TEMP,0(R13)                                            RST46440
3370  C4C0 000F      4645           NHI   TEMP,X'0F'                                             RST46450
3374  CAC0 0030      4646           AHI   TEMP,X'30'          ADD X'30'                          RST46460
3378  C5C0 003A      4647           CLHI  TEMP,X'3A'          IS 0-9 ?                           RST46470
337C  4280 3384      4648           BTC   8,HEXCN2                                               RST46480
3380  CAC0 0007      4649           AHI   TEMP,X'07'          A-F ADD X'07'                      RST46490
3384  CDCE 0000      4650  HEXCN2   SLHL  TEMP,0(R14)                                           RST46500
3388  069C           4651           OHR   R9,TEMP                                                RST46510
338A  CAD0 0004      4652           AHI   R13,4                                                  RST46520
338E  CAE0 0008      4653           AHI   R14,8                                                  RST46530
3392  C5D0 0008      4654           CLHI  R13,8                                                  RST46540
3396  4280 336A      4655           BTC   8,HEXCN1                                               RST46550
339A  08B9           4656           LHR   DATAR,R9                                               RST46560
339C  0305           4657           BR    RTN                 RETURN                           RST46570
                     4658  *********                                                            RST46580
                     4659  *                                                                    RST46590
                     4660  *  DISPLAY BTESTNO, TDEVN AND CMD2 TO DISPLAY                        RST46600
                     4661  *                                                                    RST46610
339E  D000 3778      4662  DISPLAY1 STM   R0,RSAVE           SAVE REGISTERS                     RST46620
33A2  48C0 3690      4663           LH    TEMP,TESLIN         LOAD CURRENT TDEVN                 RST46630
33A6  46C0 3694      4664           OH    TEMP,CMD2SET        OR IN THE ACTUAL CURRENT CMD2      RST46640
33AA  2411           4665           LIS   R1,1                LOAD R1 WITH ONE                   RST46650
33AC  DE10 184E      4666           OC    R1,INCR             DISPLAY IN INCREMENTAL MODE        RST46660
33B0  981C           4667           WHR   R1,TEMP             WRITE TDEVN AND CMD2               RST46670
```

SUBROUTINES AND CONSTANTS

```
33B2  2490           4668           LIS   SAVER,0            CLEAR TO ZEROES                  RST46680
33B4  9819           4669           WHR   R1,SAVER           WRITE ZEROES NEXT                RST46690
33B6  D390 1887      4670           LB    SAVER,BTESTNO+1    LOAD BINARY TEST NUMBER          RST46700
33BA  9A19           4671           WDR   R1,SAVER           WRITE TEST NUMBER                RST46710
33BC  DE10 184D      4672           OC    R1,NORM            PUT DISPLAY IN NORMAL MODE       RST46720
33C0  D100 3778      4673           LM    R0,RSAVE           RESTORE REGISTERS                RST46730
33C4  030F           4674           BR    R15                RETURN                           RST46740
                     4675  *********                                                          RST46750
                     4676  *********                                                          RST46760
                     4677  *        RESTORE  CMD2                                             RST46770
                     4678  *                                                                  RST46780
                     4679  *                                                                  RST46790
      0000 33C6      4680  RSTR     EQU   *                                                   RST46800
33C6  4870 1970      4681           LH    PAR,PARA+6         RESTORE CMD2                     RST46810
33CA  D270 3694      4682           STB   PAR,CMD2SET                                       RST46820
33CE  4160 32B8      4683           BAL   RTN2,LASCI         LOAD ASCII                       RST46830
33D2  DE30 3694      4684           OC    RDDEV,CMD2SET      COMMAND DEVICE                   RST46840
33D6  DE20 3694      4685           OC    CLDEV,CMD2SET      COMMAND DEVICE                   RST46850
33DA  0305           4686           BR    RTN                RETURN                           RST46860
                     4687  ********                                                           RST46870
33DC  48C0 1970      4688  BRKRSTR  LH    TEMP,PARA+6        LOAD ORIGINAL VALUE              RST46880
33E0  D2C0 3694      4689           STB   TEMP,CMD2SET       RESTORE                          RST46890
33E4  48C0 194C      4690           LH    TEMP,TDEVN+6       GET STORED TDEVN                 RST46900
33E8  40C0 3690      4691           STH   TEMP,TESLIN        RESTORE                          RST46910
33EC  48C0 1958      4692           LH    TEMP,CDEVN+6       GET STORED CDEVN                 RST46920
33F0  40C0 3692      4693           STH   TEMP,CONLIN        RESTORE                          RST46930
33F4  4300 0AF4      4694           B     OPTIN                                               RST46940
                     4695  ********                                                           RST46950
                     4696  *       CLOCK SET UP ROUTINE                                       RST46960
      0000 33F8      4697  CLKSET   EQU   *                                                   RST46970
33F8  2511           4698           LCS   R1,1               NEGATIVE ONE                     RST46980
33FA  4010 3722      4699           STH   R1,CLKTBL          INITIALIZE CLOCK                 RST46990
33FE  4010 3724      4700           STH   R1,CLKTBL+2        TABLE WITH ALL F'S               RST47000
3402  4860 1994      4701           LH    R6,CLOCK+6         LOAD OPTION INPUT                RST47010
3406  0876           4702  SET1     LHR   R7,R6              LOAD INTO WORK REGISTER          RST47020
3408  033F           4703           BZR   R15                FINISHED RETURN                  RST47030
340A  9064           4704           SRLS  R6,4               SHIFT OFF LOWER DIGIT IN R6      RST47040
340C  C460 0FFF      4705           NHI   R6,X'FFF'                                           RST47050
3410  C470 000F      4706           NHI   R7,X'F'            MASK OFF LOWER DIGIT             RST47060
3414  277A           4707           SIS   R7,10              SUBTRACT 10                      RST47070
3416  4280 3406      4708           BL    SET1               IF ZERO GO AGAIN                 RST47080
341A  D277 3722      4709           STB   R7,CLKTBL(R7)      STORE INTO CLOCK TABLE           RST47090
341E  4300 3406      4710           B     SET1               GO AGAIN                         RST47100
                     4711  *                                                                  RST47110
                     4712  ********                                                           RST47120
                     4713  *                                                                  RST47130
                     4714  *        CHANGE CLOCK ROUTINE                                      RST47140
                     4715  *                                                                  RST47150
      0000 3422      4716  CLKCHG   EQU   *                                                   RST47160
3422  D3C0 371E      4717           LB    TEMP,COUNTER       LOAD UP COUNT                    RST47170
      0000 3426      4718  SET4     EQU   *                                                   RST47180
3426  C5C0 0004      4719           CLHI  TEMP,4             COMPARE TO LIMIT                 RST47190
342A  4230 3436      4720           BNE   SET5               IF ALL FOUR CLOCK ARE TESTED     RST47200
```

SUBROUTINES AND CONSTANTS

```
342E  4150 33C6  4721          BAL   RTN,RSTR            RESTORE PARA OPTION                RST47210
3432  4300 0E50  4722          B     TSTEND               FINISH OUT TEST                    RST47220
      0000 3436  4723  SET5    EQU   *                                                       RST47230
3436  D37C 3722  4724          LB    PAR,CLKTBL(TEMP)     LOAD UP CLOCK                      RST47240
343A  C570 00FF  4725          CLHI  PAR,X'FF'            IS CLOCK SELECTED                  RST47250
343E  4330 344E  4726          BE    SET3                 NO TRY AGAIN                       RST47260
3442  26C1       4727          AIS   TEMP,1               INCREMENT COUNTER                  RST47270
3444  D2C0 371E  4728          STB   TEMP,COUNTER         STORE INTO COUNTER                 RST47280
3448  9176       4729          SLLS  PAR,6                SHIFT OVER                         RST47290
344A  4300 32B8  4730          B     LASCI                SET UP PAR INTO CMD2               RST47300
344E  26C1       4731  SET3    AIS   TEMP,1               INCREMENT COUNTER                  RST47310
3450  4300 3426  4732          B     SET4                 TRY AGAIN                          RST47320
                 4733  *********                                                             RST47330
                 4734  *       INTERRUPT DELAY                                               RST47340
                 4735  *                                                                     RST47350
      0000 3454  4736  IN4CLR  EQU   *                                                       RST47360
3454  24C4       4737          LIS   TEMP,4               LOAD UP A COUNTER OF 4             RST47370
3456  4300 3468  4738          B     INCLR                                                   RST47380
      0000 345A  4739  IN3CLR  EQU   *                                                       RST47390
345A  24C3       4740          LIS   TEMP,3               LOAD UP A COUNTER OF 3             RST47400
345C  4300 3468  4741          B     INCLR                                                   RST47410
      0000 3460  4742  IN2CLR  EQU   *                                                       RST47420
3460  24C2       4743          LIS   TEMP,2               LOAD UP A COUNTER OF 2             RST47430
3462  4300 3468  4744          B     INCLR                                                   RST47440
      0000 3466  4745  IN1CLR  EQU   *                                                       RST47450
3466  24C1       4746          LIS   TEMP,1               LOAD A COUNTER OF 1                RST47460
      0000 3468  4747  INCLR   EQU   *                                                       RST47470
3468  D000 3738  4748          STM   R0,RBUF              SAVE REGISTER                      RST47480
346C  C890 3482  4749          LHI   R9,ACK1              LOAD PSEUDO INTERRUPT VECTOR       RST47490
3470  4090 36B6  4750          STH   R9,DEVINT            STORE IN VECTOR TABLE              RST47500
3474  4090 36B8  4751          STH   R9,DEVINT+2          STORE IN VECTOR TABLE              RST47510
3478  4090 36BA  4752          STH   R9,DEVINT+4          STORE IN VECTOR TABLE              RST47520
347C  4090 36BC  4753          STH   R9,DEVINT+6          STORE IN VECTOR TABLE              RST47530
3480  2303       4754          BS    ACK2                                                    RST47540
3482  27C1       4755  ACK1    SIS   TEMP,1               DECREMENT COUNTER                  RST47550
3484  2337       4756          BZS   ENACK                ON ZERO FINISH UP                  RST47560
3486  C850 40F0  4757  ACK2    LHI   R5,X'40F0'                                              RST47570
348A  95D5       4758          EPSR  CHAR,R5                                                 RST47580
348C  2405       4759          LIS   R0,5                 LOAD DELAY                         RST47590
348E  4160 3348  4760          BAL   RTN2,DELAYA          DELAY 5 MILLISECONDS               RST47600
3492  C850 00F0  4761  ENACK   LHI   R5,X'F0'             DISABLE INTERRUPTS                 RST47610
3496  95D5       4762          EPSR  CHAR,R5                                                 RST47620
3498  D100 3738  4763          LM    R0,RBUF              RESTORE REGISTERS                  RST47630
349C  030F       4764          BR    LINK                                                    RST47640
                 4765  *********                                                             RST47650
                 4766  *       INITIALIZE ETPE INTERRUPT SERVICE TABLE                       RST47660
                 4767  *                                                                     RST47670
349E  40C0 36B6  4768  TABINT  STH   TEMP,DEVINT                                            RST47680
34A2  40C0 36B8  4769          STH   TEMP,DEVINT+2                                          RST47690
34A6  40C0 36BA  4770          STH   TEMP,DEVINT+4                                          RST47700
34AA  40C0 36BC  4771          STH   TEMP,DEVINT+6                                          RST47710
34AE  030F       4772          BR    LINK                 RETURN                             RST47720
                 4773  *********                                                             RST47730
```

SUBROUTINES AND CONSTANTS

```
                          4774  *        SET UP STATUS AND DEVICE REGISTERS                                RST47740
                          4775  *                                                                          RST47750
34B0   4870 1848          4776  STDAS    LH     DEV,INTDEV                                                 RST47760
34B4   D380 184A          4777           LB     STAT,INTSTA                                                RST47770
34B8   030F               4778           BR     LINK                                                       RST47780
                          4779  *********                                                                  RST47790
                          4780  *        OUTPUT COMMAND                                                    RST47800
                          4781  *                                                                          RST47810
34BA   A989               4782  DDRR     DC     X'A989'          DIS,DTR,RCT,RD                            RST47820
       0000 34BB          4783  DRR      EQU    DDRR+1           DIS,RCT,RD                                RST47830
34BC   81A3               4784  DR       DC     X'81A3'          DIS,RD                                    RST47840
       0000 34BD          4785  DDW      EQU    DR+1             DIS,DTR,WT                                RST47850
34BE   A18B               4786  DDR      DC     X'A18B'          DIS,DTR,RD                                RST47860
       0000 34BF          4787  DRW      EQU    DDR+1            DIS,RCT,WT                                RST47870
34C0   AB83               4788  DDRW     DC     X'AB83'          DIS,DTR,RCT,WT                            RST47880
       0000 34C1          4789  DW       EQU    DDRW+1           DIS,WT                                    RST47890
34C2   6163               4790  EDR      DC     X'6163'          EN,DTR,RD                                 RST47900
       0000 34C3          4791  EDW      EQU    EDR+1            EN,DTR,WT                                 RST47910
34C4   4169               4792  ER       DC     X'4169'          EN,RD                                     RST47920
       0000 34C5          4793  EDRR     EQU    ER+1             EN,DTR,RCT,RD                             RST47930
34C6   6BAF               4794  EDRW     DC     X'6BAF'          EN,DTR,RCT,WT                             RST47940
       0000 34C7          4795  DDRLW    EQU    EDRW+1           DIS,DTR,RCT,TLB,WT                        RST47950
34C8   B9BB               4796  DDRER    DC     X'B9BB'          DIS,DTR,EPX,RCT,RD                        RST47960
       0000 34C9          4797  DDREW    EQU    DDRER+1          DIS,DTR,EPX,RCT,WT                        RST47970
34CA   4300               4798  EW       DC     X'4300'          EN,WT                                     RST47980
34CC   FFFF               4799  FOX      DC     X'FFFF'                                                    RST47990
34CE   0014               4800  BUFLIM   DC     20               BUFFER LIMIT                              RST48000
34D0   0001               4801  DTBL     DC     X'0001'          DATA TABLE                                RST48010
34D2   0307               4802           DC     X'0307'                                                    RST48020
34D4   0F1F               4803           DC     X'0F1F'                                                    RST48030
34D6   3F7F               4804           DC     X'3F7F'                                                    RST48040
34D8   FFFE               4805           DC     X'FFFE'                                                    RST48050
34DA   FCF8               4806           DC     X'FCF8'                                                    RST48060
34DC   F0E0               4807           DC     X'F0E0'                                                    RST48070
34DE   C080               4808           DC     X'C080'                                                    RST48080
34E0   55AA               4809           DC     X'55AA'                                                    RST48090
34E2   33CC               4810           DC     X'33CC'                                                    RST48100
34E4   4E4E               4811  PART     DC     X'4E4E'          PARITY ASCII                              RST48110
34E6   4F45               4812           DC     X'4F45'                                                    RST48120
34E8   0000               4813  CONTER   DC     X'0'                                                       RST48130
       0000 34EA          4814  TESTS    EQU    *                                                          RST48140
34EA   1B50               4815           DC     TEST1            START ADDR OF TEST 1                      RST48150
34EC   1B50               4816           DC     TEST1            START ADDR OF TEST 1                      RST48160
34EE   1B88               4817           DC     TEST2            START ADDR OF TEST 2                      RST48170
34F0   1C86               4818           DC     TEST3            START ADDR OF TEST 3                      RST48180
34F2   1D88               4819           DC     TEST4            START ADDR OF TEST 4                      RST48190
34F4   1DEC               4820           DC     TEST5            START ADDR OF TEST 5                      RST48200
34F6   1F38               4821           DC     TEST6            START ADDR OF TEST 6                      RST48210
34F8   1FC4               4822           DC     TEST7            START ADDR OF TEST 7                      RST48220
34FA   2320               4823           DC     TEST8            START ADDR OF TEST 8                      RST48230
34FC   2380               4824           DC     TEST9            START ADDR OF TEST 9                      RST48240
34FE   23D0               4825           DC     TESTA            START ADDR OF TEST A                      RST48250
3500   2434               4826           DC     TESTB            START ADDR OF TEST B                      RST48260
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SUBROUTINES AND CONSTANTS

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3502  2480                    4827           DC    TESTC              START ADDR OF TEST C          RST48270
3504  2774                    4828           DC    TESTD              START ADDR OF TEST D          RST48280
3506  27E2                    4829           DC    TESTE              START ADDR OF TEST E          RST48290
3508  2842                    4830           DC    TESTF              START ADDR OF TEST F          RST48300
350A  294C                    4831           DC    TEST10             START ADDR OF TEST 10         RST48310
350C  2C60                    4832           DC    TEST11             START ADDR OF TEST 11         RST48320
350E  2D30                    4833           DC    TEST12             START ADDR OF TEST 12         RST48330
3510  0012                    4834  MAXTST   DC    18                                               RST48340
3512  0D0A                    4835  ENDMSG   DC    X'0D0A',C'ERRORS ='                              RST48350
3514  4552 524F 5253 203D
351C  3030 3030               4836  ECNAA    DC    C'0000',0                                        RST48360
3520  0000
      0000 351E               4837  ECNBB    EQU   ECNAA+2                                          RST48370
3522  494E 5420 4445 5620     4838  ADRMSG   DC    C'INT DEV ADDR ='                                RST48380
352A  4144 4452 203D
3530  2A2A                    4839  ERRDD    DC    C'**',X'0D'                                      RST48390
3532  000D
3534  5348 4F55 4C44 2042     4840  ERRD2    DC    C'SHOULD BE  ='                                  RST48400
353C  4520 203D
3540  2A2A                    4841  ERREE    DC    C'**',X'0D00'                                    RST48410
3542  0D00
3544  2020 4C49 4E45 2053     4842  DSAMSG   DC    C'  LINE STATUS='                                RST48420
354C  5441 5455 533D
      0000 3544               4843  STAERR   EQU   DSAMSG                                          RST48430
3552  2A2A                    4844  ERRFF    DC    C'**',X'0D'                                      RST48440
3554  000D
3556  2053 484F 554C 4420     4845  ERRF2    DC    C' SHOULD BE  ='                                 RST48450
355E  4245 2020 3D20
3564  2A2A                    4846  ERRGG    DC    C'**',X'0D'                                      RST48460
3566  000D
3568  494E 5420 4445 5620     4847  INTMSG   DC    C'INT DEV ADDR ='                                RST48470
3570  4144 4452 203D
3576  2A2A                    4848  ERRLL    DC    C'**',X'0D'                                      RST48480
3578  000D
357A  4348 4152 2057 4153     4849  CHAMSG   DC    C'CHAR WAS  ='                                   RST48490
3582  2020 3D20
3586  2A2A                    4850  ERRMM    DC    C'**',X'0D'                                      RST48500
3588  000D
358A  5348 4F55 4C44 2042     4851  ERRM2    DC    C'SHOULD BE ='                                   RST48510
3592  4520 3D20
3596  2A2A                    4852  ERRO2    DC    C'**',X'0D'                                      RST48520
3598  000D
      0000 359A               4853  PARMSG   EQU   *                                                RST48530
359A  4241 5544               4854           DC    C'BAUD'                                          RST48540
359E  202A                    4855  ERRPP    DC    C' *'                                            RST48550
      0000 359F               4856  BITSPD   EQU   ERRPP+1                                         RST48560
35A0  2042 4954               4857           DC    C' BIT'                                          RST48570
35A4  5323                    4858           DC    X'5323'                                          RST48580
35A6  202A                    4859  ERRQQ    DC    C' *'                                            RST48590
      0000 35A7               4860  DATANO   EQU   ERRQQ+1                                         RST48600
35A8  2053 5450               4861           DC    C' STP'                                          RST48610
35AC  202A                    4862  ERRRR    DC    C' *'                                            RST48620
      0000 35AD               4863  STOPNO   EQU   ERRRR+1                                         RST48630
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SUBROUTINES AND CONSTANTS

```
35AE  2050 4152           4864          DC    C' PAR'                                          RST48640
35B2  202A                4865  ERRSS   DC    C' *',X'0D'                                      RST48650
35B4  000D
      0000 35B3           4866  PARITY  EQU   ERRSS+1                                          RST48660
35B6  434F 4D4D 4F4E 2052 4867  TITLE   DC    C'COMMON RS-232 INTERFACE OFF LINE TEST 06-127R10' RST48670
35BE  532D 3233 3220 494E
35C6  5445 5246 4143 4520
35CE  4F46 4620 4C49 4E45
35D6  2054 4553 5420 3036
35DE  2D31 3237 5231 3020
35E6  000D                4868          DC    X'0D'                                            RST48680
35E8  5448 4953 2054 4553 4869  WRONG1  DC    C'THIS TEST MUST BE RUN IN FULL DUPLEX MODE'     RST48690
35F0  5420 4D55 5354 2042
35F8  4520 5255 4E20 494E
3600  2046 554C 4C20 4455
3608  504C 4558 204D 4F44
3610  4520
3612  0D00                4870          DC    X'0D00'                                          RST48700
3614  5448 4953 2054 4553 4871  WRONG2  DC    C'THIS TEST MUST BE RUN IN HALF DUPLEX MODE'     RST48710
361C  5420 4D55 5354 2042
3624  4520 5255 4E20 494E
362C  2048 414C 4620 4455
3634  504C 4558 204D 4F44
363C  4520
363E  0D00                4872          DC    X'0D00'                                          RST48720
3640  4E45 5720 4C49 4E45 4873  PLMADR  DC    C'NEW LINE ADDRESSES UNDER TEST',C'  '           RST48730
3648  2041 4444 5245 5353
3650  4553 2055 4E44 4552
3658  2054 4553 5420
365E  2020
3660  5444 4556 4E3D      4874  PLMT1   DC    C'TDEVN='                                        RST48740
3666  2A2A 2A20           4875  PLMT    DC    C'***',C'  '                                     RST48750
366A  2020
366C  4344 4556 4E3D      4876  PLMR1   DC    C'CDEVN='                                        RST48760
3672  2A2A 2A20           4877  PLMR    DC    C'***',X'0D'                                     RST48770
3676  000D
                          4878  * * * * * * * *                                               RST48780
                          4879  *                                                             RST48790
                          4880  *             SAVE AREA & DATA BUFFER                         RST48800
3678  0000                4881  PRFLG   DC    0                                               RST48810
                          4882  *                                                             RST48820
3680                      4883          ALIGN 8                                               RST48830
                          4884  *                                                             RST48840
3680  0000                4885  LBFLG   DC    0                 LBK ERROR FLAG                RST48850
                          4886  *                                                             RST48860
3682  0000                4887  OVFLG   DC    0                 OVER FLOW ERROR FLAG          RST48870
                          4888  *                                                             RST48880
3684  0000                4889  TBUF    DC    0                 TEMPORARY BUFFER POINTER      RST48890
                          4890  *                                                             RST48900
3686  0000                4891  SHUADR  DC    0                 SHOULD BE ADRS                RST48910
                          4892  *                                                             RST48920
3688  0000                4893  SVECNT  DC    0                 SAVE AREA OF CNT REG          RST48930
                          4894  *                                                             RST48940
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SUBROUTINES AND CONSTANTS

```
368A  0000                4895  SVECHA   DC    0                  SAVE AREA OF SHOULD BE CHAR          RST48950
                          4896  *                                                                       RST48960
368C  0000                4897  SVEHEX   DC    0                  SAVE AREA OF HEX-DATA                RST48970
                          4898  *                                                                       RST48980
                          4899  *                                                                       RST48990
368E  0000                4900  NUM      DC    0                  NUMERICAL CONV SAVE AREA             RST49000
                          4901  *                                                                       RST49010
3690  0000                4902  TESLIN   DC    0                  CURRENT TDEVN SAVE AREA              RST49020
3692  0000                4903  CONLIN   DC    0                  CURRENT CDEVN SAVE AREA              RST49030
3694  00                  4904  CMD2SET  DB    0                  CURRENT CMD2                         RST49040
3695  00                  4905          DB    0                  FILLER                               RST49050
3696  0000                4906  DELPLUS  DC    0                  ADDITIONAL DELAY COUNT               RST49060
3698  0000                4907  PRTFLG   DC    0                  PRINT FLAG                           RST49070
369A  0000                4908  LPERFLG  DC    0                  LOOP ON ERROR FLAG                   RST49080
369C  0000                4909  TESTAD   DC    0                  TEST RETURN ADDRESS FOR LOOP ON ERRO RST49090
369E  0000                4910  PACOUNT2 DC    0                                                       RST49100
36A0  0000                4911  LAST     DC    0                  LAST CHAR FLAG                       RST49110
      0000 36A0           4912  ENDWT    EQU   LAST                                                    RST49120
                          4913  *                                                                       RST49130
36A2  0000                4914  FIRST2   DC    0                                                       RST49140
36A4  7FF1                4915  DEFTESTS DC    X'7FF1',X'E000'    DEFAULT TESTS (HALF DUPLEX)          RST49150
36A6  E000
36A8  7C0F                4916  FDXTESTS DC    X'7C0F',X'C000'    DEFAULT TESTS (FULL DUPLEX)          RST49160
36AA  C000
      0000 36A2           4917  TFLAG    EQU   FIRST2                                                  RST49170
36AC  0010                4918  DEVSADR  DCX   10,11,12,13                                            RST49180
36AE  0011
36B0  0012
36B2  0013
36B4  FFFF                4919          DCX   FFFF                                                    RST49190
36B6  0000                4920  DEVINT   DCX   0,0,0,0                                               RST49200
36B8  0000
36BA  0000
36BC  0000
36BE  0000 0000           4921  INTLVL   DB    0,0,0,0                                               RST49210
36C2                      4922  TSTBUFR  DS    64                 BEFORE LNZB FOR TEST PURPOSES      RST49220
                          4923  *                                                                       RST49230
      0000 3701           4924  LNZB     EQU   *-1                                                   RST49240
3702                      4925  EXITF    DS    2                                                     RST49250
      0000 3702           4926  SVRG     EQU   EXITF                                                 RST49260
3704                      4927  SAVR2    DS    2                                                     RST49270
3706                      4928  SAVR5    DS    2                                                     RST49280
3708                      4929  SAVRF    DS    2                                                     RST49290
                          4930  *                                                                       RST49300
370A                      4931  RBUF1    DS    20                                                    RST49310
371E                      4932  COUNTER  DS    2                                                     RST49320
3720                      4933  PACOUNT  DS    2                                                     RST49330
                          4934  *                                                                       RST49340
                          4935  **CHKSUM                                                              RST49350
                          4936  *                                                                       RST49360
3722                      4937  CLKTBL   DS    4                                                     RST49370
3726                      4938  OPTBUF   DS    6                  OPTION INPUT BUFFER                RST49380
372C                      4939  IOSAVE   DS    2                                                     RST49390
```

SUBROUTINES AND CONSTANTS

```
372E                    4940  TEMP2     DS    2                                    RST49400
3730                    4941  ROSAVE    DS    2                                    RST49410
3732                    4942  R1SAVE    DS    2                                    RST49420
3738                    4943            ALIGN 8                                    RST49430
      0000 3738         4944  PSWSAVE   EQU   *                                    RST49440
3738                    4945  RBUF      DS    64    CHAR BUFFER                    RST49450
3778                    4946  RSAVE     DS    128   REG SAVE AREA                  RST49460
37F8                    4947  INTSAVE   DS    64                                   RST49470
3838                    4948  ERRSAVE   DS    64    ERROR ROUTINE SAVE AREA        RST49480
3878                    4949            DS    256   REG SAVE 8 REG SETS            RST49490
3978                    4950            DS    64    DPFP REGS IF DFU EQUIPPED      RST49500
                        4951  *                                                      RST49510
                        4952  *                                                      RST49520
```

CHKSUM/M17 PUNCHER

```
39B8   2400           4954  $CHKSUM  LIS   R0,0              PUNCH M17 TAPE WITH CHECKSUM          RST49540
39BA   9510           4955           EPSR  R1,R0             SELECT REG. SET 0                     RST49550
                      4956  *                                                                      RST49560
39BC   C810 0A00      4957           LDAI  R1,ORIGIN1         START                                 RST49570
39C0   2421           4958           LIS   R2,1               INCREMENT                             RST49580
39C2   C830 3701      4959           LDAI  R3,LNZB            FINAL                                 RST49590
39C6   2440           4960           LIS   R4,0               CHECKSUM BYTE                         RST49600
39C8   D351 0000      4961  $GEN     LB    R5,0(R1)                                               RST49610
39CC   0745           4962           XAR   R4,R5                                                  RST49620
39CE   C110 39C8      4963           BXLE  R1,$GEN                                                RST49630
39D2   D240 0099      4964           STB   R4,MN+3            CHECKSUM BYTE TO BOOT LOADER          RST49640
                      4965  *                                                                      RST49650
39D6   C810 0080      4966  $TAPE    LHI   R1,X'0080'                                             RST49660
39DA   9E21           4967           OCR   R2,R1              DISPLAY : NORMAL MODE                 RST49670
39DC   9444           4968           EXBR  R4,R4                                                  RST49680
39DE   9824           4969           WHR   R2,R4              CHECKSUM BYTE TO D1                   RST49690
39E0   9411           4970           EXBR  R1,R1                                                  RST49700
39E2   9501           4971           EPSR  R0,R1              HALT PROCESSOR.                       RST49710
                      4972  *                                                                      RST49720
                      4973  *-----------------------------------                                  RST49730
                      4974  *                                                                      RST49740
39E4   D360 007A      4975  $PUNCH   LB    R6,X'7A'          GET BOUTDV (PUNCH) ADDRESS.           RST49750
39E8   DE60 007B      4976           OC    R6,X'7B'          START TAPE PUNCH                      RST49760
39EC   9D60           4977           SSR   R6,R0                                                  RST49770
39EE   2081           4978           BTBS  8,1                                                    RST49780
39F0   41F0 3A32      4979           BAL   R15,$TAPL          PUNCH LEADER                          RST49790
39F4   9411           4980           EXBR  R1,R1              (R1) = X'0080'                        RST49800
39F6   C830 00CF      4981           LHI   R3,X'CF'                                               RST49810
39FA   DA61 0000      4982  $PNCH1   WD    R6,0(R1)          PUNCH BOOT LOADER                     RST49820
39FE   9D60           4983           SSR   R6,R0                                                  RST49830
3A00   2081           4984           BTBS  8,1                                                    RST49840
3A02   C110 39FA      4985           BXLE  R1,$PNCH1                                              RST49850
3A06   41F0 3A38      4986           BAL   R15,$TAPL1         PUNCH ONE-FOLD GAP.                   RST49860
                      4987  *                                                                      RST49870
3A0A   D340 0099      4988           LB    R4,MN+3           GET CHECKSUM BYTE                     RST49880
3A0E   C810 0A00      4989           LDAI  R1,ORIGIN1        (NORMALLY X'A00')                     RST49890
3A12   C830 3701      4990           LDAI  R3,LNZB                                                RST49900
3A16   D351 0000      4991  $PNCH2   LB    R5,0(R1)          PUNCH PROGRAM                         RST49910
3A1A   0745           4992           XAR   R4,R5                                                  RST49920
3A1C   9A65           4993           WDR   R6,R5                                                  RST49930
3A1E   9401           4994           EXBR  R0,R1                                                  RST49940
3A20   9820           4995           WHR   R2,R0              DATA ADDRESS TO DISPLAY.              RST49950
3A22   9D60           4996           SSR   R6,R0                                                  RST49960
3A24   2081           4997           BTBS  8,1                                                    RST49970
3A26   C110 3A16      4998           BXLE  R1,$PNCH2                                              RST49980
3A2A   41F0 3A32      4999           BAL   R15,$TAPL          PUNCH TRAILER.                        RST49990
3A2E   4300 39D6      5000           B     $TAPE              DISPLAY CHECKSUM, HALT PROCESSOR.     RST50000
```

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                          5002 *   CHKSUM/M17 PUNCHER  (CONTINUED)                                  RST50020
                          5003 *                                                                    RST50030
                          5004 *                                                                    RST50040
3A32   C800 0100          5005 $TAPL    LHI   R0,256             TO PUNCH BLANK LEADER             RST50050
3A36   2303               5006          BS    $TAPLP                                              RST50060
                          5007 *                                                                    RST50070
3A38   C800 0080          5008 $TAPL1   LHI   R0,128             TO PUNCH 1-FOLD GAP+              RST50080
                          5009 *                                                                    RST50090
3A3C   2701               5010 $TAPLP   SIS   R0,1                                                RST50100
3A3E   032F               5011          BNPR  R15                RETURN                            RST50110
3A40   2430               5012          LIS   R3,0                                                RST50120
3A42   9A63               5013          WDR   R6,R3              PUNCH BLANK FRAME                 RST50130
3A44   9D68               5014          SSR   R6,R8                                               RST50140
3A46   2081               5015          BTBS  8,1                                                 RST50150
3A48   2206               5016          BS    $TAPLP             CONTINUE.                         RST50160
                          5017 *                                                                    RST50170
3A4A                      5018          END                                                       RST50180
```

ASSEMBLED BY CAL 03-066R08-00 (32-BIT)

START OPTIONS: T=16,CROSS,ERLST,

NO CAL ERRORS
NO CAL WARNINGS
2 PASSES

TABLE SPACE USED : 22K

$CHKSUM	0000 39B8	4954*												
$CON	0000 0A2E	188*	319											
$GEN	0000 39C8	4961*	4963											
$NULL	0000 188C	1607*												
$PNCH1	0000 39FA	4982*	4985											
$PNCH2	0000 3A16	4991*	4998											
$PUNCH	0000 39E4	4975*												
$TAPE	0000 39D6	4966*	5000											
$TAPL	0000 3A32	4979	4999	5005*										
$TAPL1	0000 3A38	4986	5008*											
$TAPLP	0000 3A3C	5006	5010*	5016										
$TIMER1	0000 129C	970*	975											
$TIMXT	0000 12B0	977*												
$TSTDU0	0000 14FC	1198	1200*											
$TSTDU1	0000 151A	1210*												
$TSTDU2	0000 151C	1207	1209	1211*										
ABORT2	0000 0F44	638	650*											
ABSTOP	0000 3A4A													
ACK1	0000 3482	4749	4755*											
ACK2	0000 3486	4754	4757*											
ADC	0000 0002	1281	1353	1366	1379	1391	1399	1420	1465	1479	1485	1504	1519	1530
ADOK51	0000 1E50	2186	2189*											
ADR	0000 0CE8	434*												
ADRMSG	0000 3522	884	4838*											
ADRNG	0000 112C	826	829*											
ADRNG1	0000 1120	824*	2188	2242	2461	2482	2508	2529	2560	2595	2632	2665	3092	3113
		3138	3165	3196	4176	4248	4399							
ADRNG2	0000 1128	827*	2230	3225	3252	4360								
AF	0000 17A4	1275	1483*											
AK121	0000 24FE	3090	3093*											
AK122	0000 254A	3111	3114*											
AK123	0000 25A6	3136	3139*											
AK124	0000 2606	3163	3166*											
AK125	0000 2672	3194	3197*											
AK126	0000 26D4	3223	3226*											
AK127	0000 2734	3250	3253*											
AK131	0000 3024	4358	4361*											
AK132	0000 30A6	4397	4400*											
AMSG	0000 1938	265	1640*											
AOK52	0000 1EE2	2228	2231*											
AOK53	0000 1F0C	2240	2243*											
AOK71	0000 202C	2459	2462*											
AOK72	0000 2078	2480	2483*											
AOK73	0000 20D8	2506	2509*											
AOK74	0000 2124	2527	2530*											

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EDRW      0000 34C6   2566  2577  2889  3177  3353  3757  4794*  4795
EDW       0000 34C3   2169  2214  2313  4791*
ENACK     0000 3492   4756  4761*
ENDMSG    0000 3512   4835*
ENDWT     0000 36A0   4912*
EOTMSG    0000 1928    640  1638*
ER        0000 34C4   2442  3075  4792*  4793
ERR       0000 0FE0    706*  873  1495
ERR1      0000 1070    713   727   756*
ERR2      0000 000A     96*  872  1813  1876  1886  1892  1900  1909  1918  1926  1984  1994  2001
                      2009  2019  2028  2039  2104  2180  2187  2192  2218  2221  2229  2233  2241
                      2245  2335  2339  2453  2460  2465  2474  2481  2486  2500  2507  2512  2521
                      2528  2533  2551  2559  2563  2571  2587  2594  2598  2610  2624  2631  2635
                      2645  2657  2664  2668  2744  2813  2898  2970  3084  3091  3096  3105  3112
                      3117  3130  3137  3142  3153  3157  3164  3169  3187  3195  3199  3207  3216
                      3224  3228  3245  3251  3255  3266  3359  3361  3444  3446  3525  3536  3544
                      3552  3566  3571  3581  3726  3748  3771  3785  3800  3818  3831  3843  3865
                      3899  3910  3919  3924  4006  4022  4036  4109  4122  4131  4157  4175  4178
                      4201  4206  4230  4240  4247  4252  4295  4312  4353  4359  4363  4375  4380
                      4390  4398  4408  4419  4429  4454  4458  4467  4472  4490  4500  4509  4519
ERRALL    0000 1024    725*  1438  1448
ERRCOM    0000 103C    708   726   735*
ERRCOM1   0000 105A    739   745*
ERRCOM12  0000 0FFE    710   714*
ERRCOM2   0000 1018    715   717   721*  730
ERRD1     0000 107A    763*
ERRD2     0000 3534    886  4840*
ERRDD     0000 3530    880  1705  4839*
ERRDEV    0000 1848    764   784  1556*
ERRDS1    0000 10AA    728   783*
ERREE     0000 3540    883  1706  4841*
ERRF2     0000 3556    897  4845*
ERRFF     0000 3552    894  1707  4844*
ERRGG     0000 3564    846  1708  4846*
ERRL1     0000 10D0    797*
ERRLL     0000 3576    905  1709  4848*
ERRLVL    0000 1925   1447  1637*
ERRM2     0000 358A    922  4851*
ERRMM     0000 3586    915  1710  4850*
ERRMSG    0000 18BC    756  1621*  1622  1623
ERRNO     0000 18C4    872  1437  1445  1459  1475  1484  1503  1516  1623*  1681
ERRO2     0000 3596    918   930  1711  4852*
ERROR1    0000 11A6    818   821   830   847   872*  1814  3556  4549
ERROR2    0000 11B0    831   878*
ERROR3    0000 11DA    848   892*
ERROR6    0000 11F6    822   903*
ERROR7    0000 120C    912*  3557  4550
ERROR8    0000 1224    919*  931
ERROR9    0000 123E    860   927*
ERRPL1    0000 10E8    729   807*  1497
ERRPP     0000 359E   1713  4855*  4856
ERRQQ     0000 35A6   1714  4859*  4860
ERRRR     0000 35AC   1715  4862*  4863
ERRS1     0000 1092    773*
ERRSAVE   0000 3838    706   718   723   725  4948*
```

```
LPERR      0000 199A    716   1653*
LPWRT      0000 185C   1575*
LVLERR     0000 1762   1428   1444*
MAXTST     0000 3510    483   4834*
MICROBUS   0000 0A1A    171*  1129
MM         0000 17F2   1273   1514*
MM16       0000 1828   1532*  1533
MM32       0000 1812   1521   1525*
MN         0000 0096    133*  4964   4988
MOD32      0000 183A    196    199   1282   1354   1367   1392   1421   1486   1505   1520   1546*
MODE       0000 195E    470   1648*  1722   1749   1807   1879   1987   2033   2093   2205   2304   2435   2728
                       2799   2881   2957   3060   3340   3428   3698   3776   3804   3997   4011   4016   4093
MREADC     0000 1860   1324   1346   1577*
MTESTNO    0000 18B8    558    560   1620*  1679
NEXDEV     0000 1B5C   1804*  1812
NEXTST     0000 188A    536    540    556   1606*
NGEND      0000 1190    819    823    832    851    854    858    861*  1815   3558   4551
NGEND2     0000 1196    864*
NINT1      0000 1DE4   2088   2103*
NINT51     0000 1EC2   2195   2220*  2248
NINT6      0000 1FAC   2315   2333*
NINT61     0000 1FB8   2321   2337*
NINTNG     0000 1114    820*  2105   2222   2336   2340   3158
NLM17      0000 2D04   4028*  4034
NNT121     0000 25E4   3145   3155*
NOERMSG    0000 18D8    589   1625*
NOERR      0000 187A    566    587    741   1598*
NOMSG      0000 19B2   1040   1655*
NORM       0000 184D    701   1561*  4672
NOTEST     0000 328A   4557   4559*
NOTEST1    0000 3286   2305   2436   2729   2800   2882   2958   4094   4558*
NOTEST2    0000 3280   3061   3341   3429   4556*
NUM        0000 368E   4900*
OLM21      0000 1CDE   1988   1997*
OLOC       0000 1846    798    811   1358   1398   1492   1529   1553*
OLOK1      0000 1CB8   1983   1987*
OLOK2      0000 1CF6   1993   2000   2004*
OLOK3      0000 1D14   2008   2012*
OLOK4      0000 1D3A   2018   2022*
OLOK5      0000 1D5C   2027   2031*
OLOK6      0000 1D6E   2034   2036*
OPSW       0000 1842    808   1357   1397   1491   1528   1551*
OPSW32     0000 1840   1372   1550*
OPT        0000 193A    302    340    382   1644*
OPTBUF     0000 3726    271    272    273    288    296    307   4938*
OPTCMD     0000 0BDC    339*
OPTCMD1    0000 0BDE    340*   344
OPTCMD10   0000 0C66    384*   388
OPTCMD11   0000 0C98    401*   405
OPTCMD12   0000 0CA6    396    399    406*
OPTCMD2    0000 0C00    350*   376
OPTCMD3    0000 0C06    352*   371
OPTCMD4    0000 0C0C    354*
OPTCMD5    0000 0C1E    356    359*
OPTCMD6    0000 0C2E    361    364*
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OPTCMD7    0000 0C3A    353    367*
OPTCMD71   0000 0C4C    372*
OPTCMD8    0000 0C5A    337    380*
OPTCMD9    0000 0C64    383*   410
OPTEND     0000 19CA   1658*
OPTEND2    0000 19CA    409   1657*  1658
OPTEXX     0000 0BCA    326    329    333*
OPTIN      0000 0AF4    260*   280    403    428    476    481    503    645    688   1186   4694
OPTIN1     0000 0AF8    262*   411   1149   1440   1453   1498
OPTION     0000 19CA    320    333   1659*
OPTRTN     0000 0BD0    336*
OPTVAL     0000 124E    327    420    486    935*
OPTVAL0    0000 1254    937*   955
OPTVAL1    0000 1256    938*   941
OPTVAL2    0000 1262    939    943*
OPTVAL3    0000 1266    945*   951
OPTVAL4    0000 127A    949    952*
OPTVAL5    0000 1276    947    950*
ORIGIN1    0000 0A00    129    158*  4957   4989
ORIGIN2    0000 0A04    159*
ORIGIN3    0000 0A08    160*
ORIGIN4    0000 0A0C    161*
OTC.0      0000 13AC   1080*  1085   1094   1096
OTC.1      0000 13B8   1084*
OTC.2      0000 13C2   1083   1087*
OTC.3      0000 13D4   1090   1093*
OTC.4      0000 13F2   1102*  1107
OTC.5      0000 1408   1109*  1115
OUT.SAV    0000 1890   1075   1118   1609*
OUT0       0000 141E   1081   1100   1103   1105   1110   1117*
OUT1       0000 1422   1116   1118*
OUTCHR     0000 139A    266    268    331    341    346    358    363    366    385    390    682    991   1036
                       1046   1055   1059   1070   1075*
OUTCHR2    0000 13E2   1078   1086   1092   1098*
OVFL       0000 2B76   3848   3851*
OVFL1      0000 2B7E   3852   3854*
OVFL1A     0000 2B86   3857*
OVFL1A2    0000 2B8C   3859*  3863
OVFL2      0000 2BA4   3869*
OVFL2.4    0000 2BA0   3861   3867*
OVFL210    0000 2B98   3864*  3876   3887
OVFL22     0000 2BAA   3871*  3875
OVFL3      0000 2BC0   3880*
OVFL32     0000 2BC6   3882*  3886
OVFL36     0000 2BBA   3873   3877*
OVFL4      0000 2BDE   3891*
OVFL46     0000 2BD6   3884   3888*
OVFL4A     0000 2BEA   3895*  3898
OVFL5      0000 2C04   3897   3902*
OVFL6      0000 2C22   3907   3912*
OVFL62     0000 2C28   3914*  3918
OVFL6A     0000 2C3C   3916   3921*
OVFLG      0000 3682   1700   3909   3927   4887*
OVSNG      0000 2C50   3901   3927*
P1         0000 131A   1018   1022*
```

			1124	1125	1127	1129	1147	1148	1153	1155	1156	1165	1168	1176	1177
			1182	1188	1189	1190	1196	1199	1205	1212	1217	1218	1219	1225	1226
			1227	1231	1236	1237	1240	1241	1242	1250	1251	1260	1261	1265	1267
			1269	1306	1307	1321	1322	1344	1357	1369	1380	1394	1397	1405	1430
			1493	1494	1535	1536	1537	1672	1672	1673	1674	1675	1676	1677	1697
			1697	1698	1699	1700	1701	1702	1703	1704	1705	1706	1707	1708	1709
			1710	1711	1712	1713	1714	1715	1716	2549	2567	2590	2622	2639	3087
			3108	3133	3160	3185	3214	3243	3259	3553	3554	3574	3575	3704	3705
			3783	4009	4014	4100	4101	4152	4222	4223	4224	4225	4238	4270	4271
			4277	4278	4279	4322	4323	4331	4351	4388	4403	4404	4424	4425	4514
			4515	4625	4626	4632	4662	4673	4748	4759	4763	4954	4955	4971	4977
			4983	4994	4995	4996	5005	5008	5010						
ROSAVE	0000	3730	4941*												
R1	0000	0001	103*	129	141	142	144	149	191	192	198	199	200	202	210
			213	215	219	230	231	232	234	236	238	239	263	274	285
			288	294	296	297	302	304	309	316	318	320	413	423	427
			511	512	517	518	554	570	571	576	577	591	592	606	615
			634	637	649	650	651	652	655	656	663	664	665	693	694
			694	695	695	696	697	698	698	699	699	700	736	737	745
			746	747	748	764	774	784	788	798	808	811	970	973	1003
			1019	1020	1024	1028	1052	1053	1082	1084	1087	1088	1089	1091	1093
			1098	1101	1102	1104	1106	1111	1112	1113	1114	1117	1156	1158	1160
			1168	1169	1174	1177	1182	1183	1197	1200	1201	1202	1202	1203	1204
			1204	1205	1206	1208	1210	1211	1218	1219	1220	1238	1247	1248	1249
			1250	1251	1252	1253	1257	1261	1262	1263	1265	1266	1269	1270	1282
			1304	1305	1305	1307	1308	1310	1314	1358	1395	1398	1404	1531	1532
			1678	1679	1680	1681	3816	3817	3820	3821	3841	3842	3867	3868	3908
			3909	3926	4111	4112	4290	4291	4329	4330	4495	4496	4665	4666	4667
			4669	4671	4672	4698	4699	4700	4955	4957	4961	4963	4966	4967	4970
			4970	4971	4980	4980	4982	4985	4989	4991	4994	4998			
R10	0000	000A	112*	602	603	604	605	606	610	611	613	614	615	1387	1387
			1388	1407	1425	1426	1427	1446	1446	1447	1514	1514	1526	1527	3717
			3718	3719	3995	4008	4031	4142	4147	4170	4189	4192	4212	4220	4234
			4254	4266	4287	4298	4319	4339	4349	4350	4437	4444	4446	4447	4475
			4478	4481	4482										
R11	0000	000B	113*												
R12	0000	000C	114*	269	286	295	306	419	422	432	436	440	443	448	450
			459	463	488	490	522	942							
R13	0000	000D	115*	3892	4448	4449	4449	4452	4484	4485	4485	4488	4641	4644	4652
			4654												
R14	0000	000E	116*	327	337	373	420	423	425	486	493	497	953	956	962
			1468	1488	1491	1507	1517	1522	1525	1527	1528	3893	4642	4650	4653
R15	0000	000F	118*	248	256	275	425	431	435	439	454	458	464	507	508
			509	609	618	643	644	936	937	938	940	944	945	991	1075
			1118	1119	1185	1187	1469	1489	1492	1508	1518	1523	1529	1735	1802
			1864	1975	2080	2163	2303	2434	2727	2733	2798	2805	2880	2886	2956
			3059	3339	3347	3427	3507	3683	3687	3714	3984	4092	4193	4194	4194
			4199	4300	4301	4301	4306	4674	4703	4979	4986	4999	5011		
R1SAVE	0000	3732	4942*												
R2	0000	0002	104*	124	145	151	193	194	195	196	201	203	211	216	218
			220	221	225	226	227	234	235	236	237	245	245	246	262
			263	333	334	339	340	342	343	349	352	374	382	384	386
			391	408	409	540	543	544	551	553	554	555	556	558	560
			561	568	569	570	608	617	665	708	726	735	740	741	742
			743	765	775	785	789	799	809	812	971	983	984	986	988

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                          992   1007  1008  1022  1162  1163  1165  1166  1172  1176  1179  1179  1258
                         1310   1312  1312  1313  1324  1325  1327  1328  1334  1335  1340  1346  1347
                         1349   1351  1359  1381  1382  1389  1403  1404  1406  1412  1458  1459  1474
                         1475   1483  1484  1486  1494  1502  1503  1505  1515  1516  1520  1537  4958
                         4967   4969  4995
R3        0000 0003       105*   130   131   132   212   213   216   232   233   242   242   246   247
                          248    303   307   311   313   336   349   374   383   387   494   498   680
                          683    960   963   963   972  1000  1001  1002  1004  1009  1035  1037  1259
                         1264   1268  1271  1272  1275  1276  1278  1279  1288  1289  1302  1303  1309
                         1313   1319  1325  1328  1329  1335  1340  1341  1347  1352  1381  1390  4959
                         4981   4990  5012  5013
R4        0000 0004       106*   134   135   136   138   146   148   239   240   241   243   243   265
                          267    276   278   279   281   283   290   292   296   325   330   340   345
                          350    351   354   357   362   364   365   365   367   368   369   370   384
                          389    402   404   418   421   468   499   681   938   946   948   952   954
                          987    988   989   990   990  1003  1004  1005  1006  1006  1007  1031  1032
                         1033   1034  1045  1047  1051  1056  1058  1069  1108  1123  1125  1127  1137
                         1138   1232  1273  1274  1280  1287  1299  1300  1301  1327  1334  1337  1337
                         1349   1354  1359  4960  4962  4964  4968  4968  4969  4988  4992
R5        0000 0005       107*   136   138   139   139   141   142   143   146   148   154   255   305
                          307    347   348   360   360   372   372   375   391   483   487   563   589
                          619    640   641   674   675   678   686   756   767   777   791   801   814
                          987   1045  1049  1145  1290  1291  1292  1293  1332  1392  1400  1400  1409
                         1410   1414  1416  1424  1427  1450  1451  4556  4558  4757  4758  4761  4762
                         4961   4962  4991  4992  4993
R5HEX     0000 12B2       393    679   687   982*
R5X       0000 12C0       987*   993
R5XA      0000 12CE       991*
R5XB      0000 12D6       985    994*
R6        0000 0006       108*   133   143   150   221   222   223   223   304   305   312   328   332
                          381    397   398   400   427   430   434   438   442   444   445   451   453
                          457    462   487   489   489   491   496   935   943   944   950   961   964
                         1410   1412  1416  1418  1421  1436  1437  1444  1445  1688  1689  1690  1692
                         1740   2731  2747  2884  2901  3344  3364  3686  4569  4600  4701  4702  4704
                         4705   4975  4976  4977  4982  4983  4993  4996  5013  5014
R7        0000 0007       109*   152   153   154   442   446   447   449   451   484   494   501  4702
                         4706   4707  4709  4709
R8        0000 0008       110*   144   145   150   151   444   453   485   498   502  5014
R9        0000 0009       111*  1124  1131  1132  1134  1135  1137  1228  1361  1362  1367  3716  3716
                         3731   3732  3745  3996  3996  4025  4032  4033  4143  4148  4167  4169  4171
                         4180   4190  4209  4211  4213  4221  4254  4255  4262  4274  4275  4288  4289
                         4315   4326  4327  4340  4340  4400  4405  4421  4426  4434  4435  4445  4445
                         4492   4497  4511  4516  4522  4523  4535  4537  4540  4543  4544  4548  4596
                         4597   4640  4651  4656  4749  4750  4751  4752  4753
RBSYF1    0000 265A      3180   3189*
RBSYH1    0000 2178      2544   2553*
RBUF      0000 3738      4025   4167  4209  4262  4315  4400  4492  4529  4540  4748  4763  4945*
RBUF1     0000 370A      4421   4511  4532  4931*
RCN1      0000 210E      2515   2523*
RCNF1     0000 25F0      3149   3159*
RDCHAR0   0000 0B34       277    279*
RDCHAR1   0000 0B48       282    285*
RDCHR     0000 0B26       275*   289   298
RDCHR1    0000 0B58       284    290*
RDDEV     0000 0003        87*   825   865  1717  1719  1721  1868  1872  1881  1883  1903  1905  1914
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SK132B    0000 30EA    4416  4421*
SK141     0000 3160    4457  4460*
SK141A    0000 318E    4471  4474*
SK141B    0000 317C    4464  4469*
SK141C    0000 3168    4463* 4466
SK142     0000 31EA    4494  4502*
SK1422    0000 31F0    4504* 4508
SK142A    0000 322A    4513  4521*
SK142B    0000 3204    4506  4511*
SK151     0000 28CA    3543  3547*
SK152     0000 2922    3570  3574*
SOK71     0000 2044    2464  2468*
SOK73     0000 20F0    2511  2515*
SOK74     0000 213C    2532  2536*  2537
SOK75     0000 21BE    2570  2573*  2574
SOK76     0000 2222    2597  2601*  2648
SOK76A    0000 222C    2605* 2609
SOK76B    0000 2244    2606  2612*
SOK77     0000 22C4    2644  2647*
SOK78     0000 2318    2667  2671*
ST        0000 0A50     197   201*
ST1NG     0000 1148     839*  1986  2021  2030  3546  3573  4024  4133  4432
ST2NG     0000 1150     842*  1996  2003  2011  2041  4382
ST3NG     0000 1154     835   838   841   844*
ST4NG     0000 118C     853   856   859*
STAERR    0000 3544     845   4843*
STAMSG    0000 18EA     777   1628*
STANG     0000 1140     836*  1878  1911  1920  2194  2467  2488  2514  2535  2565  3098  3119  3144
                       3171  3201  3752  3822  3845  3928  4184  4411
STANGO    0000 1138     833*  1888  1894  1902  1928  2235  2247  2600  2637  2670  3230  3257  4232
                       4259  4365
START     0000 0A68     201   210*
START1    0000 0A30     158   191*  207
START2    0000 0A46     159   198*  208
START3    0000 0A60     160   207*
START4    0000 0A64     161   208*
STAT      0000 0008      93*  892   1804  1805  1872  1873  1874  1883  1884  1889  1890  1897  1898
                       1905  1906  1907  1914  1915  1916  1923  1924  1980  1981  1982  1991  1992
                       1998  1999  2006  2007  2015  2016  2017  2024  2025  2026  2036  2037  2189
                       2190  2231  2243  2462  2463  2483  2484  2509  2510  2530  2531  2561  2569
                       2596  2605  2633  2641  2643  2666  3093  3094  3114  3115  3139  3140  3166
                       3167  3197  3205  3226  3253  3262  3264  3521  3532  3540  3541  3542  3562
                       3569  3722  3729  3767  3796  3809  3810  3827  3834  3835  3860  3872  3883
                       3895  3895  3915  3922  4002  4019  4020  4105  4118  4128  4129  4165  4196
                       4204  4228  4250  4281  4292  4303  4310  4361  4371  4378  4401  4415  4422
                       4450  4456  4463  4470  4486  4493  4505  4512  4777
STDAS     0000 34B0    2184  2226  2238  2334  2338  2457  2478  2504  2525  2555  2591  2628  2661
                       3088  3109  3134  3156  3161  3191  3221  3248  3789  4162  4244  4356  4395
                       4776*
STOK51    0000 1E68    2191  2195*
STOK52    0000 1F20    2232  2244  2248*
STOK72    0000 2090    2485  2489*  2490
STOPNO    0000 35AD    4592  4863*
SVECHA    0000 368A     916   928   3538  3549  3554  3568  3575  3577  3580  3746  3815  3840  4182
                       4257  4407  4428  4499  4518  4539  4895*
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