

# COMMON LINE PRINTER TEST PROGRAM

**Consists of:**

**Test Program Description  
Test Program Listing  
Test Tape  
R03 Patch Information**

**B06-170M95R02A15  
06-170M96R02A13  
06-170R02M17  
Sheet i/ii**

R03 PATCH INFORMATION

Patch as follows:

<u>LOC</u>	<u>OLD DATA</u>	<u>NEW DATA</u>
EEC	A22	A24
143C	D300	D3B0
1448	C500	C5B0
1488	C500	C5B0
177A	0CB8	1876

This patch is incorporated in object 06-170R02.1 on multi-media packages.

April 1977

## COMMON LINE PRINTER TEST PROGRAM DESCRIPTION

## 1. COMMON LINE PRINTER TEST PROGRAM

## 1.1 Related Documents

Test Program Listing	06-170M96R02A13
Test Program Paper Tape	06-170M17R02
Line Printer Programming Manual	29-448

## 1.2 Test programs to be run prior to loading this test

## For 16-Bit Processors:

Memory Test	06-003
Processor Test	06-106 or
Model 50 Processor Test	06-128 or
5/16 Processor Test Part 1	06-215
5/16 Processor Test Part 2	06-216
8/16 Processor Test Part 1	06-209 or
8/16 Processor Test Part 2	06-210
8/16E Processor Test Part 1	06-211 or
8/16E Processor Test Part 2	06-212

## For 32-Bit Processors:

Series 32-Processor Test Part 1	06-154
Series 32-Processor Test Part 2	06-155
Series 32-Processor Test Part 3	06-178
Series 32 Memory Test	06-156

## Other Test Programs:

Teletype Basic Confidence Test	06-004
Common CRT Test	06-146
Common Current Loop Interface Test	06-184
Common Carousel 300 Test	06-183
Series 32-Processor Test Part 4	06-195

## 2. PURPOSE OF TEST

The Common Line Printer Test Program checks the Line Printer and its associated Interface. The following six tests are provided to check specific functions of the Line Printer:

#### Test 0

The Disarm and Disable functions are tested by printing a line for each function.

#### Test 1

The desired character is repeatedly sent to the Line Printer until end of line. This test allows the service engineer to mechanically adjust the Line Printer. All ASCII characters can be sent.

#### Test 2

The Line Printer is sent a ripple pattern, so that every character is printed in every print position. This checks the print functions.

#### Test 3

The alternating ASCII characters U (X'55') and \* (X'2A') are sent to the Line Printer to form a checkerboard pattern.

#### Test 4

The Paper Advance Commands and Vertical Format Unit are tested.

#### Test 5

This Write Block test does not produce any printout. However, the SPACE character is repeatedly presented to the Interface to aid in troubleshooting.

### 3. MINIMUM HARDWARE REQUIRED

The following hardware is required:

Processor - Model 7/16 Basic (or equivalent) or  
Model 7/32 (or equivalent)

Minimum Memory - 16K Bytes

Console Input Device (see Appendix 1)

Teletype or CRT on TTY Interface, CRT on PASLA, or Teletype or CRT on a Micro I/O Bus interface.

List Device (see Appendix 1)

Teletype or CRT on TTY Interface, CRT on PASLA, or Line Printer.  
or Teletype or CRT on a Micro I/O Bus interface.

Paper Tape Reader  
Teletype or High Speed Paper Tape Reader

60 to 200 LPM Line Printer  
(M46-204) with associated Interface (M46-202)

or

200 LPM Line Printer (M46-207) or  
600 LPM Line Printer (M46-209) with associated Interface (M46-206).

#### 4. REQUIREMENTS OF MACHINE UNDER TEST

This program assumes that the programs indicated in Section 1.2 have been run without detecting an error.

The Line Printer should be strapped for device address X'62'. If it is different, the DEVADR option must be entered. Refer to Appendices 2 and 3.

#### 5. LOADING PROCEDURES

##### 5.1 Test Tape Format

Absolute, non-zoned object tape (M17) with front end boot loader. The test program occupies memory from X'A00' through X'1FEC'.

##### 5.2 Normal Loading Procedures

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

	LOCATION	CONTENTS
	X'30'	X'0000'
	X'32'	X'0000'
	X'34'	X'0000'
	X'36'	X'0005'
	X'50'	X'D500'
	X'52'	X'00CF'
	X'54'	X'4300'
	X'56'	X'0080'
for TTY or Carousel 35	X'78'	X'0294'
for HSPTR	X'78'	X'0399'
for HSPTR/P	X'78'	X'1399'
for Micro I/O Bus	X'78'	X'C082'

2. Place the program tape in the paper tape reader.
3. Execute at address X'30'.
4. When the processor halts, observe the value, displayed on the console display Registers D1 and D2. If it is zero, loading is complete; otherwise, repeat the loading procedure.
5. Refer to Appendix 1 and set up the addresses for console input device and the list device.
6. Address memory location X'A00' in the case of a 32-bit processor. Address memory location X'A04' in the case of an 16-bit processor.
7. Start program execution. Observe the following title is output to the list device:

COMMON LINE PRINTER TEST 06-170R02

## 6. OPERATING PROCEDURE

### 6.1 Normal Testing

The following is a list of normal testing procedures.

1. Enter TEST 0 and RUN command. Two identical lines are output. Refer to Appendix 4 for successful test termination. Should an error occur, refer to Section 6.2.
2. Enter Test 1, 2, 3 option to select Tests 1, 2, and 3. The tests are started by the RUN command. Refer to Appendix 2 for Option/Command Input Structure. When each of these tests is executed, 60 lines are printed. Check the Line Printer printout by comparing it with the expected result shown in Appendix 4. Should an error occur, refer to Section 6.2. The test can be terminated anytime by depressing the Break key. For normal termination, refer to Appendix 4.
3. Enter INTRPT 1 option followed by the RUN command. Tests 1, 2, and 3 are run under interrupt control.
4. Test 4 should not be run on the 02-244 Line Printer Interface. For 02-397 Interface (Data Printer) enter the desired PACHAR for paper advance. Enter TEST 4 followed by the RUN command. Two asterisks are output. The vertical distance between asterisks should be the number of lines requested to advance.
5. Enter TEST 5 and RUN command. Space character is repeatedly output. This test must be terminated by depressing the Break key.
6. If all the above tests run without detecting an error, normal testing is complete.

## 6.2 Error Procedures

**Error Messages.** If an error is encountered, the current test is aborted and the error message in the following format is printed:

ERROR TTNN

where

TT = current test number in which the error is detected  
(00 through 05)

NN = error number (01 through 15)

In addition to error number, some other useful information may be printed. Refer to Appendix 5 for the explanation and suggested action.

**Troubleshooting.** To test Data Printer or Centronics Line Printer, Tests 0, 1, 2, 3, 4 (Data Printer only), and 5 should be run in order.

## 7. PROGRAMMING NOTES

The halfword location labeled 'PSW' contains the PSW status used in the test modules. This value must be changed to X'6000' if test is to be executed on the Model 50 Processor.



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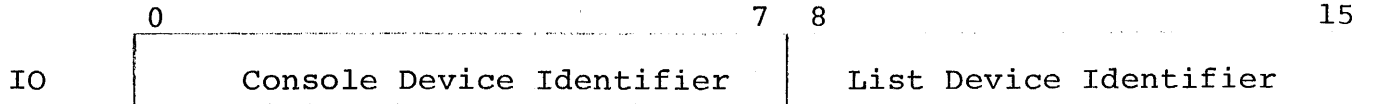




APPENDIX 1

USER DEVICE DEFINITION

- The halfword labeled 'IO' (see Program Listing) has the default value for teletype, CRT, or Carousel 15/30 (all on Current Loop Interface) as the input/output console device. If the set-up is different, 'IO' must be changed as follows:



Console Device Identifier

Meaning

X'01'	GDT/CRT on PASLA/PALM Interface, strapped for FDX operation at the highest baud rate.
X'02'	TTY/GDT/CRT/Carousel 15/30/35 on TTY/Current Loop Interface.
X'03'	Reserved. Interpreted as X'02'.
X'04'	Carousel 300 on PASLA/PALM Interface, FDX, highest baud rate.
X'05'	Micro I/O Bus Interface.
X'06'-X'FF'	Reserved. Interpreted as X'02'.

List Device Identifier

Meaning

X'01'	As above.
X'02'	As above.
X'03'	Line Printer (Data Printer or Centronics on Line Printer Interface).
X'04'	As above.
X'05'	As above.
X'06'-X'FF'	As above.

APPENDIX 1 (Continued)

2. The GDT (Graphic Display Terminal) or CRT, if used on PASLA/PALM Interface, should be strapped for device addresses X'10' and X'11' for Receive and Transmit sides, respectively. If the addresses are different, then the halfword labeled 'PASADR' (see the program listing) must be changed accordingly.
3. The teletype or current loop interface, if used, should be strapped for device address X'02'. If the address is different, the halfword labeled 'CLIFADR' (see the Program Listing) must be changed.
4. The line printer, if used, should be strapped for device address X'62'. If the address is different, the halfword labeled 'LPADR' (see the Program Listing) must be changed.
5. The Carousel 300, if used on PASLA/PALM Interface, should be strapped for device address X'10' and X'11' for Receive and Transmit sides, respectively. If the addresses are different, the halfword labeled 'C300ADR' (see the Program Listing) must be changed accordingly.
6. The Micro I/O Bus if used should be strapped for device address X'C0'. If the address is different, the halfword labeled MICROBUS (see the Program Listing) must be changed accordingly.

APPENDIX 2  
OPTION/COMMAND INPUT STRUCTURE

An asterisk (\*) is output to the List Device to indicate that the program is awaiting an option input. Any option may be typed in from the Console Input Device, followed by a space and the desired hex value; an exception is the TEST option which accepts arguments separated by commas. A Carriage Return (CR) is issued to terminate every option/command input. An invalid option/command or value causes a (?) followed by a Carriage Return (CR), Line Feed (LF), and an asterisk (\*) to occur.

The left arrow (←) can be typed to delete the previous character; or a string of characters can be deleted by typing a left arrow (←) for each character to be deleted.



APPENDIX 3  
OPTIONS TABLE

Option	Default Value	Description
TEST	TEST 0,1,2,3	Selects the test or tests to be run. Test followed by CR selects default tests.
DEVADR	X'0062'	Specifies the physical device address of the Line Printer.
RCHAR	X'45' (ASCII E)	Specifies the character to be printed in Tests 0 and 1. Any ASCII character from X'20' through X'7F' may be specified. Entry is hexadecimal.
PACHAR	X'41'	Specifies the Paper Advance character used in Test 4. X'40' - X'77': 0 thru 55 lines X'78' - X'7F': Space according to Channel 1 thru 8
EXPAND	0	Specifies normal or expanded width characters in case of Centronics Line Printer. 0 = Normal width 1 = Expanded width
LWIDTH	132	Specifies number of characters per line in decimal number 2 thru 132. EXPAND = 1 halves number of characters per line.
EOLCHR	X'0D01'	Specifies the end of line character/characters. In the operand X'MM' or X'0DNN', MM = 01(LF), OA(LF), OB(VT), or OC(FF) NN = Any value from X'40' thru X'7F', or any MM value.
LOOP	0	Determines the number of times each test module is to be run.
CONTIN	0	Enables the user to run all selected test modules continuously until Break key returns the program to Command mode. 0 = Normal execution 1 = Continuous execution

APPENDIX 3 (Continued)

Option	Default Value	Description
INTRPT	0	Determines whether Test Modules 1, 2, and 3 perform tests under Interrupt Control or Sense Status. 0 = Sense status 1 = Interrupt Control
HALT	0	Causes the program to halt after printing a line in Test Modules 1, 2, and 3. 0 = 1 and 2 0 = Print continuously 1 = Halt after printing a line. The 'LF' key must be depressed to print the next line.
NOMSG	0	Determines whether all messages or only error messages will be printed. 0 = All messages 1 = Error messages only
OPTION		As soon as this command is entered, all options with their current values are listed on the list device.
RUN		Starts execution of selected tests.
INTLEV	0	Specifies the Line Printer interrupt level when the test is run on a 32-Bit Processor. Ignored for 16-Bit Processors.
TIMVAL	X'14D'	Establishes a count value for a 1 millisecond software timeout. 5/16 MOS C4 6/16 MOS 14A 6/16,8/16,8/16E 750 nsec 14D 6/16,8/16,8/16E 1000 nsec 134 7/16 Basic D2 7/16 HSALU 750 nsec 14D 7/16 HSALU 1000 nsec 134 7/32 750 nsec EB 7/32 1000 nsec D2 8/32 EE

APPENDIX 4

EXPECTED RESULTS

When the Common Line Printer Test is run as explained in Section 6, the output on TTY or CRT should be:

COMMON LINE PRINTER TEST 06-170R02

\*TEST 0,1,2,3

\*RUN

TEST 00

NO ERROR

TEST 01

NO ERROR

TEST 02

NO ERROR

TEST 03

NO ERROR

END OF TEST

\*INTRPT 1

\*RUN

TEST 00

NO ERROR

TEST 01

NO ERROR

TEST 02

NO ERROR

TEST 03

NO ERROR

END OF TEST

\*TEST 4 (Data Printer Only)

\*RUN

TEST 04

NO ERROR

END OF TEST

\*TEST 5

\*RUN

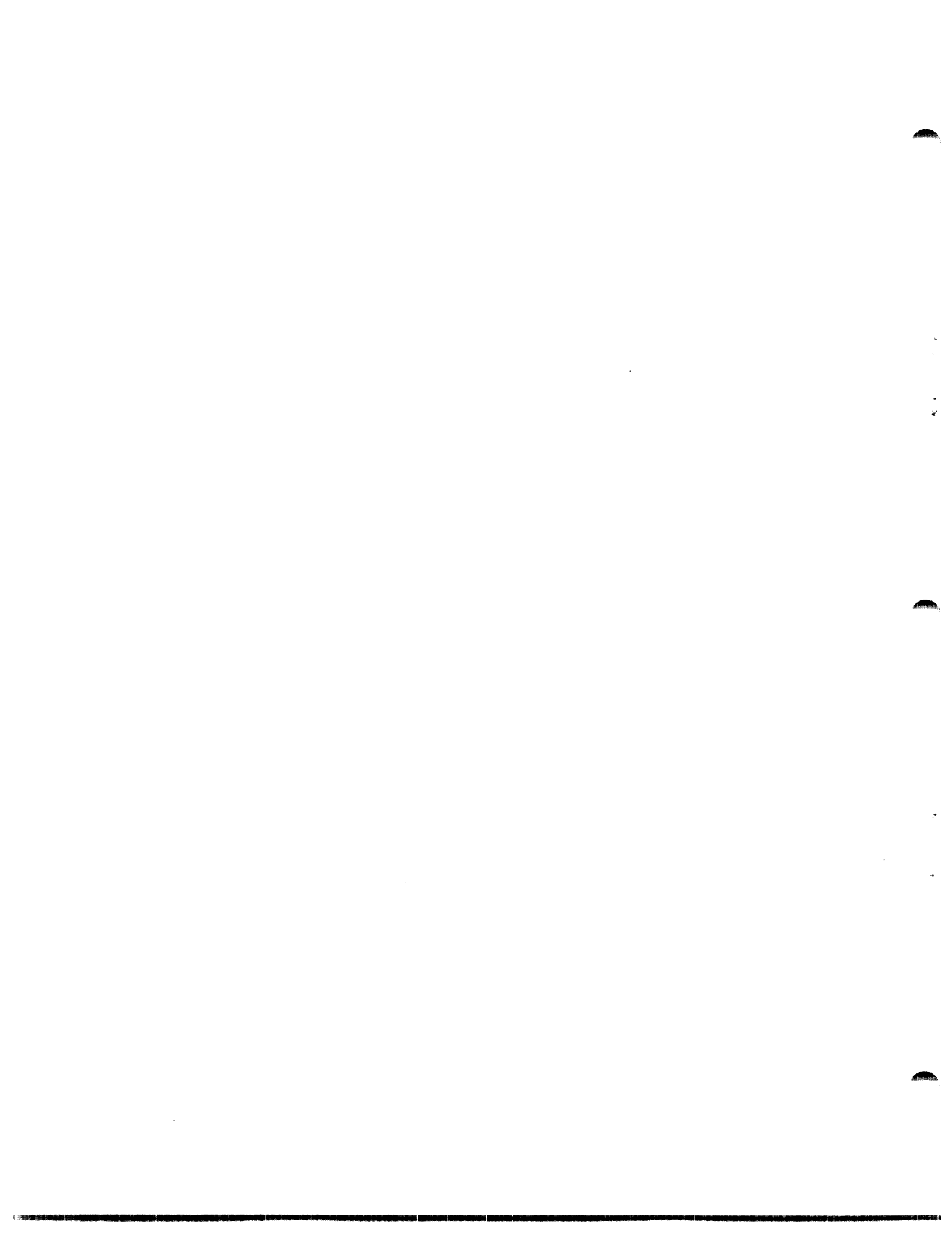
TEST 05 (Terminate test by depressing BREAK)

\*









## APPENDIX 5

## ERROR TABLE

Applicable Tests	Error Condition	Explanation	Suggested Action
ALL	ERROR TT01 DEV DDD	Incorrect device address or device is not in the system. TT = Test module number DDD = Address assigned to the Line Printer.	Check address strap on the Interface to ensure that it agrees with the one assigned to it in the test program.
1,2,3	ERROR TT02	Failed to receive an interrupt in time-out period.	Run Test 5 to ensure the interrupt logic works.
0	ERROR TT03	An interrupt was queued when the Line Printer was disarmed.	Check interrupt logic.
ALL	ERROR TT04	An interrupt was generated while disarmed.	Check interrupt logic.
0	ERROR TT05	An interrupt was generated while the device was disabled.	Check interrupt logic.
0	ERROR TT06	An interrupt was not queued when the device was disabled.	Check interrupt logic.
0,1,2,3,4	ERROR TT07 STA SS	BSY did not drop in time out SS = Line Printer status	Check the Status Data Lines.
0,1,2,3,4	ERROR TT08 STA SS	Device unavailable SS = Device status	Check LP power or Status Lines.
0,1,2,3,4	ERROR TT09 STA SS	The Paper Out condition exists. SS = Device status	Check paper supply or Paper Out sense switch.
0,1,2,3,4	ERROR TT10 STA SS	The Interlock condition exists. SS = Device status	Check Printhead mechanism or Status Lines.

## APPENDIX 5 (CONTD)

A5-2

Applicable Tests	Error Condition	Explanation	Suggested Action
0,1,2,3,4	ERROR TT11 STA SS	Only the Examine bit is set. SS = Device status	Check status logic.
0,1,2,3,4	ERROR TT12 STA SS	The Paper Out bit did not set. Examine bit. SS = Device status	Check status logic.
0,1,2,3,4	ERROR TT13 STA SS	The Interlock bit did not set. Examine bit. SS = Device status	Check status logic.
0,1,2,3,4	ERROR TT14 STA SS	Non-relevant status bit is set. SS = Device status	Check data lines.
0,1,2,3,4	ERROR TT15 STA SS	Interrupt received when only BSY bit is set. SS = Device status	Check data lines.
ALL	ERROR TTFN DEV DDD STA SS PSW PPPP LOC LLLL	Spurious interrupt received. N = 1 for arithmetic (32-bit) fixed/point arithmetic (16-bit) fault interrupt. N = 2 for illegal instruction interrupt. N = 3 for machine malfunction interrupt. N = 4 for unsolicited immediate interrupt. N = 5 for relocation/protection (32-bit)/floating-point divide fault (16-bit) N = 6 for device interrupt in wrong interrupt level (32-bit) DDD & SS = Interrupting device address and status received in case of 4 above. PPPP = current PSW when an interrupt is sensed (least significant 16 bits for 32-bit m/c) LLLL = Current location when an interrupt is sensed (least significant 16 bits for 32-bit m/c)/	



0000	0007	56	R7	EQU	7		CLP00560
0000	0008	57	R8	EQU	8		CLP00570
0000	0009	58	R9	EQU	9		CLP00580
0000	000A	59	R10	EQU	10		CLP00590
0000	000B	60	R11	EQU	11		CLP00600
0000	000C	61	R12	EQU	12		CLP00610
0000	000D	62	R13	EQU	13		CLP00620
0000	000E	63	R14	EQU	14		CLP00630
0000	000F	64	RET	EQU	14		CLP00640
0000	000F	65	R15	EQU	15		CLP00650
0000	000F	66	LINK	EQU	15		CLP00660
		67	*				CLP00670
		68	*	BOOTLOADER WITH CHKSUM			CLP00680
		69	*				CLP00690
0000R		70		ORG	X*80'		CLP00700
0080	2421	71		LIS	R2,1		CLP00710
0082	2303	72		BS	BOOT		CLP00720
0084	1008	73		DC	Z(PSWSAVE)	CURRENT PSW SAVE POINTER(32-BIT M/C)	CLP00730
0086	1D10	74		DC	Z(RSAVE)	REGISTER SAVE POINTER(32-BIT M/C)	CLP00740
0088	4020 0022	75	BOOT	STH	R2,X'22'	REGISTER SAVE POINTER(16-BIT M/C)	CLP00750
008C	C810 0A00	76		LHI	R1,ORIGIN1	R1 = ADR( FIRST BYTE OF TEST PROG )	CLP00760
0090	C830 1CA7	77		LHI	R3,LNZB	R3 = ADR( LAST NON-ZERO BYTE )	CLP00770
0094	C860 0000	78	MN	LHI	R6,0	R6 = CHKSUM BYTE = X'MN'	CLP00780
0098	D340 0078	79		LB	R4,X'78'	INPUT DEV ADR	CLP00790
009C	DE40 0079	80		OC	R4,X'79'		CLP00800
00A0	9D45	81	LEADER	SSR	R4,R5		CLP00810
00A2	2091	82		BTBS	9,1	DU,BSY	CLP00820
00A4	9B45	83		RDR	R4,R5		CLP00830
00A6	0855	84		LDAR	R5,R5		CLP00840
00A8	2234	85		BZS	LEADER	IGNORE LEADER	CLP00850
00AA	0251 0000	86	LOAD	STB	R5,0(R1)	STORE 1ST NON-ZERO & SUBSEQUENT BYTE	CLP00860
00AE	0351 0000	87		LB	R5,0(R1)	RELOAD DATA BYTE TO	CLP00870
00B2	0765	88		XAR	R6,R5	GENERATE CHKSUM	CLP00880
00B4	9481	89		EXBR	R8,R1		CLP00890
00B6	9828	90		WHR	R2,R8	DISPLAY MEMORY ADDRESS	CLP00900
00B8	9D45	91		SSR	R4,R5		CLP00910
00BA	2091	92		BTBS	9,1	DU,BSY	CLP00920
00BC	9B45	93		RDR	R4,R5		CLP00930
00BE	C110 00AA	94		BXLE	R1,LOAD	LOAD TILL LAST BYTE	CLP00940
00C2	9486	95		EXBR	R8,R6		CLP00950
00C4	9828	96		WHR	R2,R8	FINAL CHKSUM	CLP00960
00C6	2478	97	LDWT	LIS	R7,8		CLP00970
00C8	917C	98		SLLS	R7,12	R7 = X'8000'	CLP00980
00CA	9557	99		EPSR	R5,R7	HALT PROCESSOR.	CLP00990
00CC	2203	100		BS	LDWT		CLP01000

## EXEC - ETPE R03P3

00CE		102	ORG	X'A00'		CLP01020
0A00	4300 0A30	103	ORIGIN1	B	START1	START HERE FOR 32-BIT PROCESSOR
	0000 0A04	104	ORIGIN2	EQU	*	CLP01030
0A04		105	IFZ	ADC-2		CLP01040
0A04	4300 0A46	106	B	START2	START HERE FOR 16-BIT PROCESSOR	CLP01050
0A08	4300 0A5E	107	ORIGIN3	B	START3	SPECIAL 32-BIT PROCESSOR START
0A0C	4300 0A62	108	ORIGIN4	B	START4	CLP01060
		109	ELSE			CLP01070
		110	B	START3	SPECIAL START FOR 32 BIT PROCESSOR	CLP01080
		111	B	START3		CLP01090
		112	B	START3		CLP01100
		113	ENDC			CLP01110
		114	*			CLP01120
		115	*-----*			CLP01130
		116	* TEST CONSTANTS		*	CLP01140
		117	*			CLP01150
0A10	0202	118	IO	DC	X'0202'	I/O DEVICE(S) IDENTIFIER
0A12	1011	119	PASLADR	DC	X'1011'	PASLA/PALM READ/WRITE ADDRESSES
0A14	0202	120	CLIFADR	DC	X'0202'	CURRENT LOOP INTERFACE R/W ADDRESSES
0A16	6262	121	LPADR	DC	X'6262'	LINE PRINTER ADDRESS
0A18	1011	122	C300ADR	DC	X'1011'	CAROUSEL 300/PASLA ADDRESSES
0A1A	C0C0	123	MICROBUS	DC	X'C0C0'	MICROBUS ADDRESS
0A1C	0000	124	DCX	0		PROVISION FOR SPECIAL DEVICE
		125	*			CLP01240
		126	* IO =	0101	FOR CRT ON PASLA	CLP01250
		127	*	0202	FOR TELETYPE, CAROUSEL 15/30	CLP01260
		128	*	XX03	FOR LINE PRINTER	CLP01270
		129	*	0404	FOR CAROUSEL 300	CLP01280
		130	*	0505	FOR MICROBUS	CLP01290
		131	*			CLP01300
0A1E	0140	132	TIME	DC	X'140'	CONSTANT FOR 1 MS DELAY(X'C8'-MOD70)
0A20	0000	133	DCX	0		RESERVED
0A22	70F0	134	PSW	DCX	70F0	PSW USED IN PROGRAM
0A24	30F0	135	PSW2	DCX	30F0	PSW USED IN EXEC
0A26	0000	136	DCX	0		RESERVED
0A28	0000	137	DCX	0		RESERVED
0A2A	0000	138	DCX	0		RESERVED
0A2C	0000	139	DCX	0		RESERVED
0A2E	0000	140	DCX	0		RESERVED
		141	*-----*			CLP01320
		142	*			CLP01330
0A30	0711	143	START1	XAR	R1,R1	PSW USED IN PROGRAM
0A32	4010 0030	144	STH	R1,X'30'		PSW USED IN EXEC
0A36	4820 0A24	145	LH	R2,PSW2		RESERVED
0A3A	4020 0032	146	STH	R2,X'32'		RESERVED
0A3E		147	IFZ	ADC-2		RESERVED
0A3E	2521	148	LCS	R2,1		RESERVED
0A40	4020 1642	149	STH	R2,MOD32	SET MODEL 32 PROCESSOR FLAG	RESERVED
0A44	2306	150	BS	ST		RESERVED
0A46	0711	151	START2	XAR	R1,R1	RESERVED
0A48	4010 1642	152	STH	R1,MOD32	RESET MOD 32 PROCESSOR FLAG	RESERVED
0A4C	4810 0A24	153	LH	R1,PSW2		RESERVED
0A50		154	ENDC			RESERVED
0A50	C820 0A66	155	ST	LHI	R2,START	RESERVED





## EXEC - ETPE R03P3

0A54	4010 0034	156	STH	R1,X'34'		CLP01560
0A58	4020 0036	157	STH	R2,X'36'	II INT NEW PSW LOC	CLP01570
0A5C	0000	158	OCX	0	TAKE AN ILLEGAL INSTRUCTION INT	CLP01580
		159	*			CLP01590
0A5E	4300 0A30	160	START3	B START1	INSERT SPECIAL ROUTINE HERE	CLP01600
0A62		161		IFZ ADC-2		CLP01610
0A62	4300 0A46	162	START4	B START2	INSERT SPECIAL ROUTINE HERE	CLP01620
0A66		163		ENDC		CLP01630
		164	*			CLP01640
0A66	D310 0A10	165	START	LB R1,I0	GET I/O IDENTIFIERS	CLP01650
0A6A	D320 0A11	166		LB R2,I0+1		CLP01660
0A6E	2436	167		LIS R3,6	IDENTIFIER CAN BE 1,2,3,4,5	CLP01670
0A70	0513	168		CLHR R1,R3		CLP01680
0A72	2182	169		BLS I0,OK1	BRANCH IF KB IDENTIFIER OK	CLP01690
0A74	2412	170		LIS R1,2	OTHERWISE FORCE IT TO BE TTY	CLP01700
0A76	0523	171	I0,OK1	CLHR R2,R3		CLP01710
0A78	2182	172		BLS I0,OK2	SAME TEST FOR LIST DEVICE	CLP01720
0A7A	2422	173		LIS R2,2		CLP01730
0A7C	D210 0A10	174	I0,OK2	STB R1,I0	REESTABLISH VALUES	CLP01740
0A80	D220 0A11	175		STB R2,I0+1		CLP01750
0A84	D362 1674	176		LB R6,CONRQ2S(R2)		CLP01760
0A88	4060 1658	177		STH R6,PASFLG2	SET PASLA FLAG (LIST DEVICE)	CLP01770
0A8C	0866	178		LDAR R6,R6		CLP01780
0A8E	2336	179		SZS I0,OK3	SKIP IF NOT PASLA	CLP01790
0A90	9121	180		SLHLS R2,1		CLP01800
0A92	D302 0A11	181		LB R0,I0+1(R2)		CLP01810
0A96	DE02 1668	182		OC R0,CON2ND(R2)	ISSUE 2ND COMMAND (LIST DEVICE)	CLP01820
		183	*			CLP01830
0A9A	41F0 1334	184	I0,OK3	BAL LINK,SETKB	ESTABLISH KEYBOARD DEVICE	CLP01840
0A9E	9310	185		LBR R1,R0	(R1) = 1,2,4,5	CLP01850
0AA0	9111	186		SLHLS R1,1	(R1) = 2,4,6,A	CLP01860
0AA2	4831 0A10	187		LH R3,I0(R1)		CLP01870
0AA6	4030 165A	188		STH R3,CONADR	SET UP CONSOLE DEVICE ADDRESS	CLP01880
0AAA	4821 165C	189		LH R2,CONRD(R1)		CLP01890
0AAE	4020 165C	190		STH R2,CONRD	SET UP R/W COMMANDS	CLP01900
0AB2	4821 1668	191		LH R2,CON2ND(R1)		CLP01910
0AB6	4020 1668	192		STH R2,CON2ND	2ND CMD; ENABLE READ CMD	CLP01920
0ABA	9011	193		SRHLS R1,1		CLP01930
0ABC	D341 1674	194		LB R4,CONRQ2S(R1)		CLP01940
0AC0	D240 1674	195		STB R4,CONRQ2S	CONSOLE REQUEST TO SEND	CLP01950
0AC4	4040 1656	196		STH R4,PASFLG	SET PASLA FLAG (CONSOLE)	CLP01960
0AC8	0844	197		LDAR R4,R4		CLP01970
0ACA	2333	198		BFFS 3,3	SKIP IF NOT PASLA	CLP01980
0ACC	9422	199		EXBR R2,R2		CLP01990
0ACE	9E32	200		OCR R3,R2	ISSUE 2ND COMMAND (CONSOLE)	CLP02000
		201	*			CLP02010
0AD0	41F0 1390	202		BAL LINK,LCORE	SET UP LOW CORE	CLP02020
0AD4	2400	203		LIS R0,0		CLP02030
0AD6	4000 1684	204		STH R0,WASDU	RESET 'DEVICE UNAVAILABLE' FLAG	CLP02040
0ADA	41F0 11D4	205		BAL LINK,CRLF		CLP02050
0ADE	C850 1C7E	206		LHI R5,TITLE		CLP02060
0AE2	41F0 1154	207		BAL R15,PRINT	PRINT TEST PROGRAM TITLE	CLP02070
		208	*			CLP02080
		209	*		KEYBOARD INPUT ROUTINE	CLP02090

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			210	*			CLP02100	
			211	OPTIN	EGU	*	CLP02110	
0A66	41F0	1104	212	BAL	LINK,CRLF	CR,LF TO LIST DEVICE	CLP02120	
	0000	0AEA	213	OPTIN1	EGU	*	CLP02130	
0AEA	4820	0A24	214	LH	R2,PSW2		CLP02140	
0AEE	9512		215	EPSR	R1,R2	NO INT. REG SET 15	CLP02150	
0AF0	41F0	1334	216	BAL	LINK,SETKB	ESTABLISH CONSOLE	CLP02160	
0AF4	0340	1734	217	LB	R4,AMSG	OUTPUT AN * TO INDICATE	CLP02170	
0AF8	41F0	11E2	218	BAL	LINK,OUTCHR	COMMAND MODE ESTABLISHED	CLP02180	
0AFC	2541		219	LCS	R4,1	X'FF'	CLP02190	
0AFE	41F0	11E2	220	BAL	LINK,OUTCHR		CLP02200	
0B02	C8C0	1288	221	LHI	R12,QUESTN	SET UP R12 FOR ERR ROUTINE	CLP02210	
0B06	C800	2020	222	LHI	R0,X'2020'	BLANK OUT COMMAND BUFFER	CLP02220	
0B0A	4000	1CA8	223	STH	R0,OPTBUF	WHICH WILL CONTAIN OPTION	CLP02230	
0B0E	4000	1CAA	224	STH	R0,OPTBUF+2	NAME	CLP02240	
0B12	4000	1CAC	225	STH	R0,OPTBUF+4		CLP02250	
0B16	0711		226	XAR	R1,R1	CLEAR OPTBUF INDEX	CLP02260	
0B18	41F0	1254	227	RDCHR	BAL	R15,GETCHR	GET A CHAR IN R4	CLP02270
0B1C	C540	0060	228	CLHI	R4,X'60'	UPPER CASE ALPHA ?	CLP02280	
0B20	2183		229	BLS	RDCHAR0	BRANCH IF NO.	CLP02290	
0B22	C840	0020	230	SHI	R4,X'20'	CONVERT TO LOWER CASE	CLP02300	
0B26	C540	0023	231	RDCHAR0	CLHI	R4,X'23'	IS IT # ?	CLP02310
0B2A	4330	0AE6	232	BE	OPTIN		CLP02320	
0B2E	C540	005F	233	CLHI	R4,X'5F'	LEFT ARROW, UNDERLINE OR DELETE ?	CLP02330	
0B32	2139		234	BNES	RDCHR1		CLP02340	
0B34	2711		235	SIS	R1,1	YES, DECREMENT INDEX	CLP02350	
0B36	021C		236	BMR	R12	BUFFER UNDERFLOW; PRINT '?'	CLP02360	
0B38	C800	0020	237	LHI	R0,X'20'		CLP02370	
0B3C	D201	1CA8	238	STR	R0,OPTBUF(R1)		CLP02380	
0B40	4300	0B18	239	B	RDCHR		CLP02390	
0B44	C540	0000	240	RDCHR1	CLHI	R4,X'00'	IS IT CR ?	CLP02400
0B48	233C		241	BES	LOOKUP	YES, TRY MATCH	CLP02410	
0B4A	C540	0020	242	CLHI	R4,X'20'	IS IT A BLANK?	CLP02420	
0B4E	2339		243	BES	LOOKUP	YES, TRY MATCH	CLP02430	
0B50	C510	0006	244	CLHI	R1,6	7 CHARACTERS INPUT ?	CLP02440	
0B54	038C		245	BNLR	R12	IF YES, ERROR	CLP02450	
0B56	D241	1CA8	246	STR	R4,OPTBUF(R1)	STORE CURRENT BYTE	CLP02460	
0B5A	2611		247	AIS	R1,1	BUMP BUFFER INDEX	CLP02470	
0B5C	4300	0B18	248	B	RDCHR	READ NEXT CHARACTER	CLP02480	
			249	-----			CLP02490	
			250	* OPTION MATCH ROUTINE			CLP02500	
			251	*			CLP02510	
0B60	C810	1736	252	LOOKUP	LHI	R1,OPT	LOAD ADDRESS OF OPTION TABLE	CLP02520
0B64	0733		253	LOOK1	XAR	R3,R3	CLEAR BUFFER INDEX	CLP02530
0B66	0861		254		LDAR	R6,R1	SET OPTION WORD INDEX	CLP02540
0B68	4856	0000	255	LOOK2	LH	R5,0(R6)		CLP02550
0B6C	021C		256		BMR	R12	IF MINUS, THEN NO MATCH = ERROR	CLP02560
0B6E	4553	1CA8	257		CLH	R5,OPTBUF(R3)	COMPARE TO OPTBUF HW	CLP02570
0B72	2333		258		BES	LOOK3		CLP02580
0B74	261C		259		AIS	R1,12		CLP02590
0B76	2209		260		BS	LOOK1		CLP02600
0B78	2632		261	LOOK3	AIS	R3,2	TRY NEXT HW	CLP02610
0B7A	2662		262		AIS	R6,2		CLP02620
0B7C	C530	0006	263		CLHI	R3,6	3 MATCHING HW FOUND ?	CLP02630

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0880	208C	264	BLS	LOOK2		CLP02640
		265	*			CLP02650
0882	C510 17EA	266	CLHI	R1,RUN	RUN COMMAND ?	CLP02660
0886	4330 0012	267	BE	RUNIT		CLP02670
088A	C510 17DE	268	CLHI	R1,OPTION	OPTION CMD ?	CLP02680
088E	4230 0C84	269	BNE	LOOK4	NO, LOOK FURTHER	CLP02690
		270	*			CLP02700
		271	*	TO PROCESS INPUT COMMAND 'OPTION'		CLP02710
0892	4820 17E6	272	LH	R2,OPTION+8	CHECK FOR SPECIAL ROUTINE	CLP02720
0896	0232	273	BNZR	R2	LINK TO ROUTINE	CLP02730
0898	C830 1736	274	OPTRTN	LHI R3,TEST	RETURN HERE	CLP02740
089C	C8E0 0C22	275	LHI	R14,OPTCMD8		CLP02750
08A0	41F0 11D4	276	BAL	LINK,CRLF		CLP02760
08A4	0722	277	OPTCMD	XAR R2,R2	RESET COUNTER	CLP02770
08A6	D342 1736	278	OPTCMD1	LB R4,OPT(R2)	TO PRINT TEST	CLP02780
08AA	41F0 11E2	279	BAL	LINK,OUTCHR		CLP02790
08AE	2621	280	AIS	R2,1		CLP02800
08B0	C520 0006	281	CLHI	R2,6		CLP02810
08B4	2087	282	BLS	OPTCMD1		CLP02820
08B6	C840 0020	283	LHI	R4,C' '		CLP02830
08BA	41F0 11E2	284	BAL	LINK,OUTCHR	OUTPUT 1 SPACE	CLP02840
08BE	0755	285	XAR	R5,R5	TO PRINT SELECTED TEST NUMBERS	CLP02850
08C0	4050 1640	286	STH	R5,FIRST		CLP02860
08C4	4823 0006	287	LH	R2,6(R3)	FIRST TEST WORD	CLP02870
08C8	2440	288	OPTCMD2	LIS R4,0	START WITH TEST 0	CLP02880
08CA	4040 1CB0	289	STH	R4,TEMP		CLP02890
08CE	9121	290	OPTCMD3	SLHLS R2,1		CLP02900
08D0	4380 0C02	291	RNC	OPTCMD7		CLP02910
08D4	4040 1CR0	292	OPTCMD4	STH R4,TEMP	OPTION VALUE FOUND.	CLP02920
08D8	4800 1640	293	LH	R0,FIRST	IS IT FIRST ?	CLP02930
08DC	2335	294	BZS	OPTCMD5		CLP02940
08DE	C840 002C	295	LHI	R4,C','	NO, OUTPUT COMMA	CLP02950
08E2	41F0 11E2	296	BAL	LINK,OUTCHR		CLP02960
08E6	40F0 1640	297	OPTCMD5	STH LINK,FIRST		CLP02970
08EA	0855	298	LDAR	R5,R5	TEST VALUE FROM SECOND HW	CLP02980
08EC	2335	299	BZS	OPTCMD6	NO	CLP02990
08EE	C840 0031	300	LHI	R4,C'1'	YES,OUTPUT '1'	CLP03000
08F2	41F0 11E2	301	BAL	LINK,OUTCHR		CLP03010
08F6	4840 1CB0	302	OPTCMD6	LH R4,TEMP	RESTORE R4	CLP03020
08FA	D344 169C	303	LB	R4,HEXTAB(R4)	CONVERT	CLP03030
08FE	41F0 11E2	304	BAL	LINK,OUTCHR	OUTPUT 0-F	CLP03040
0C02	4840 1CB0	305	OPTCMD7	LH R4,TEMP	RESTORE	CLP03050
0C06	2641	306	AIS	R4,1	INCREMENT TEST #	CLP03060
0C08	4040 1CB0	307	STH	R4,TEMP		CLP03070
0C0C	C540 0010	308	CLHI	R4,16		CLP03080
0C10	4280 08CE	309	BL	OPTCMD3		CLP03090
0C14	0855	310	OPTCMD71	LDAR R5,R5	DONE ?	CLP03100
0C16	023E	311	BNZR	R14		CLP03110
0C18	4823 0008	312	LH	R2,8(R3)	SECOND TEST WORD	CLP03120
0C1C	2451	313	LIS	R5,1	R5 = 1 FOR SECOND TEST HW	CLP03130
0C1E	4300 08C8	314	B	OPTCMD2		CLP03140
		315	*			CLP03150
		316	*	TO OUTPUT OTHER OPTION NAMES & VALUES		CLP03160
		317	*			CLP03170

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0C22	41F0 1104	318	OPTCMD8	BAL	LINK,CRLF		CLP03180
0C26	2461	319		LIS	R6,1	SET LINE COUNTER	CLP03190
0C28	C820 1742	320		LHI	R2,OPT+12	R2 POINTS TO THE NAME	CLP03200
0C2C	2436	321	OPTCMD9	LIS	R3,6		CLP03210
0C2E	D342 0000	322	OPTCMD10	LB	R4,0(R2)		CLP03220
0C32	41F0 11E2	323		BAL	LINK,OUTCHR	OUTPUT OPTION NAME CHAR	CLP03230
0C36	2621	324		AIS	R2,1		CLP03240
0C38	2731	325		SIS	R3,1	6 CHARACTERS OUTPUT ?	CLP03250
0C3A	2026	326		BPS	OPTCMD10	NO,LOOP	CLP03260
0C3C	C840 0020	327		LHI	R4,C'		CLP03270
0C40	41F0 11E2	328		BAL	LINK,OUTCHR	OUTPUT ONE SPACE	CLP03280
0C44	4852 0000	329		LH	R5,0(R2)	R5 = OPTION VALUE	CLP03290
0C48	2404	330		LIS	R0,4		CLP03300
0C4A	41F0 108E	331		BAL	LINK,R5HEX	WRITE OPTION VALUE IN HEX (4 DIGITS)	CLP03310
0C4E	D300 0A10	332		LB	R0,10		CLP03320
0C52	2741	333		SIS	R0,1	CONSOLE = CRT ?	CLP03330
0C54	213D	334		BNZS	OPTCMD12	BRANCH: NO.	CLP03340
0C56	2661	335		AIS	R6,1	INCREMENT LINE COUNTER.	CLP03350
0C58	C560 0014	336		CLHI	R6,20	PAGE FULL ?	CLP03360
0C5C	2189	337		BLS	OPTCMD12	NO	CLP03370
0C5E	0766	338		XAR	R6,R6	INITIALIZE LINE COUNT	CLP03380
0C60	41F0 1254	339	OPTCMD11	BAL	LINK,GETCHR		CLP03390
0C64	274D	340		SIS	R4,13	CR ?	CLP03400
0C66	4330 0AE6	341		BZ	OPTIN	TO ACCEPT NEXT COMMAND	CLP03410
0C6A	2643	342		AIS	R4,3	LF ?	CLP03420
0C6C	2036	343		BNZS	OPTCMD11	IF YES, PRINT NEXT PAGE	CLP03430
0C6E	41F0 1104	344	OPTCMD12	BAL	LINK,CRLF		CLP03440
0C72	41F0 12A2	345		BAL	LINK,TSTBRK	EXIT IF 'BREAK' PRESSED.	CLP03450
0C76	2626	346		AIS	R2,6		CLP03460
0C78	C520 17DE	347		CLHI	R2,OPTEND2	ALL PRINTING OPTIONS DONE ?	CLP03470
0C7C	4280 0C2C	348		BL	OPTCMD9	NO,LOOP FOR NEXT ONE	CLP03480
0C80	4300 0AEA	349		B	OPTIN1	TO ACCEPT NEXT COMMAND	CLP03490
		350					CLP03500
0C84	C510 1736	351	LOOK4	CLHI	R1,TEST	'TEST' OPTION ?	CLP03510
0C88	4330 0CC0	352		BE	TESTOP		CLP03520
		353				* TO PROCESS COMMANDS OTHER THAN 'TEST', 'OPTION'.	CLP03530
		354					CLP03540
0C8C	274D	355		SIS	R4,13	OPT FOLLOWED BY CR ?	CLP03550
0C8E	033C	356		BZR	R12	YES, ERROR	CLP03560
0C90	41E0 1030	357		BAL	R14,OPTVAL	GET OPTION VALUE IN R6	CLP03570
0C94	274D	358		SIS	R4,13	TERMINATED BY CR ?	CLP03580
0C96	023C	359		BNZR	R12	IF NO, BRANCH	CLP03590
0C98	48E1 0008	360		LH	R14,8(R1)	GET OPTION CHECK ROUTINE ADDRESS	CLP03600
0C9C	2332	361		RZS	LOOK5		CLP03610
0C9E	01FE	362		BALR	R15,R14	LINK OPTION CHECK ROUTINE	CLP03620
	0000 0CA0	363	LOOK5	EQU	*	RETURN HERE	CLP03630
0CA0	4061 0006	364		STH	R6,6(R1)	STORE OPTION VALUE	CLP03640
0CA4	4300 0AE6	365		B	OPTIN	TO ACCEPT NEXT COMMAND	CLP03650
		366					CLP03660
0CA8	C360 FFFE	367	ZERONE	THI	R6,X'FFFE'	IGNORE LSB	CLP03670
0CAC	033F	368		BZR	R15	OKAY	CLP03680
0CAE	030C	369		BR	R12	ERROR RETURN	CLP03690
		370					CLP03700
0CB0	C560 0400	371	* ADR	CLHI	R6,X'400'	(R6) = 10 BIT DEVICE ADDRESS	CLP03710

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0CB4	028F	372		BLR	R15	RETURN TO LOOK5	CLP03720
0CB6	030C	373		BR	R12		CLP03730
		374	*				CLP03740
0CB8	C560 000F	375	LEVEL	CLHI	R6,15	(R6) = INTERRUPT LEVEL HEX DIGIT	CLP03750
0CBC	028F	376		BLR	R15	RETURN TO LOOK5	CLP03760
0CBE	030C	377		BR	R12		CLP03770
		378	*				CLP03780
		379	*			TEST OPTION PROCESS ROUTINE	CLP03790
		380	*				CLP03800
0CC0	274D	381	TESTOP	SIS	R4,13	'TEST' FOLLOWED BY (CR) ?	CLP03810
0CC2	213B	382		BNZS	TSTOP1		CLP03820
UCC4	4800 1C3E	383		LH	R0,DEFTESTS	YES, SET TEST OPTION TO	CLP03830
0CC8	4000 173C	384		STH	R0,TEST+6	FIRST TEST WORD	CLP03840
0CCC	4800 1C40	385		LH	R0,DEFTESTS+2	ALL DEFAULT TESTS IN PROGRAM	CLP03850
0CD0	4000 173E	386		STH	R0,TEST+8	SECOND TEST WORD	CLP03860
0CD4	4300 0AE6	387		B	OPTIN	TO ACCEPT NEXT COMMAND	CLP03870
		388	*				CLP03880
0CD8	4850 1C3C	389	TSTOP1	LH	R5,MAXYST	TEST BIT ACCUMULATORS	CLP03890
0CDC	2470	390		LIS	R7,0		CLP03900
0CDE	2480	391		LIS	R9,0		CLP03910
0CE0	41E0 1030	392	TSTOP2	BAL	R14,OPTVAL	GET OPTION VALUE IN R6	CLP03920
0CE4	0556	393		CLAR	R5,R6		CLP03930
0CE6	028C	394		BLR	R12	ERROR: INVALID TEST NUMBER	CLP03940
0CE8	C560 0010	395		CLHI	R6,16	R6 < 16 ?	CLP03950
0CEC	2385	396		BNLS	TSTOP3	NO	CLP03960
0CEE	41E0 1066	397		BAL	R14,UNARY	GET UNARY OPERAND IN R3	CLP03970
0CF2	0673	398		OAR	R7,R3	SET CURRENT BIT	CLP03980
0CF4	2306	399		BS	TSTOP4		CLP03990
0CF6	CB60 0010	400	TSTOP3	SHI	R6,16	R6 = 0-F	CLP04000
0CFA	41E0 1066	401		BAL	R14,UNARY		CLP04010
0CFE	0683	402		OAR	R8,R3	SET CURRENT BIT	CLP04020
0D00	274D	403	TSTOP4	SIS	R4,13	TERMINATED BY CR ?	CLP04030
0D02	4230 0CE0	404		BNZ	TSTOP2		CLP04040
0D06	4070 173C	405		STH	R7,TEST+6	STORE VALID SELECTED TESTS	CLP04050
0D0A	4080 173E	406		STH	R8,TEST+8		CLP04060
0D0E	4300 0AE6	407		B	OPTIN	TO ACCEPT NEXT COMMAND	CLP04070
		408	*				CLP04080
		409	*				CLP04090
	0000 0D12	410	RUNIT	EQU	*		CLP04100
0D12	41F0 11D4	411		BAL	LINK,CRLF		CLP04110
0D16	4800 0A10	412		LH	R0,IO		CLP04120
0D1A	4000 1CAF	413		STH	R0,IOSAVE	RESTORE USER'S I/O CHOICE	CLP04130
0D1E	41F0 11D4	414		BAL	LINK,CRLF		CLP04140
0D22	41F0 1882	415		BAL	LINK,INIT	LINK USER INITIALIZATION ROUTINE	CLP04150
	0000 0026	416	INITRET	EQU	*	RETURN HERE	CLP04160
0D26	07FF	417		XAR	R15,R15		CLP04170
0D28	40F0 1686	418		STH	R15,WASDU1		CLP04180
0D2C	240F	419		LIS	R0,15	TO FIND HIGHEST SELECTED TEST NO.	CLP04190
0D2E	4810 173E	420		LH	R1,TEST+8	CHECK SECOND TEST HW	CLP04200
0D32	9011	421	KEEP1	SRLS	R1,1		CLP04210
0D34	218B	422		BCS	FOUND1	R0 = F-0	CLP04220
0D36	2701	423		SIS	R0,1		CLP04230
0D38	2213	424		BNMS	KEEP1	TRY NEXT DIGIT	CLP04240
0D3A	240F	425		LIS	R0,15	INITIALIZE AGAIN	CLP04250

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003C	4810 173C	426	LH	R1,TEST+6	CHECK FIRST TEST HW	CLP04260
0040	9011	427	KEEP2	SRLS R1,1		CLP04270
0042	2186	428	BCS	FOUND1+4	RO = F-0 = TEST #	CLP04280
0044	2701	429	SIS	RO,1		CLP04290
0046	2213	430	BNMS	KEEP2	LOOP	CLP04300
0048	030C	431	BR	R12	TEST NOT SELECTED	CLP04310
004A	CA00 0010	432	FOUND1	AHI RO,16	ADJUST TEST # FOR SECOND HW	CLP04320
004E	4000 1682	433	STH	RO,SELTST	HIGHEST SELECTED TEST NUMBER	CLP04330
		434	*			CLP04340
		435	*	RESET TEST PARAMETERS		CLP04350
		436	*			CLP04360
0052	0700	437	XAR	RO,RO		CLP04370
0054	4000 167E	438	STH	RO,ISITERR	RESET ERROR FLAG	CLP04380
0058	4000 1688	439	STH	RO,TOTAL	RESET TOTAL	CLP04390
005C	4000 168A	440	STH	RO,TOTERR	RESET TOTERR	CLP04400
0060	4000 1684	441	STH	RO,WASDU	RESET WASDU	CLP04410
0064	C810 3030	442	LHI	R1,C'00'		CLP04420
0068	4010 1682	443	STH	R1,MTESTNO	RESET THESE FLAGS TO C'00'	CLP04430
006C	4010 168C	444	STH	R1,ETESTNO		CLP04440
0070	4010 168E	445	STH	R1,ERRNO		CLP04450
0074	41F0 1390	446	BAL	LINK,LCORE	SET UP LOW CORE	CLP04460
		447	*			CLP04470
		448	*	START SELECTION FROM TEST 0		CLP04480
		449	*			CLP04490
0078	0700	450	KEEP3	XAR RO,RO		CLP04500
007A	4000 168C	451	STH	RO,BTESTNO	RESET BINARY TEST NUMBER	CLP04510
007E	4000 1690	452	STH	RO,NEXTST	RESET NEXT TEST #	CLP04520
		453	*			CLP04530
		454	*	TO FIND THE NEXT SELECTED TEST.		CLP04540
		455	*			CLP04550
0082	4820 1690	456	KEEP4	LH R2,NEXTST	GET NEXT TEST #	CLP04560
0086	2408	457	KEEP41	LIS RO,8		CLP04570
0089	910C	458	SLHLS	RO,12	RO = X'8000'	CLP04580
008A	CC02 0000	459	SRHL	RO,0(R2)	RO = NEXT TEST BIT	CLP04590
008E	C520 0010	460	CLHI	R2,X'10'	NEXT TEST < 16	CLP04600
0092	2185	461	BLS	KEEP42		CLP04610
0094	4400 173E	462	NH	RO,TEST+8	LOOK AT TEST HW 2	CLP04620
0098	2137	463	BNZS	KEEP5		CLP04630
009A	2304	464	BS	KEEP43		CLP04640
009C	4400 173C	465	KEEP42	NH RO,TEST+6	LOOK AT TEST HW 1	CLP04650
00A0	2133	466	BNZS	KEEP5		CLP04660
00A2	2621	467	KEEP43	AIS R2,1		CLP04670
00A4	220F	468	BS	KEEP41	LOOP FOR NEXT TEST #	CLP04680
00A6	4020 168C	469	KEEP5	STH R2,BTESTNO	CURRENT TEST #	CLP04690
00AA	0812	470	LDAR	R1,R2	R1 = TEST # IN BINARY	CLP04700
00AC	2621	471	AIS	R2,1		CLP04710
00AE	4020 1690	472	STH	R2,NEXTST		CLP04720
00B2	2402	473	LIS	RO,2	SET DIGITS TO PRINT = 2	CLP04730
00B4	C320 1682	474	LHI	R2,MTESTNO	R2 = A(MTESTNO)	CLP04740
00B8	41F0 10F4	475	BAL	LINK,HEXASC	STORE TEST # IN ASCII @ MTESTNO	CLP04750
00BC	4820 1682	476	LH	R2,MTESTNO		CLP04760
00C0	4020 168C	477	STH	R2,ETESTNO	STORE TEST # IN ASCII @ ETESTNO	CLP04770
00C4	41F0 12A2	478	BAL	LINK,TSTBRK	TEST BREAK	CLP04780
00C8	C850 16AC	479	LHI	R5,TSTMSG		CLP04790

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00CC 41F0 1154 480 BAL LINK,PRINT PRINT 'TEST NN' CLP04800
00DD 0700 481 XAR R0,R0 CLP04810
00D2 4000 1680 482 STH R0,NOERR RESET ERROR FLAG CLP04820
00D6 4000 168E 483 STH R0,COUNT RESET COUNT CLP04830
00DA 4810 0A24 484 KEEP6 LH R1,PSW2 DISABLE INTERRUPTS CLP04840
00DE 9501 485 EPSR R0,R1 CLP04850
00E0 4820 168C 486 LH R2,BTESTNO R2=TEST IN BINARY CLP04860
00E4 9121 487 SLLS R2,LADC CLP04870
00E6 4812 1C72 488 LDA R1,TESTS(R2) # ETE CLP04880
00EA 0301 489 BR R1 GO TO TEST MODULE CLP04890
490 ETE04540 CLP04900
491 ETE04550 CLP04910
492 *----- CLP04920
493 * CLP04930
494 * TEST MODULE END ROUTINE CLP04940
495 * CLP04950
0000 0DEC 496 TSTEND EQU * CLP04960
00EC 4810 0A24 497 LH R1,PSW2 CLP04970
00F0 9501 498 EPSR R0,R1 DISABIF INT @ PROCESSOR LEVEL CLP04980
00F2 4800 168E 499 LH R0,COUNT CLP04990
00F6 26U1 500 AIS R0,1 INCREMENT COUNT CLP05000
00F8 4000 168F 501 STH R0,COUNT CLP05010
00FC 4500 1754 502 CLH R0,LOOP+6 IF COUNT > LOOP, CLP05020
0E00 2385 503 BNLS KEEP7 GO TO NEXT TEST MODULE CLP05030
0E02 41F0 12A2 504 BAL LINK,TSTBRK IF BREAK GO TO OPTIN CLP05040
0E06 4300 0DDA 505 B KEEP6 OTHERWISE, REPEAT SAME TEST CLP05050
0E0A 4800 1680 506 KEEP7 LH R0,NOERR LOOK @ ERROR FLAG CLP05060
0E0E 2135 507 BNZS KEEP71 CLP05070
0E10 C850 16D2 508 LHI R5,NOERMSG CLP05080
0E14 41F0 1154 509 BAL LINK,PRINT PRINT "NO ERROR" CLP05090
0E18 4810 168C 510 KEEP71 LH R1,BTESTNO GET TEST # CLP05100
0E1C 4510 1682 511 CLH R1,SELTST IS THE LAST SELECTED TEST DONE ? CLP05110
0E20 4280 0D82 512 BL KEEP4 NO, GO SELECT NEXT TEST CLP05120
513 * CLP05130
514 * ALL THE SELECTED TESTS ARE NOW RUN CLP05140
515 * CLP05150
0000 0E24 516 ABORT EQU * COME HERE TO ABORT TEST SEQUENCE, CLP05160
0E24 4200 0000 517 NOP CLP05170
0E28 41F0 130E 518 BAL LINK,TSTDU RETURN WITH R1 = DU BIT CLP05180
0E2C 4230 0E54 519 BNZ KEEP9 IF DU, DISPLAY TOTAL CLP05190
0E30 4810 1686 520 LH R1,WASDU1 WAS IT EVER ? CLP05200
0E34 4230 0E9C 521 BNZ KEEP10 YES, PRINT TOTAL, TOTERR CLP05210
0E38 41FC 12A2 522 BAL LINK,TSTBRK CLP05220
0E3C 4810 1760 523 LH R1,CONTIN+6 IF CONTIN = 1, CLP05230
0E40 4230 0D78 524 BNZ KEEP3 GO TO TEST 0 CLP05240
0E44 41F0 1334 525 BAL LINK,SETKB KB DEVICE = LIST DEVICE CLP05250
0E48 C850 1724 526 LHI R5,EOTMSG CLP05260
0E4C 41F0 1154 527 BAL LINK,PRINT 'END OF TEST' CLP05270
0E50 4300 0AE6 528 B OPTIN CLP05280
529 *----- CLP05290
530 * ROUTINE INCREMENTS,DISPLAYS & CHECKS 'TOTAL' CLP05300
531 * CLP05310
0E54 4010 1684 532 KEEP9 STH R1,WASDU SET 'WASDU' FLAG CLP05320
0E58 4810 1688 533 LH R1,TOTAL INCREMENT TOTAL CLP05330

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0E5C	2611	534	AIS	R1,1		CLP05340
0E5E	4010 1688	535	STH	R1,TOTAL		CLP05350
0E62	2421	536	LIS	R2,1		CLP05360
0E64	0E20 1655	537	KEEP91 OC	R2,INCR	DISPLAY: INCREMENTAL MODE	CLP05370
0E68	4800 168A	538	LH	R0,TOTERR		CLP05380
0E6C	9400	539	EXBR	R0,R0		CLP05390
0E6E	9820	540	WHR	R2,R0	DISPLAY TOTERR	CLP05400
0E70	9401	541	EXBR	R0,R1	FORMAT FOR DISPLAY	CLP05410
0E72	9820	542	WHR	R2,R0	DISPLAY TOTAL	CLP05420
0E74	0E20 1654	543	OC	R2,NORM	DISPLAY: NORMAL MODE	CLP05430
0E78	C510 7FFF	544	CLHI	R1,X'7FFF'	TOTAL < MAX RETAINABLE ?	CLP05440
0E7C	2389	545	BNLS	HALT9		CLP05450
0E7E	4800 168C	546	LH	R0,BTESTNO	R0 = CURRENT TEST #	CLP05460
0E82	4500 1682	547	CLH	R0,SELTST	IS IT LAST TEST ?	CLP05470
0E86	4280 0D82	548	BL	KEEP4	NO, GO TO NEXT TEST	CLP05480
0ERA	4300 0D78	549	R	KEEP3	GO TO TEST 0	CLP05490
		550	*			CLP05500
0E8E	C810 080F	551	HALT9	LHI	R1,X'80F'	CLP05510
0E92	9114	552		SLHLS	R1,4	CLP05520
0E94	9521	553		EPSR	R2,R1	CLP05530
		554	*		HALT PROCESSOR	CLP05540
		555	*	WHEN EXE/RUN IS PRESSED, PRINT TOTAL & TOTERR		CLP05550
		556	*			CLP05560
0E96	41F0 130E	557		BAL	LINK,TSTDU	CLP05570
0E9A	2036	558		BNZS	HALT9	CLP05580
0E9C	0700	559	KEEP10	XAR	R0,R0	CLP05590
0E9E	4000 1684	560		STH	R0,WASDU	CLP05600
0EA2	41F0 1104	561		BAL	LINK,CRLF	CLP05610
0EA6	C850 16C2	562		LHI	R5,TOTMSG	CLP05620
0EAA	4050 167E	563		STH	R5,ISITERR	CLP05630
0EAE	41F0 1154	564		BAL	LINK,PRINT	CLP05640
0EB2	2404	565		LIS	R0,4	CLP05650
0EB4	4850 1688	566		LH	R5,TOTAL	CLP05660
0EB8	41F0 108E	567		BAL	LINK,R5HEX	CLP05670
0ERC	2434	568		LIS	R3,4	CLP05680
0ERE	C840 0020	569		LHI	R4,C'	CLP05690
0EC2	41F0 11E2	570	KEEP101	BAL	LINK,OUTCHR	CLP05700
0EC6	2731	571		SIS	R3,1	CLP05710
0EC8	2023	572		BPS	KEEP101	CLP05720
0ECA	2404	573		LIS	R0,4	CLP05730
0ECC	4850 168A	574		LH	R5,TOTERR	CLP05740
0ED0	41F0 108E	575		BAL	LINK,R5HEX	CLP05750
0ED4	4300 0AE6	576		S	OPTIN	CLP05760
		577	*	*****		CLP05770
		578	*	ERROR ROUTINES	(OVERRIDE NOMSG OPTION)	CLP05780
		579	*			CLP05790
0ED8	0000 1000	580	ERR	STH	R0,ERRSAVE	CLP05800
0EDC	4120 0F62	581		BAL	R2,ERRCOM	CLP05810
0EE0	41E0 0F94	582		BAL	RET,ERR1	CLP05820
0EF4	0700	583	ERRCOM2	XAR	R0,R0	CLP05830
0EE6	4000 167E	584		STH	R0,ISITERR	CLP05840
0EEA	4820 0A22	585		LH	R2,PSW	CLP05850
0EEE	9502	586		EPSR	R0,R2	CLP05860
0EFO	0100 1000	587		LM	R0,ERRSAVE	CLP05870



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0EF4	030F	588	BR	LINK	RETURN TO TEST	CLP05880
0EF6	0000 10D0	589	ERRD	STM R0,ERRSAVE	STORE REGISTERS	CLP05890
0EFA	4120 0F62	590	BAL	R2,ERRCOM	RETURN IF LIST DEVICE IS ON	CLP05900
0EFE	41E0 0F94	591	BAL	RET,ERR1	PRINT 'ERROR TTNN'	CLP05910
0F02	41E0 0F9E	592	BAL	RET,ERRD1	PRINT 'DEV DDD'	CLP05920
0F06	4300 0EE4	593	B	ERRCOM2		CLP05930
0F0A	0000 10D0	594	ERRS	STM R0,ERRSAVE	STORE REGISTERS	CLP05940
0F0E	4120 0F62	595	BAL	R2,ERRCOM	RETURN IF LIST DEVICE IS ON	CLP05950
0F12	41E0 0F94	596	BAL	RET,ERR1	PRINT 'ERROR TTNN'	CLP05960
0F16	41E0 0F86	597	BAL	RET,ERRS1	PRINT 'STA SS'	CLP05970
0F1A	4300 0EE4	598	B	ERRCOM2		CLP05980
0F1E	0000 10D0	599	ERRDS	STM R0,ERRSAVE	STORE REGISTERS	CLP05990
0F22	4120 0F62	600	BAL	R2,ERRCOM	RETURN IF LIST DEVICE IS ON	CLP06000
0F26	41E0 0F94	601	BAL	RET,ERR1	PRINT 'ERROR TTNN'	CLP06010
0F2A	41E0 0FCE	602	BAL	RET,ERRDS1	PRINT 'DEV DDD STA SS'	CLP06020
0F2E	4300 0EE4	603	B	ERRCOM2		CLP06030
0F32	0000 10D0	604	ERRL	STM R0,ERRSAVE	STORE REGISTERS	CLP06040
0F36	40F0 164E	605	STH	R15,0LOC	STORE ERROR LOC TO PRINT	CLP06050
0F3A	4120 0F62	606	BAL	R2,ERRCOM	RETURN IF LIST DEVICE IS ON	CLP06060
0F3E	41E0 0F94	607	BAL	RET,ERR1	PRINT 'ERROR TTNN'	CLP06070
0F42	41E0 0FF4	608	BAL	RET,ERRL1	PRINT 'LOC LLLL'	CLP06080
0F46	4300 0EE4	609	B	ERRCOM2		CLP06090
0F4A	0000 10D0	610	ERRALL	STM R0,ERRSAVE	STORE REGISTERS	CLP06100
0F4E	4120 0F62	611	BAL	R2,ERRCOM	RETURN IF LIST DEVICE IS ON	CLP06110
0F52	41E0 0F94	612	BAL	RET,ERR1	PRINT 'ERROR TTNN'	CLP06120
0F56	41E0 0FCE	613	BAL	RET,ERRDS1	PRINT 'DEV DDD STA SS'	CLP06130
0F5A	41E0 100C	614	BAL	RET,ERRPL1	PRINT 'PSW PPPP LOC LLLL'	CLP06140
0F5E	4300 0EE4	615	B	ERRCOM2		CLP06150
		616	*			CLP06160
		617	*	COMMON ERROR ROUTINE		CLP06170
		618	*			CLP06180
0F62	4020 0F7C	619	ERRCOM	STH R2,COMRET		CLP06190
0F66	4810 0A24	620	LH	R1,PSW2		CLP06200
0F6A	9501	621	EPSR	R0,R1	DISABLE INT. @ PROCESSOR LEVEL	CLP06210
0F6C	41F0 130E	622	BAL	LINK,TSTDU	GET LIST DEVICE DU BIT IN R1	CLP06220
0F70	2137	623	BNZS	ERRCOM1	BRANCH IF OFF-LINE	CLP06230
0F72	4020 167E	624	STH	R2,ISITERR	SET ERROR FLAG	CLP06240
0F76	4020 1680	625	STH	R2,NOERR		CLP06250
0F7A	4300 0F7A	626	B	*	GO, PRINT ERROR MESSAGE	CLP06260
	0000 0F7C	627	COMRET	EQU *-2		CLP06270
		628	*			CLP06280
0F7E	4810 168A	629	ERRCOM1	LH R1,TOTERR	LIST DEVICE IS OFF	CLP06290
0F82	2611	630	AIS	R1,1		CLP06300
0F84	4010 168A	631	STH	R1,TOTERR	INCREMENT TOTERR	CLP06310
0F88	C510 7FFF	632	CLHI	R1,X'7FFF'	TOTERR < MAX RETAINABLE ?	CLP06320
0F8C	4280 0E62	633	B	KEEP91	NO, ABORT CURRENT TEST & GOTO NEXT	CLP06330
0F90	4300 0E8E	634	B	HALT9	YES, HALT PROCESSOR	CLP06340
		635	*	-----		CLP06350
		636	*	MESSAGE PRINT ROUTINES	(DO NOT OVERRIDE NOMSG OPTION)	CLP06360
		637	*			CLP06370
		638	*	TO PRINT 'ERROR TTNN'		CLP06380
		639	*			CLP06390
0F94	C850 16R6	640	ERR1	LHI R5,ERRMSG		CLP06400
0F98	41F0 1154	641	BAL	LINK,PRINT	PRINT 'ERROR TTNN'	CLP06410

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0F9C	030E	642	*			TT = TEST #, NN = ERROR #	CLP06420
		643		BR	RET	RETURN	CLP06430
		644	*				CLP06440
		645	*	TO PRINT 'DEV DDD'			CLP06450
		646	*				CLP06460
0F9E	2403	647	ERRD1	LIS	R0,3	SET UP DIGITS = 3	CLP06470
0FA0	4810 1650	648		LH	R1,ERRDEV	R1 = ERROR DEV # IN BINARY	CLP06480
0FA4	C820 16F0	649		LHI	R2,ASCIDEV2		CLP06490
0FA8	41F0 10F4	650		BAL	LINK,HEXASC	CONVERT IT TO ASCII	CLP06500
0FAC	C850 16EC	651		LHI	R5,DEVMSG2		CLP06510
0FB0	41F0 1154	652		BAL	LINK,PRINT	PRINT 'DEV DD'	CLP06520
0FB4	030E	653		BR	RET	RETURN	CLP06530
		654	*				CLP06540
		655	*	TO PRINT 'STA SS'			CLP06550
		656	*				CLP06560
0FB6	2402	657	ERRS1	LIS	R0,2	SET UP DIGITS = 2	CLP06570
0FB8	0310 1652	658		LB	R1,ERRSTA	R1 = ERROR STATUS	CLP06580
0FBC	C820 16E8	659		LHI	R2,ASCISTA		CLP06590
0FC0	41F0 10F4	660		BAL	LINK,HEXASC	CONVERT IT TO ASCII	CLP06600
0FC4	C850 16F4	661		LHI	R5,STAMSG		CLP06610
0FC8	41F0 1154	662		BAL	LINK,PRINT	PRINT 'STA SS'	CLP06620
0FCC	030E	663		BR	RET	RETURN	CLP06630
		664	*				CLP06640
		665	*	TO PRINT 'DEV ODD STA SS'			CLP06650
		666	*				CLP06660
0FCE	2403	667	ERRDS1	LIS	R0,3	SET UP DIGITS = 3	CLP06670
0FD0	4810 1650	668		LH	R1,ERRDEV	R1 = ERROR DEV #	CLP06680
0FD4	C820 16E0	669		LHI	R2,ASCIDEV		CLP06690
0FD8	41F0 10F4	670		BAL	LINK,HEXASC	CONVERT IT TO ASCII	CLP06700
0FDC	2402	671		LIS	R0,2	SET UP DIGITS = 2	CLP06710
0FDE	0310 1652	672		LB	R1,ERRSTA	R1 = ERROR STATUS	CLP06720
0FE2	C820 16E8	673		LHI	R2,ASCISTA		CLP06730
0FE6	41F0 10F4	674		BAL	LINK,HEXASC	CONVERT IT TO ASCII	CLP06740
0FEA	C850 160C	675		LHI	R5,DEVMSG		CLP06750
0FEE	41F0 1154	676		BAL	LINK,PRINT	PRINT 'DEV DD STA SS'	CLP06760
0FF2	030E	677		BR	RET	RETURN	CLP06770
		678	*				CLP06780
		679	*	TO PRINT 'LOC LLLL'			CLP06790
		680	*				CLP06800
0FF4	2404	681	ERRL1	LIS	R0,4	SET UP DIGITS = 4	CLP06810
0FF6	4810 164E	682		LH	R1,OLOC	R1 = OLD LOC	CLP06820
0FFA	C820 1704	683		LHI	R2,ASCILOC		CLP06830
0FFE	41F0 10F4	684		BAL	LINK,HEXASC	CONVERT IT TO ASCII	CLP06840
1002	C850 1700	685		LHI	R5,LOCMSG		CLP06850
1006	41F0 1154	686		BAL	LINK,PRINT	PRINT 'LOC LLLL'	CLP06860
100A	030E	687		BR	RET	RETURN	CLP06870
		688	*				CLP06880
		689	*	TO PRINT 'PSW PPPP LOC LLLL'			CLP06890
		690	*				CLP06900
100C	2404	691	ERRPL1	LIS	R0,4	SET UP DIGITS = 4	CLP06910
100E	4810 164A	692		LH	R1,OPSW	R1 = OLD PSW	CLP06920
1012	C820 16FA	693		LHI	R2,ASCIPSW		CLP06930
1016	41F0 10F4	694		BAL	LINK,HEXASC	CONVERT IT TO ASCII	CLP06940
101A	481C 164E	695		LH	R1,OLOC	R1 = OLD LOC	CLP06950



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1092	0820	750	LDAR	R2,R0	R2 = # OF DIGITS TO BE PRINTED	CLP07500
1094	2721	751	SIS	R2,1		CLP07510
1096	4210 10B2	752	BM	R5XB		CLP07520
109A	9122	753	SLLS	R2,2	R2 = 4(DIGITS-1)	CLP07530
109C	0845	754	R5X LDAR	R4,R5		CLP07540
109E	CC42 0000	755	SRAL	R4,0(R2)		CLP07550
10A2	C440 000F	756	NHI	R4,15	R4 = HEX DIGIT	CLP07560
10A6	0344 169C	757	LB	R4,HEXTAB(R4)		CLP07570
10AA	41F0 11E2	758	R5XA BAL	R15,OUTCHR		CLP07580
10AE	2724	759	SIS	R2,4		CLP07590
10B0	221A	760	BNMS	R5X	LOOP TILL ALL DIGITS	CLP07600
10B2	0100 1D10	761	R5XB LM	R0,RSAVE	RESTORE REGISTERS	CLP07610
10B6	030F	762	BR	LINK	RETURN	CLP07620
		763	*-----*			CLP07630
		764	* R5BIN PRINTS CONTENTS OF R5 IN BINARY			CLP07640
		765	* PRINTS UPTO 16 DIGITS			CLP07650
		766	*-----*			CLP07660
10B8	0000 1D10	767	R5BIN STM	R0,RSAVE	STORE REGISTERS	CLP07670
10BC	0830	768	LDAR	R3,R0	R3 = # OF DIGITS TO BE PRINTED	CLP07680
10BE	C810 0010	769	LHI	R1,16		CLP07690
10C2	0813	770	SAR	R1,R3		CLP07700
10C4	211C	771	BMS	R5B2	EXIT	CLP07710
10C6	CD51 0000	772	SLHL	R5,0(R1)	R5 = DATA TO BE PRINTED	CLP07720
10CA	C840 0030	773	R5B LHI	R4,C'0'		CLP07730
10CE	9151	774	SLHLS	R5,1		CLP07740
10D0	2382	775	SNCS	R5B1		CLP07750
10D2	2641	776	AIS	R4,1	IF CARRY, PRINT 1	CLP07760
10D4	41F0 11E2	777	R5B1 BAL	LINK,OUTCHR		CLP07770
10D8	2731	778	SIS	R3,1	R3 = # OF REMAINING DIGITS	CLP07780
10DA	2124	779	BPS	R5B3		CLP07790
10DC	0100 1D10	780	R5B2 LM	R0,RSAVE	RESTORE REGISTERS	CLP07800
10E0	030F	781	BR	LINK	RETURN	CLP07810
10E2	C330 0003	782	R5B3 THI	R3,3	4,8 OR 12 DIGITS LEFT ?	CLP07820
10E6	2135	783	BNZS	R5B4	NO	CLP07830
10E8	C840 0020	784	LHI	R4,C' '	YES, OUTPUT ONE SPACE	CLP07840
10EC	41F0 11E2	785	BAL	R15,OUTCHR		CLP07850
10F0	4300 10CA	786	R5B4 B	R5B	LOOP FOR NEXT DIGIT	CLP07860
		787	*-----*			CLP07870
		788	* TO CONVERT HEXADECIMAL DATA IN R1 TO ASCII CHAR & STORE @ 0(R2)			CLP07880
		789	*-----*			CLP07890
10F4	0000 1D10	790	HEXASC STM	R0,RSAVE	STORE REGISTERS	CLP07900
10F8	0830	791	LDAR	R3,R0	R3 = DIGITS	CLP07910
10FA	9132	792	SLLS	R3,2		CLP07920
10FC	2734	793	SIS	R3,4	R3 = 4(DIGITS)-4	CLP07930
10FE	0841	794	HEXASC1 LDAR	R4,R1	R4 = HEX DATA	CLP07940
1100	CC43 0000	795	SRAL	R4,0(R3)		CLP07950
1104	C440 000F	796	NHI	R4,15	R4 = HEX DIGIT TO BE CONVERTED	CLP07960
1108	0344 169C	797	LB	R4,HEXTAB(R4)		CLP07970
110C	D242 0000	798	STR	R4,0(R2)	STORE ASCII CHAR	CLP07980
1110	2621	799	AIS	R2,1		CLP07990
1112	2734	800	SIS	R3,4		CLP08000
1114	221B	801	BNMS	HEXASC1	LOOP TILL ALL DIGITS	CLP08010
1116	0100 1D10	802	LM	R0,RSAVE	RESTORE REGISTERS	CLP08020
111A	030F	803	BR	LINK	RETURN	CLP08030



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11A6	D345	0000	858	*					CLP08580	
11AA	41F0	11E2	859	PRINT2	LB	R4,0(R5)	GET A MESSAGE BYTE		CLP08590	
11AE	274D		860		BAL	LINK,OUTCHR	OUTPUT IT		CLP08600	
11B0	2333		861		SIS	R4,13	CR ?		CLP08610	
11B2	2651		862		BZS	PRINT3	MSG OVER		CLP08620	
11B4	2207		863		AIS	R5,1			CLP08630	
11B6	244A		864		BS	PRINT2	LOOP FOR NEXT CHAR		CLP08640	
11B8	D310	1CAF	865	PRINT3	LIS	R4,10	LF		CLP08650	
11B9	2713		866		LB	R1,IOSAVE+1	GET LIST DEV IDENTIFIER		CLP08660	
11BE	2335		867		SIS	R1,3	LINE PRINTER ?		CLP08670	
11C0	41F0	11E2	868		BZS	PRINT3A	BRANCH IF YES.		CLP08680	
11C4	2541		869		BAL	LINK,OUTCHR	LF		CLP08690	
11C6	2302		870		LCS	R4,1	DEL		CLP08700	
11C8	2441		871		BS	PRINT3B			CLP08710	
11CA	41F0	11E2	872	PRINT3A	LIS	R4,1	YES, OUTPUT X'01'		CLP08720	
	0000	11CE	873	PRINT3B	BAL	LINK,OUTCHR	TERMINAL CHARACTER		CLP08730	
11CE	D100	1D10	874	PRINT5	EQU	*	ETE08470		CLP08740	
11D2	030F		875		LM	R0,RSAVE	RESTORE REGISTERS		CLP08750	
			876		BR	LINK	RETURN		CLP08760	
			877	*-----*						CLP08770
			878	* SMALL SUPPORT ROUTINES						CLP08780
			879	*						CLP08790
			880	* TO OUTPUT CR,LF TO LIST DEVICE						CLP08800
			881	*						CLP08810
11D4	D000	1B10	882	CRLF	STM	R0,RSAVE	STORE REGISTERS		CLP08820	
11D8	244D		883		LIS	R4,13			CLP08830	
11DA	41F0	11E2	884		BAL	LINK,OUTCHR	OUTPUT CR		CLP08840	
11DE	4300	11B6	885		B	PRINT3	LINE FEED, RESTORE, RETURN		CLP08850	
			886	*-----*						CLP08860
			887	* TO OUTPUT A CHARACTER TO THE LIST DEVICE						CLP08870
11E2	40F0	1250	888	OUTCHR	STH	R15,OUT1+2	SAVE RETURN ADDRESS		CLP08880	
11E6	D300	1CAF	889		LB	R0,IOSAVE+1			CLP08890	
11EA	2704		890		SIS	R0,4			CLP08900	
11EC	4230	1224	891		RNZ	OUTCHR2	BRANCH IF NOT CAROUSEL		CLP08910	
11F0	4000	1252	892	OTC.	STH	R0,PAUSE			CLP08920	
11F4	41F0	130E	893	OTC.0	BAL	LINK,TSTDU	ON LINE ?		CLP08930	
11F8	4230	124A	894		RNZ	OUT0	NO, BRANCH		CLP08940	
11FC	9D01		895		SSR	R0,R1	GET CAROUSEL STATUS		CLP08950	
11FE	2386		896		BFFS	B,OTC.1	BRANCH IF CHAR. IS TO BE READ		CLP08960	
1200	4810	1252	897		LH	R1,PAUSE	PAUSED NOW ?		CLP08970	
1204	2038		898		BNZS	OTC.0	YES, LOOP		CLP08980	
1206	4300	1224	899		B	OUTCHR2	NO, GO OUTPUT CHARACTER		CLP08990	
	0000	120A	900	OTC.1	EQU	*			CLP09000	
120A	41F0	12A2	901		BAL	R15,TSTBRK			CLP09010	
120E	9B01		902		RDR	R0,R1	GET CAROUSEL CHARACTER		CLP09020	
1210	C410	007F	903		NHI	R1,X'7F'			CLP09030	
1214	CB10	0012	904		SHI	R1,X'12'	DC2 ?		CLP09040	
1218	2336		905		BZS	OUTCHR2	YES, BRANCH		CLP09050	
121A	2712		906		SIS	R1,2	DC4 ?		CLP09060	
121C	4330	11F0	907		BZ	OTC.	YES, GO SET PAUSE FLAG		CLP09070	
1220	4300	11F4	908		R	OTC.0	NO, GO WAIT FOR DC2		CLP09080	
	0000	1224	909	OUTCHR2	EQU	*			CLP09090	
1224	4010	1252	910		STH	R1,PAUSE	RESET FLAG		CLP09100	
1228	41F0	130E	911		BAL	LINK,TSTDU	OFF-LINE ?		CLP09110	

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122C 213F 912 BNZS OUT0 BRANCH IF OFF-LINE CLP09120
122E 4110 137A 913 BAL R1,SETUP SET UP FOR OUTPUT CLP09130
1232 9001 914 OTC.4 SSR R0,R1 WAIT FOR NOT BUSY CLP09140
1234 213B 915 BTFS 3,OUT0 BRANCH IF OFF-LINE CLP09150
1236 C510 000C 916 CLHI R1,12 PASLA OFFLINE ? CLP09160
123A 2338 917 BES OUT0 BRANCH: YES. CLP09170
123C C310 000B 918 THI R1,8 BUSY ? CLP09180
1240 2037 919 BNZS OTC.4 WAIT FOR NOT BUSY. CLP09190
1242 9A04 920 WDR R0,R4 OUTPUT DATA BYTE CLP09200
1244 9D01 921 SSR R0,R1 CLP09210
1246 2081 922 BTBS 8,1 WAIT FOR NOT BUSY. CLP09220
1248 2303 923 BS OUT1 CLP09230
124A 4010 1684 924 OUT0 STH R1,WASDU SET FLAG CLP09240
124E 4300 124E 925 OUT1 B * RETURN AS SET UP ABOVE CLP09250
1252 0000 926 PAUSE DCX 0 SET DURING TRANSMISSION PAUSE CLP09260
927 *-----* CLP09270
928 * TO GET A CHAR FROM KEYBOARD (IN REG R4) CLP09280
929 * CLP09290
1254 4140 1342 930 GETCHR BAL R4,KBREAD PUT KB DEVICE IN READ MODE CLP09300
1258 9D04 931 SSR R0,R4 CLP09310
125A 021F 932 BTCR 1,LINK IF DU, RETURN CLP09320
125C 2082 933 BTBS 8,2 IF BUSY, LOOP CLP09330
125E 0400 0A1A 934 CLB R0,MICROBUS IS IT BICROBUS ? CLP09340
1262 2333 935 ECHO1 YES, BRANCH CLP09350
1264 9B04 936 RDR R0,R4 READ A CHAR IN R4 CLP09360
1266 2303 937 BS ECHO CLP09370
1268 9B04 938 ECHO1 RDR R0,R4 CLP09380
126A 9A04 939 WDR R0,R4 CLP09390
940 * TO ECHO RECEIVED CHARACTERS TO CONSOLE DEVICE IN FDX MODE CLP09400
126C 0390 165C 941 ECHO LB R9,CONRD CLP09410
1270 C590 00A9 942 CLHI R9,X'A9' CAROUSEL ? CLP09420
1274 2137 943 BNES ECHRTN DO NOT ECHO CLP09430
1276 0390 165B 944 LB R9,CONADR+1 CLP09440
127A 0090 1653 945 SS R9,SINK CLP09450
127E 2082 946 BTBS 8,2 CLP09460
1280 9A94 947 WDR R9,R4 CLP09470
1282 C440 007F 948 ECHRTN NHI R4,X'7F' ECHO RECEIVED BYTE CLP09480
1286 030F 949 BR LINK REMOVE PARITY BIT CLP09490
950 *-----* CLP09500
951 * TO OUTPUT '?' TO CONSOLE CLP09510
952 * CLP09520
1288 41F0 1104 953 QUESTN BAL LINK,CRLF CLP09530
128C 40F0 167E 954 STH LINK,ISITERR SET FLAG CLP09540
1290 C850 1732 955 LHI R5,QMSG CLP09550
1294 41F0 1154 956 BAL LINK,PRINT PRINT '?' CLP09560
1298 0700 957 XAR R0,R0 CLP09570
129A 4000 167E 958 STH R0,ISITERR CLP09580
129E 4300 0AEA 959 B OPTINI TO ACCEPT COMMAND INPUT CLP09590
960 *-----* CLP09600
961 * IF BREAK KEY DEPRESSED, GO TO 'OPTIN' OR (BRKVECT); ELSE RETURN. CLP09610
962 * CLP09620
12A2 0000 1050 963 TSTBRK STM R0,RSAVE+64 STORE REGISTERS CLP09630
12A6 40F0 130C 964 STH LINK,BRKRTN CLP09640
12AA 0300 165A 965 LB R0,CONADR GET KEYBOARD DEVICE ADR CLP09650

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12AE	9D01	966	SSR	R0,R1		CLP09660	
12B0	C310 0020	967	THI	R1,X'20'	'BREAK' KEY PRESSED ?	CLP09670	
12B4	4330 1300	968	BZ	TSTBRK3	NO, EXIT AND RETURN TO PROGRAM	CLP09680	
12B8	D320 0A10	969	LB	R2,IO		CLP09690	
12Bc	C520 0005	970	CLHI	R2,5	IS IT MICROBUS ?	CLP09700	
12C0	2139	971	BNES	TSTBRK4	NO, BRANCH	CLP09710	
	0000 12C2	972	TSTBRK5	EQU	*	CLP09720	
12C2	9802	973	RDR	R0,R2		CLP09730	
12C4	9D01	974	SSR	R0,R1		CLP09740	
12C6	C310 0020	975	THI	R1,X'20'		CLP09750	
12CA	4230 12C2	976	BNZ	TSTBRK5		CLP09760	
12CE	4300 12F4	977	B	TSTBRK2		CLP09770	
	0000 12D2	978	TSTBRK4	EQU	*	CLP09780	
12D2	4820 1656	979	LH	R2,PASFLG	PASLA ?	CLP09790	
12D6	2338	980	BZS	TSTBRK1	BRANCH IF NO.	CLP09800	
12D8	C310 0008	981	THI	R1,8	ALREADY ACKNOWLEDGED ?	CLP09810	
12DC	4230 1300	982	BNZ	TSTBRK3	BRANCH IF YES	CLP09820	
12E0	9802	983	RDR	R0,R2		CLP09830	
12E2	9D01	984	SSR	R0,R1		CLP09840	
12E4	2281	985	BFBS	8,1		CLP09850	
12E6	0822	986	LDAR	R2,R2	ZERO CHARACTER ?	CLP09860	
12E8	213C	987	BNZS	TSTBRK3	BRANCH: JUST FRAMING ERROR	CLP09870	
12EA	2305	988	BS	TSTBRK2		CLP09880	
12EC	9D01	989	TSTBRK1	SSR	R0,R1	CLP09890	
12EE	C310 0020	990	THI	R1,X'20'		CLP09900	
12F2	2033	991	BTBS	3,3	WAIT FOR BREAK KEY RELEASE	CLP09910	
12F4	48F0 167C	992	TSTBRK2	LH	R15,BRKVECT	CHECK FOR SPECIAL ROUTINE	CLP09920
12F8	4330 0AE6	993	BZ	OPTIN	BRK W/NO VFCTOR: TO EXEC.	CLP09930	
12FC	40F0 130C	994	STH	R15,BRKRTN	SET UP FOR EXIT	CLP09940	
1300	2400	995	TSTBRK3	LIS	R0,0	CLP09950	
1302	4000 167C	996	STH	R0,BRKVECT	DELETE VECTOR AFTER ONE SHOT.	CLP09960	
1306	D100 1050	997	LM	R0,RSAVE+64	RESTORE REGISTERS	CLP09970	
130A	4300 130A	998	B	*	RETURN TO PROGRAM	CLP09980	
	0000 130C	999	BRKRTN	EQU	**2	CLP09990	
		1000	*-----*			CLP10000	
		1001	* SEE IF LIST DEVICE OFF-LINE (R1, CC NON-ZERO IF OFF)			CLP10010	
		1002	*			CLP10020	
130E	D310 1CAF	1003	TSTDU	LB	R1,IOSAVE+1	GET LIST DEVICE IDENTIFIER	CLP10030
1312	9111	1004	SLHLS	R1,1		(R1) = 2,4,6,8,A	CLP10040
1314	D301 0A11	1005	LB	R0,IO+1(R1)		GET LIST DEVICE ADDRESS	CLP10050
1318	9D01	1006	SSR	R0,R1			CLP10060
131A	4800 1658	1007	LH	R0,PASFLG2			CLP10070
131E	2338	1008	BZS	TSTDU1		BRANCH IF LIST DEVICE NOT PASLA	CLP10080
1320	C410 00FC	1009	NHI	R1,X'FC'			CLP10090
1324	C510 000C	1010	CLHI	R1,X'0C'	BSY & EX SET ?		CLP10100
1328	2133	1011	BNES	TSTDU1	BRANCH IF PASLA ON-LINE		CLP10110
132A	0811	1012	LDAR	R1,R1			CLP10120
132C	030F	1013	BR	LINK	PASLA OFF-LINE		CLP10130
132E	C410 0001	1014	TSTDU1	NHI	R1,1	(R1) = DU BIT	CLP10140
1332	030F	1015	BR	LINK	RETURN		CLP10150
		1016	*-----*			CLP10160	
		1017	* TO DIRECT INPUT AND OUTPUT TO CONSOLE DEVICE			CLP10170	
		1018	*			CLP10180	
1334	D300 0A10	1019	SETKB	LB	R0,IO	GET KEYBOARD DEVICE	CLP10190



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1338	9410	1028	EXBR	R1,R0		CLP10200	
133A	0610	1021	OAR	R1,R0		CLP10210	
133C	4010 1CAE	1022	STH	R1,IOSAVE	KB DEVICE = LIST DEVICE	CLP10220	
1340	030F	1023	BR	LINK	RETURN	CLP10230	
		1024	*-----*				CLP10240
		1025	* TO PUT KEYBOARD DEVICE IN READ MODE				CLP10250
		1026	*				CLP10260
1342	D300 165A	1027	KBREAD	LB	R0,CONADR	CLP10270	
1346	DE00 165C	1028		OC	R0,CONRO	CLP10280	
134A	DB00 1653	1029		RD	R0,SINK	CLP10290	
134E	4890 1656	1030		LH	R9,PASFLG	CLP10300	
1352	4200 1352	1031		VOP	*	CLP10310	
1356	0334	1032	TTYGET	BZR	R4	FOR SPECIAL KB DEVICE	
1358	DE00 1674	1033		OC	R0,CONRQ2S	RETURN	
135C	0304	1034		BR	R4	CLP10320	
		1035	*-----*				CLP10330
		1036	* TO SET UP KEYBOARD DEV TO READ WITH INT ENABLED				CLP10340
		1037	*				CLP10350
135E	D000 1010	1038	KBRD	STM	R0,RSAVE	CLP10360	
1362	D300 165A	1039		LB	R0,CONADR	CLP10370	
1366	4810 1656	1040		LH	R1,PASFLG	SAVE REGISTERS	
136A	2333	1041		BZS	KBRD1	GET KB DEV ADR	
136C	DE00 1674	1042		OC	R0,CONRQ2S	PASLA ?	
1370	DE00 1669	1043	KBRD1	OC	R0,CONENRO	CLP10400	
1374	0100 1D10	1044		LM	R0,RSAVE	CLP10410	
1378	030F	1045		BR	LINK	CLP10420	
		1046	*-----*				CLP10430
		1047	* LIST DEVICE SET UP ROUTINE				CLP10440
		1048	*				CLP10450
137A	4010 138E	1049	SETUP	STH	R1,SET.RTN	CLP10460	
137E	D310 1CAF	1050		LB	R1,IOSAVE+1	CLP10470	
1382	9111	1051		SLHLS	R1,1	GET LIST DEVICE IDENTIFIER	
1384	D301 0A11	1052		LB	R0,IO+1(R1)	HW INDEX	
1388	DE01 165D	1053		OC	R0,CONWRT(R1)	GET LIST DEVICE ADDRESS	
138C	4300 138C	1054		B	*	CLP10500	
	0000 138E	1055	SET.RTN	EQU	*-2	CLP10510	
		1056	* *****				CLP10520
		1057	* LOW CORE SET UP ROUTINE				CLP10530
		1058	*				CLP10540
1390	0711	1059	LCORE	XAR	R1,R1	CLP10550	
1392	2422	1060		LIS	R2,2	CLP10560	
1394	C830 004E	1061		LHI	R3,X'4E'	CLP10570	
1398	0700	1062		XAR	R0,R0	CLP10580	
139A	4001 0000	1063	ZERO1	STH	R0,0(R1)	CLP10590	
139E	C110 139A	1064		BXLE	R1,ZERO1	CLP10600	
13A2	C810 0080	1065		LHI	R1,X'80'	ZERO CORE FROM 0 THRU X'4F'	
13A6	C830 00CE	1066		LHI	R3,X'CE'	CLP10610	
13AA	4001 0000	1067	ZERO2	STH	R0,0(R1)	CLP10620	
13AE	C110 13AA	1068		BXLE	R1,ZERO2	CLP10630	
13B2	C800 140A	1069		LHI	R0,XI32	ZERO CORE FROM X'80' THRU X'CF'	
13B6	C830 08CE	1070		LHI	R3,X'8CE'	INTERRUPT HANDLER ROUTINE	
13BA	4001 0000	1071	ZERO3	STH	R0,0(R1)	CLP10640	
13BE	C110 13BA	1072		BXLE	R1,ZERO3	CLP10650	
13C2	C830 15E0	1073		LHI	R3,II	CLP10660	
						CLP10670	
						CLP10680	
						CLP10690	
						CLP10700	
						CLP10710	
						CLP10720	
						CLP10730	

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13C6	4030	0036	1074	STH	R3,X'36'	ILL-INST INT NEW PSW LOC	CLP10740
13CA	C840	15FA	1075	LHI	R4,MM		CLP10750
13CE	4040	003E	1076	STH	R4,X'3E'	M. M. INT NEW PSW LOC	CLP10760
13D2	C830	15AC	1077	LHI	R3,AF		CLP10770
13D6	4030	004E	1078	STH	R3,X'4E'	ARITHMETIC FAULT NEW PSW LOC(32-BIT)	CLP10780
			1079	*		FIXED PT DIVIDE FAULT NEW PSW LOC	CLP10790
13DA	C840	1010	1080	LHI	R4,RSAVE		CLP10800
13DE			1081	IFZ	ADC-2		CLP10810
13DE	4810	1642	1082	LH	R1,MOD32		CLP10820
13E2	4230	1404	1083	BNZ	LCORE32		CLP10830
			1084	*			CLP10840
			1085	*	SET UP LOW CORE FOR 16 BIT MACHINE		CLP10850
			1086	*			CLP10860
13E6	4040	0022	1087	STH	R4,X'22'	REG SAVE POINTER	CLP10870
13EA	C830	159A	1088	LHI	R3,FP		CLP10880
13EE	4030	002E	1089	STH	R3,X'2E'	FLOATING PT FAULT INT NEW PSW LOC	CLP10890
13F2	4850	0A24	1090	LH	R5,PSW2		CLP10900
13F6	4050	0044	1091	STH	R5,X'44'	HW EXT INT NEW PSW STATUS	CLP10910
13FA	C850	14CC	1092	LHI	R5,XI16		CLP10920
13FE	4050	0046	1093	STH	R5,X'46'	EXT INT NEW PSW LOC	CLP10930
1402	030F		1094	BR	LINK		CLP10940
1404			1095	ENDC			CLP10950
			1096	*			CLP10960
			1097	*	SET UP LOW CORE FOR 32 BIT MACHINE		CLP10970
			1098	*			CLP10980
1404	4040	0086	1099	LCORE32	STH R4,X'86'	REG SAVE POINTER	CLP10990
1408	C840	1008	1100	LHI	R4,PSWSAVE	PPF PSW SAVE AREA	CLP11000
140C	4040	0084	1101	STH	R4,X'84'	POINTNER	CLP11010
1410	C830	15A2	1102	LHI	R3,RP		CLP11020
1414	4030	0096	1103	STH	R3,X'96'	RELOC/PROTECT INT NEW PSW LOC	CLP11030
1418	D310	165A	1104	LB	R1,COMADR	LOAD CONSOLE I/O ADDRESS	CLP11040
141C	0A11		1105	AAR	R1,R1		CLP11050
141E	C800	143C	1106	LHI	R0,KBINT0	R0 = A(KEYBOARD INT HANDLER)	CLP11060
1422	4001	00D0	1107	STH	R0,X'D0'(R1)	STORE @ X'D0'+2(KB DEV ADR)	CLP11070
1426	0711		1108	XAR	R1,R1	TO SET UP SERVICE POINTER TABLE	CLP11080
1428	C830	14DA	1109	LHI	R3,XI32		CLP11090
142C	4821	1C44	1110	LCORE32A	LH R2,DEVSADR(R1)	GET DEV ADR FROM TABLE	CLP11100
1430	021F		1111	BMR	LINK	DONE. RETURN	CLP11110
1432	0A22		1112	AAR	R2,R2		CLP11120
1434	4032	00D0	1113	STH	R3,X'D0'(R2)	STORE @ X'D0'+2(DEV ADR)	CLP11130
1438	2612		1114	AIS	R1,2		CLP11140
143A	2207		1115	SS	LCORE32A		CLP11150
			1116	*			CLP11160
			1117	*	KEYBOARD INTERRUPT HANDLER		CLP11170
			1118	*			CLP11180
143C	0300	0A10	1119	KBINT0	LB R0,I0	GET CONSOLE ADDRESS	CLP11190
1440	C330	0020	1120	THI	R3,X'20'	IS BREAK KEY DEPRESSED ?	CLP11200
1444	4330	1488	1121	BZ	KBINT1	NO	CLP11210
1448	C500	0005	1122	CLHI	R0,5	IS IT MICROBUS ?	CLP11220
144C	4230	1468	1123	BNE	KBINT08	NO, BRANCH	CLP11230
1450	DE20	1666	1124	OC	R2,MREADC	YES, ISSUE READ	CLP11240
1454	9D23		1125	SSR	R2,R3		CLP11250
1456	2081		1126	BTBS	8,1		CLP11260
1458	9B24		1127	KBINTOC	RDR R2,R4	KNOCK DOWN BREAK	CLP11270

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145A	9023	1128	SSR	R2,R3		CLP11280	
145C	C330 0020	1129	THI	R3,X'20'	BREAK STILL THERE ?	CLP11290	
1460	4230 1458	1130	BNZ	KBINT0C	YES, KNOCK IT DOWN AGAIN	CLP11300	
1464	4300 12F4	1131	B	TSTBRK2	NO, GO TO COMMAND MODE	CLP11310	
	0000 1468	1132	KBINT0B	EQU	*	CLP11320	
1468	4850 1656	1133	LH	R5,PASFLG	CONSOLE ON PASLA ?	CLP11330	
146C	2339	1134	BZS	KBINT0A	BRANCH IF NO.	CLP11340	
146E	9824	1135	ROR	R2,R4		CLP11350	
1470	9023	1136	SSR	R2,R3		CLP11360	
1472	2281	1137	BFBS	8,1		CLP11370	
1474	0844	1138	LDAR	R4,R4		CLP11380	
1476	4230 14BA	1139	BNZ	RETOPSW	IGNORE FRERR ONLY	CLP11390	
147A	4300 0AE6	1140	B	OPTIN		CLP11400	
147E	9023	1141	KBINT0A	SSR	R2,R3	CLP11410	
1480	C330 0020	1142	THI	R3,X'20'		CLP11420	
1484	2033	1143	BTBS	3,3	WAIT FOR BREAK RELEASE	CLP11430	
1486	2206	1144	BS	KBINT00	GO TO COMMAND MODE	CLP11440	
	0000 1488	1145	KBINT1	EQU	*	CLP11450	
1488	C500 0005	1146	CLHI	R0,5	IS IT MICROBUS ?	CLP11460	
148C	4230 1498	1147	BNE	KRINT3	NO, BRANCH	CLP11470	
1490	DE20 1667	1148	OC	R2,MREADC+1	READ COMMAND TO MICROBUS	CLP11480	
1494	4300 14BA	1149	B	RETOPSW	RETURN	CLP11490	
	0000 1498	1150	KBINT3	EQU	*	CLP11500	
1498	4020 1650	1151	STH	R2,INTDEV		CLP11510	
149C	0230 1652	1152	STB	R3,INTSTA		CLP11520	
14A0		1153	IFZ	ADC-2		CLP11530	
14A0	4840 1642	1154	LH	R4,M0032		CLP11540	
14A4	2335	1155	BZS	KBINT2		CLP11550	
14A6		1156	ENDC			CLP11560	
14A6	4000 164A	1157	STH	R0,OPSW	STORE OLD PSW OF 32-BIT PROCESSOR	CLP11570	
14AA	4010 164E	1158	STH	R1,0LOC	IN ORDER TO RETURN BACK TO TEST	CLP11580	
14AE	9824	1159	KBINT2	ROR	R2,R4	CLP11590	
14B0	41F0 126C	1160	BAL	LINK,ECHO	ECHO RECEIVED BYTE	CLP11600	
14B4	4890 167A	1161	LH	R9,KBINT	IF ZERO,IGNORE; ELSE	CLP11610	
14B8	0239	1162	BNZR	R9	GO,PROCESS KB INT FURTHER	CLP11620	
		1163	*	-----		CLP11630	
		1164	*	TO RETURN ON OLD PSW		CLP11640	
		1165	*			CLP11650	
	0000 14BA	1166	RETOPSW	EQU	*	CLP11660	
14BA		1167	IFZ	ADC-2		CLP11670	
14BA	4890 1642	1168	LH	R9,M0032		CLP11680	
14BE	2135	1169	BNZS	RETOPSW1		CLP11690	
14C0	0100 1090	1170	LM	R0,INTSAV	RESTORE REGISTERS	CLP11700	
14C4	C200 0040	1171	LPSW	X'40'	RETURN ON OLD PSW AFTER KB INT	CLP11710	
14C8		1172	ENDC			CLP11720	
14CA	C200 1648	1173	RETOPSW1	LPSW	OPSW32	CLP11730	
		1174	*	*****		CLP11740	
		1175	*	EXTERNAL INTERRUPT HANDLER		CLP11750	
14CC		1176	IFZ	ADC-2		CLP11760	
14CC	0000 1090	1177	XI16	STM	R0,INTSAV	FOR 16-BIT PROCESSOR	CLP11770
14D0	9F23	1178	ACKR	R2,R3	ACKNOWLEDGE THE INTERRUPT	CLP11780	
14D2	0420 165A	1179	CLB	R2,CONADR	FROM KEYBOARD DEVICE ?	CLP11790	
14D6	4330 143C	1180	BE	KBINT0		CLP11800	
14DA		1181	ENDC			CLP11810	



## EXLC - ETPE R03P3

	0000 1564	1236	XIEXIT	EQU	*-2		CLP12360
		1237	*	-----			CLP12370
		1238	*	EXTERNAL INTERRUPT ERROR ROUTINE			CLP12380
		1239	*				CLP12390
1566	C860 4634	1240	XIERR	LHI	R6,C'F4'	ERROR # F4	CLP12400
156A	4060 168E	1241		STH	R6,ERRNO		CLP12410
156E	41F0 0F4A	1242		BAL	LINK,ERRALL	'ERROR XXF4', 'DEV DDD STA SS'	CLP12420
		1243	*			'PSW PPPP LOC LLLL'	CLP12430
1572	4300 0AEA	1244		B	OPTIN1	TO ENTER COMMAND MODE	CLP12440
		1245	*	-----			CLP12450
		1246	*	DEVICE INTERRUPTED IN WRONG INTERRUPT LEVEL			CLP12460
		1247	*				CLP12470
1576	C860 4636	1248	LVLERR	LHI	R6,C'F6'	ERROR # F6	CLP12480
157A	4060 168E	1249		STH	R6,ERRNO		CLP12490
157E	03AA 169C	1250		LB	R10,HEXTAB(R10)	CONVERT TO ASCII	CLP12500
1582	02A0 1720	1251		STB	R10,ERRLVL	AND STORE ERROR LEVEL IN MESSAGE	CLP12510
1586	41F0 0F4A	1252		BAL	LINK,ERRALL	'ERROR XXF6', 'DEV DDD STA SS'	CLP12520
		1253	*			'PSW PPPP LOC LLLL'	CLP12530
158A	C850 170A	1254		LHI	R5,INTLVLH		CLP12540
158E	4050 167E	1255		STH	R5,ISITERR	SET FLAG TO OVERRIDE NOMSG OPTION	CLP12550
1592	41F0 1154	1256		BAL	LINK,PRINT	'INTERRUPTED IN LEVEL N'	CLP12560
1596	4300 0AEA	1257		B	OPTIN1	ENTER COMMAND MODE.	CLP12570
		1258	*	-----			CLP12580
		1259	*	SPURIOUS INTERRUPT HANDLERS			CLP12590
		1260	*				CLP12600
		1261	*				CLP12610
159A		1262		IFZ	ADC-2		CLP12620
		1263	*	FLOATING-PT ARITH FAULT INT TRAP (16 BIT PROCESSOR)			CLP12630
		1264	*				CLP12640
159A	48E0 0028	1265	FP	LH	R14,X'28'	OLD PSW (16-BIT PROCESSOR)	CLP12650
159E	48F0 002A	1266		LH	R15,X'2A'	OLD LOC	CLP12660
15A2		1267		ENDC			CLP12670
		1268	*				CLP12680
		1269	*	RELOCATION/PROTECTION INT TRAP			CLP12690
		1270	*				CLP12700
15A2	C820 4635	1271	RP	LHI	R2,C'F5'		CLP12710
15A6	4020 168E	1272		STH	R2,ERRNO	SET ERROR # F5	CLP12720
15AA	230C	1273		BS	COMM		CLP12730
		1274	*				CLP12740
		1275	*	ARITHMETIC FAULT INT (32-BIT PROCESSOR) TRAP			CLP12750
15AC		1276		IFZ	ADC-2		CLP12760
		1277	*	FIXED-PT DIVIDE FAULT INT (16-BIT PROCESSOR) TRAP			CLP12770
15AC		1278		ENDC			CLP12780
		1279	*				CLP12790
15AC	C820 4631	1280	AF	LHI	R2,C'F1'		CLP12800
15B0	4020 168E	1281		STH	R2,ERRNO	SET ERROR # F1	CLP12810
15B4		1282		IFZ	ADC-2		CLP12820
15B4	4820 1642	1283		LH	R2,M0032		CLP12830
15B8	2135	1284		BNZS	COMM		CLP12840
15BA	48E0 0048	1285		LH	R14,X'48'	OLD PSW (16-BIT PROCESSOR)	CLP12850
15BE	48F0 004A	1286		LH	R15,X'4A'	OLD LOC (16-BIT PROCESSOR)	CLP12860
15C2		1287		ENDC			CLP12870
15C2	40E0 164A	1288	COMM	STH	R14,OPSW		CLP12880
15C6	40F0 164E	1289		STH	R15,OLOC		CLP12890

## EXEC - ETPE R03P3

15CA	4800	0A24	1290	COMM1	LH	R0+PSW2		CLP12980
15CE	9520		1291		EPSR	R2,R0	NO INT. , REG SET 15	CLP12910
15D0	41F0	0ED8	1292		BAL	LINK,ERR	PRINT 'ERROR XXFN'	CLP12920
15D4	40F0	167E	1293		STH	LINK,ISITERR	FORCE PRINT	CLP12930
15D8	41E0	100C	1294		BAL	RET,ERRPL1	PRINT 'PSW PPPP LOC LLLL'	CLP12940
15DC	4300	0AEA	1295		B	OPTIN1	ENTER COMMAND MODE	CLP12950
			1296	*				CLP12960
			1297	*				CLP12970
			1298	*				CLP12980
			1299	II	LHI	R2,C'F2'		CLP12990
15E0	C620	4632	1300		STH	R2,ERRNO	SET ERROR # F2	CLP13000
15E4	4020	16BE	1301		IFZ	ADC-2		CLP13010
15E8	4820	1642	1302		LH	R2,MOD32		CLP13020
15EC	2135		1303		BNZS	II32		CLP13030
15EE	48E0	0030	1304		LH	R14,X'30'	OLD PSW	CLP13040
15F2	48F0	0032	1305		LH	R15,X'32'	OLD LOC	CLP13050
15F6			1306		ENDC			CLP13060
15F6	4300	15C2	1307	II32	B	COMM		CLP13070
			1308	*				CLP13080
			1309	*				CLP13090
			1310	*				CLP13100
15FA	95AA		1311	MM	EPSR	R10,R10	CAPTURE MMINT PSW	CLP13110
15FC	C820	4633	1312		LHI	R2,C'F3'		CLP13120
1600	4020	16BE	1313		STH	R2,ERRNO	SET ERROR # F3	CLP13130
1604	48E0	0022	1314		LH	R14,X'22'	OLD PSW ( 32-BIT PROCESSOR)	CLP13140
1608	48F0	0026	1315		LH	R15,X'26'	OLD LOC	CLP13150
160C			1316		IFZ	ADC-2		CLP13160
160C	4820	1642	1317		LH	R2,MOD32		CLP13170
1610	2135		1318		BNZS	MM32		CLP13180
1612	48E0	0038	1319		LH	R14,X'38'	OLD PSW (16 BIT PROCESSOR)	CLP13190
1616	48F0	003A	1320		LH	R15,X'3A'	OLD LOC	CLP13200
161A			1321		ENDC			CLP13210
161A	C4E0	FFF0	1322	MM32	NHI	R14,X'FFF0'		CLP13220
161E	C4A0	000F	1323		NHI	R10,X'000F'		CLP13230
1622	06EA		1324		OAR	R14,R10		CLP13240
1624	40E0	164A	1325		STH	R14,OPSW		CLP13250
1628	40F0	164E	1326		STH	R15,OLOC		CLP13260
162C			1327		IFZ	ADC-2		CLP13270
162C	C810	7FFF	1328		LHI	R1,X'7FFF'		CLP13280
1630	2711		1329	MM16	SIS	R1,1		CLP13290
1632	2021		1330		BPS	MM16		CLP13300
1634			1331		ENDC			CLP13310
1634	C800	080F	1332		LHI	R0,X'080F'		CLP13320
1638	9104		1333		SLHLS	R0,4	R0 = X'80F0'	CLP13330
163A	9520		1334		EPSR	R2,R0	HALT PROCESSOR	CLP13340
			1335	*				CLP13350
			1336	*				CLP13360
			1337	*				CLP13370
			1338	*				CLP13380
163C	4300	15CA	1339	*	B	COMM1		CLP13390
			1340	*				CLP13400
			1341	*				CLP13410
1640	0000		1342	FIRST	DCX	0		CLP13420
1642	0000		1343	MOD32	DCX	0	FLAG FOR 32-BIT M/C(NON-ZERO)	CLP13430

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1644	0000	1344	INTPSW	DCX	0	(FOR 32-BIT M/C ONLY)	CLP13440	
1648		1345		ALIGN	8		CLP13450	
		1346	*-----*					CLP13460
1648	0000	1347	OPSW32	DCX	0	OLD PSW STORAGE AREA	CLP13470	
164A	0000	1348	OPSW	DCX	0		CLP13480	
164C	0000	1349		DCX	0		CLP13490	
164E	0000	1350	OLOC	DCX	0		CLP13500	
		1351	*-----*					CLP13510
1650	0000	1352	INTDEV	DCX	0	INTERRUPTING DEV ADR	CLP13520	
	0000 1650	1353	ERRDEV	EQU	INTDEV	ERROR DEVICE #	CLP13530	
1652	00	1354	INTSTA	DB	0	INTERRUPTING DEV STATUS	CLP13540	
	0000 1652	1355	ERRSTA	EQU	INTSTA	ERRONEOUS STATUS	CLP13550	
1653	00	1356	SINK	DB	0	BIT BUCKET	CLP13560	
1654	80	1357	NORM	DB	X'80'		CLP13570	
1655	40	1358	INCR	DB	X'40'		CLP13580	
1656		1359		DB	*		CLP13590	
1656	0000	1360	PASFLG	DCX	0	SET WHEN CONSOLE ON PASLA/PALM	CLP13600	
1658	0000	1361	PASFLG2	DCX	0	SET WHEN LIST DEVICE ON PASLA	CLP13610	
		1362	*-----*					CLP13620
		1363	* ETPE IO COMMANDS					CLP13630
		1364	*					CLP13640
165A	0000	1365	CONADR	DCX	0	CONSOLE DEVICE ADDRESS	CLP13650	
		1366	*					CLP13660
165C	0000	1367	CONRD	DCX	0	CONSOLE READ/WRITE COMMANDS	CLP13670	
	0000 165D	1368	CONWRT	EQU	CONRD+1		CLP13680	
165E	B9AB	1369	CRTRD	DCX	B9AB	FOR CRT	CLP13690	
1660	A4D8	1370	CLIFRD	DCX	A4D8	* CURRENT LOOP INTERFACE	CLP13700	
1662	0080	1371	LPWRT	DCX	0080	* LINE PRINTER	CLP13710	
1664	A9AB	1372	CARRD	DCX	A9AB	* CAROUSEL 300	CLP13720	
1666	8202	1373	MREADC	DCX	8202	* MICROBUS	CLP13730	
		1374	*					CLP13740
1668	0000	1375	CON2ND	DCX	0	2ND COMMAND: ENABLE READ COMMAND	CLP13750	
	0000 1669	1376	CONENRD	EQU	CON2ND+1		CLP13760	
166A	F879	1377	CRT2ND	DCX	F879	FOR CRT	CLP13770	
166C	0064	1378	CLIF2ND	DCX	0064	* CURRENT LOOP INTERFACE	CLP13780	
166E	0000	1379		DCX	0	* DUMMY HW FOR LP	CLP13790	
1670	F069	1380	CAR2ND	DCX	F069	* CAROUSEL 300	CLP13800	
1672	9292	1381		DCX	9292	* DUMMY HW FOR MICROBUS	CLP13810	
		1382	*					CLP13820
1674	00	1383	CONRQ2S	DB	0	CONSOLE REQUEST TO SEND CMD	CLP13830	
1675	3B	1384	CRTRQ2S	DB	X'3B'	FOR CRT	CLP13840	
1676	00	1385		DB	0	* DUMMY BYTE FOR CLI	CLP13850	
1677	00	1386		DB	0	* DUMMY BYTE FOR LP	CLP13860	
1678	23	1387	CARRQ2S	DB	X'23'	* CAROUSEL 300	CLP13870	
1679	00	1388		DB	0	* DUMMY BYTE FOR MICROBUS	CLP13880	
167A		1389		DB	*		CLP13890	
		1390	*-----*					CLP13900
167A	14BA	1391	KBINT	DC	Z(RETOPSW)	KEYBOARD INT RETURN ADR	CLP13910	
167C	0000	1392	BRKVECT	DC	Z(0)	BREAK KEY VECTOR	CLP13920	
167E	0000	1393	ISITERR	DCX	0		CLP13930	
1680	0000	1394	NOERR	DCX	0		CLP13940	
1682	0000	1395	SELTST	DCX	0	HIGHEST SELECTED TEST #	CLP13950	
1684	0000	1396	WASDU	DCX	0	1 IF KEYBOARD DEVICE WAS OFF	CLP13960	
1686	0000	1397	WASDU1	DCX	0	NON-ZERO IF TOTAL TOTERR TO PRINT	CLP13970	

## EXEC - ETPE R03P3

1688	0000	1398	TOTAL	DCX	0	# OF TIMES THE SELECTED TESTS RUN	CLP13980
168A	0000	1399	TOTERR	DCX	0	TOTAL ERRORS DETECTED WHILE DU	CLP13990
168C	0000	1400	BTESTNO	DCX	0	CURRENT TEST # IN BINARY	CLP14000
168E	0000	1401	COUNT	DCX	0		CLP14010
1690	0000	1402	NEXTST	DCX	0	NEXT TEST #	CLP14020
		1403	*				CLP14030
1692	0001	1404	DECTAB	DC	1,10,100,1000,10000		CLP14040
1694	000A						
1696	0064						
1698	03E8						
169A	2710						
169C	30313233	1405	HEXTAB	DB	C*0123456789ABCDEF*		CLP14050
	34353637						
	38394142						
	43444546						
		1406	*-----				CLP14060
		1407	* ETPE MESSAGES				CLP14070
		1408	*				CLP14080
16AC	54455354	1409	TSTMSG	DC	C*TEST **',X'0D00'		CLP14090
	20202A2A						
16B4	0D00						
	0000 16B2	1410	MTESTNO	EQU	*-4		CLP14100
16B6	4552524F	1411	ERRMSG	DC	C*ERROR ****',X'0D00'		CLP14110
	52202A2A						
	2A2A						
16C0	0D00						
	0000 16B8	1412	ETESTNO	EQU	*-6	STORED BY ETPE	CLP14120
	0000 16B6	1413	ERRNO	EQU	*-4	STORE ERRNO AS CHAR CONSTANT	CLP14130
16C2	544F5441	1414	TOTMSG	DC	C*TOTAL TOTERR',X'0D00'		CLP14140
	4C202020						
	544F5445						
	5252						
16D0	0D00						
16D2	4E4F2045	1415	NOERMSG	DC	C*NO ERROR',X'0D00'		CLP14150
	52524F52						
16DA	0D00						
16DC	44455620	1416	DEVMSG	DC	C*DEV *** STA **',X'0D00'		CLP14160
	2A2A2A20						
	53544120						
	2A2A						
16EA	0D00						
	0000 16E0	1417	ASCIDEV	EQU	*-12		CLP14170
	0000 16E4	1418	STAMSG	EQU	*-8		CLP14180
	0000 16E8	1419	ASCISTA	EQU	*-4		CLP14190
16EC	44455620	1420	DEVMSG2	DC	C*DEV ****',X'0D00'		CLP14200
	2A2A2A20						
16F4	0D00						
	0000 16F0	1421	ASCIDEV2	EQU	*-6		CLP14210
16F6	50535720	1422	PSWMSG	DC	C*PSW **** LOC ****',X'0D00'		CLP14220
	2A2A2A2A						
	20204C4F						
	43202A2A						
	2A2A						
1708	0D00						



EXEC - ETPE R03P3

	0000 16FA	1423	ASCIPSW	EQU	*-16	
	0000 1700	1424	LOCMSG	EQU	*-10	CLP14230
	0000 1704	1425	ASCILOC	EQU	*-6	CLP14240
170A	494E5445	1426	INTLVLM	DC	C*INTERRUPTED IN LEVEL **X*0000*	CLP14250
	52525550					CLP14260
	54454420					
	494E204C					
	4556454C					
	20202A20					
1722	0000					
	0000 1720	1427	ERRLVL	EQU	*-4	CLP14270
1724	454E4420	1428	EOTMSG	DC	C*END OF TEST*,X*0000*	CLP14280
	4F462054					
	45535420					
1730	0000					
1732	3F0D	1429	QMSG	DC	X*3F0D*	CLP14290
1734	2A0D	1430	AMSG	DC	X*2A0D*	CLP14300

EX=C - ETPE R03P3

		1432	*					CLP14320
		1433	*	OPTION/COMMAND TABLE				CLP14330
		1434	*					CLP14340
		1435	OPT	EQU	*			CLP14350
	0000 1736	1436	TEST	DC	C*TEST	' ,X'F000',X'0000',X'0000'		CLP14360
1736	54455354							
	2020							
173C	F000							
173E	0000							
1740	0000							
1742	44455641	1437	DEVADR	DC	C*DEVADR	' ,X'62',0,0		CLP14370
	4452							
1748	0062							
174A	0000							
174C	0000							
174E	4C4F4F50	1438	LOOP	DC	C*LOOP	' ,X'0000',X'0000',X'0000'		CLP14380
	2020							
1754	0000							
1756	0000							
1758	0000							
175A	434F4E54	1439	CONTIN	DC	C*CONTIN	' ,X'0000',Z(ZERONE),X'0000'		CLP14390
	494E							
1760	0000							
1762	0CA8							
1764	0000							
1766	4E4F4D53	1440	NOMSG	DC	C*NOMSG	' ,X'0000',Z(ZERONE),X'0000'		CLP14400
	4720							
176C	0000							
176E	0CA8							
1770	0000							
1772	494E544C	1441	INTLEV	DC	C*INTLEV	' ,X'0000',Z(LEVEL),X'0000'		CLP14410
	4556							
1778	0000							
177A	0CB8							
177C	0000							
177E	54494056	1442	TIMVAL	DC	C*TIMVAL	' ,X'0140',0,0	ETE13970	CLP14420
	414C							
1784	0140							
1786	0000							
1788	0000							
178A	48414C54	1443	HALT	DC	C*HALT	' ,0,0,0		CLP14430
	2020							
1790	0000							
1792	0000							
1794	0000							
1796	494E5452	1444	INTRPT	DC	C*INTRPT	' ,0,0,0		CLP14440
	5054							
179C	0000							
179E	0000							
17A0	0000							
17A2	52434841	1445	RCHAR	DC	C*RCHAR	' ,X'45',RCONTR,0		CLP14450
	5220							
17A8	0045							
17AA	17F8							
17AC	0000							

## EXEC - ETPE R03P3

17AE	<del>50414340</del> 4152	1446	PACHAR	DC	C*PACHAR',X*41',PACONTR,0	CLP14460
17B4	0041					
17B6	<del>1800</del>					
17B8	0000					
17BA	454F4C43 <del>4852</del>	1447	EOLCHR	DC	C'EOLCHR',X'0001',0,0	CLP14470
17C0	0001					
17C2	0000					
17C4	<del>0000</del>					
17C6	45585041 4E44	1448	EXPAND	DC	C*EXPAND',0,0,0	CLP14480
17CC	<del>0000</del>					
17CE	0000					
17D0	0000					
17D2	4C574944 5448	1449	LWIDTH	DC	C*LWIDTH',X*132',WIDCONTR,0 DECIMAL OPTION VALUE	CLP14490
17D8	0132					
17DA	180E					
17DC	0000					
	0000 17DE	1450	OPTEND2	EWU	*	CLP14500
	<del>0000 17DE</del>	1451	OPTEND	EQU	*	CLP14510
17DE	4F505449 4F4E	1452	OPTION	DC	C*OPTION',0,0,0	CLP14520
17E4	<del>0000</del>					
17E6	0000					
17E8	0000					
17EA	52554E20 2020	1453	RUN	DC	C*RUN',0,0,0	CLP14530
17F0	0000					
17F2	<del>0000</del>					
17F4	0000					
17F6	FFFF	1454		DC	-1	CLP14540
		1455	*		OPTION TABLE TERMINATOR	CLP14550

## EXEC - ETPE R03P3

	0000	0000	1457	WORK	EQU	0			CLP14570
	0000	0001	1458	VALUE	EQU	1			CLP14580
	0000	0003	1459	STAT	EQU	3			CLP14590
	0000	0004	1460	DEV	EQU	4			CLP14600
	0000	0005	1461	QFLG	EQU	5			CLP14610
	0000	0006	1462	CNT	EQU	6			CLP14620
	0000	0007	1463	INCRMT	EQU	7			CLP14630
	0000	0008	1464	LIMIT	EQU	8			CLP14640
	0000	0009	1465	DATA	EQU	9			CLP14650
	0000	000A	1466	CNT3	EQU	10			CLP14660
	0000	000B	1467	RTNA	EQU	11			CLP14670
	0000	000C	1468	CNT2	EQU	12			CLP14680
	0000	000D	1469	BUMP	EQU	13			CLP14690
	0000	000E	1470	LIMIT2	EQU	14			CLP14700
	0000	000F	1471	RTN	EQU	15			CLP14710
			1472	*					CLP14720
17F8	C560	0020	1473	RCONTR	CLHI	R6,X'20'	RCHAR = X'20' - X'7F'		CLP14730
17FC	028C		1474	BLR	R12				CLP14740
17FE	2304		1475	BS	PA				CLP14750
			1476	*					CLP14760
1800	C560	0040	1477	PACONTR	CLHI	R6,X'40'	PACHAR = X'40' - X'7F'		CLP14770
1804	028C		1478	BLR	R12				CLP14780
1806	C560	0080	1479	PA	CLHI	R6,X'80'			CLP14790
180A	038C		1480	BNLR	R12				CLP14800
180C	030F		1481	BR	LINK		RETURN TO ETPE		CLP14810
			1482	*					CLP14820
180E	C560	0002	1483	WIDCONTR	CLHI	R6,2	LWIDTH = 2 - 132 (DECIMAL ENTRY)		CLP14830
1812	028C		1484	BLR	R12				CLP14840
1814	C560	0133	1485	CLHI	R6,X'133'				CLP14850
1818	038C		1486	BNLR	R12				CLP14860
181A	41E0	1824	1487	BAL	RET,DECHEX		CONVERT OPTION ENTRY IN DECIMAL		CLP14870
			1488	*			DIGITS TO HEX VALUE IN R7		CLP14880
181E	4070	1C38	1489	STH	R7,LINWID		STORE LINE WIDTH IN HEX		CLP14890
1822	030F		1490	BR	LINK		RETURN TO ETPE		CLP14900
			1491	*					CLP14910
			1492	*					CLP14920
			1493	*			TO CONVERT OPTION ENTRY IN R6 IN DECIMAL DIGITS TO		CLP14930
			1494	*			HEX VALUE IN R7. NO REGISTERS DESTROYED.		CLP14940
			1495	*			IF NON-DECIMAL DIGIT IS ENTERED '?' IS LISTED		CLP14950
			1496	*					CLP14960
			1497	*					CLP14970
1824	D000	1D10	1498	DECHEX	STM	R0,RSAVE			CLP14980
1828	0826		1499	LHR	R2,R6				CLP14990
182A	C420	000F	1500	NHI	R2,X'F'		OUTPUT ' ? ' IF NON-DECIMAL		CLP15000
182E	C520	000A	1501	CLHI	R2,X'0A'				CLP15010
1832	4380	1870	1502	BNL	DECHEX2		DIGITS ARE ENTERED.		CLP15020
1836	0826		1503	LHR	R2,R6				CLP15030
1838	9024		1504	SRLS	R2,4				CLP15040
183A	C420	000F	1505	NHI	R2,X'F'				CLP15050
183E	C520	000A	1506	CLHI	R2,X'0A'				CLP15060
1842	4380	1870	1507	BNL	DECHEX2				CLP15070
			1508	*					CLP15080
1846	0846		1509	LHR	R4,R6				CLP15090
1848	9048		1510	SRLS	R4,8		R4 = 0 THRU 9		CLP15100



TEST0

```

1543 * CLP15430
1544 * * * * * CLP15440
1545 * CLP15450
1546 * T E S T 0 CLP15460
1547 * CLP15470
1548 * PURPOSE: CLP15480
1549 * TO VERIFY THE OPERATION OF THE DISABLE AND DISARM CLP15490
1550 * FUNCTION ON THE LINE PRINTER INTERFACE. CLP15500
1551 * CLP15510
1552 * DESIGN SPECIFICATIONS: CLP15520
1553 * THIS TEST FIRST ISSUES A DISARM CLP15530
1554 * COMMAND TO THE LINE PRINTER INTERFACE AND PERFORMS CLP15540
1555 * A PRINT OPERATION. IF AN INTERRUPT IS GENERATED CLP15550
1556 * AN ERROR MESSAGE IS PRINTED. IF NO INTERRUPT IS CLP15560
1557 * GENERATED THE DEVICE IS ENABLED TO INSURE THAT AN CLP15570
1558 * INTERRUPT WAS NOT QUEUED. IF AN INTERRUPT WAS CLP15580
1559 * QUEUED AN ERROR MESSAGE IS PRINTED. CLP15590
1560 * THEN TEST ISSUES A DISABLE COMMAND TO THE LINE CLP15600
1561 * PRINTER INTERFACE AND THEN PERFORMS A PRINT CLP15610
1562 * OPERATION. IF AN INTERRUPT IS GENERATED AN ERROR CLP15620
1563 * MESSAGE IS PRINTED. IF NO INTERRUPT IS GENERATED CLP15630
1564 * THE DEVICE IS ENABLED TO INSURE THAT AN INTERRUPT CLP15640
1565 * WAS QUEUED. IF NO INTERRUPT WAS QUEUED AN ERROR CLP15650
1566 * MESSAGE IS PRINTED. CLP15660
1567 * CLP15670
1568 * HOW TO RUN THE TEST: CLP15680
1569 * DEPRESS THE POWER PUSHBUTTON OF THE LINE PRINTER CLP15690
1570 * AND INSURE THAT THE DEVICE IS ON LINE. ENTER TEST 0 CLP15700
1571 * AND ANY OTHER OPTION INFORMATION DESIRED. THE TEST CLP15710
1572 * IS EXECUTED BY ENTERING THE RUN COMMAND. THE TEST CLP15720
1573 * PRINTS TWO LINES AND MAY BE TERMINATED CLP15730
1574 * BY THE USER AT ANY TIME BY DEPRESSING THE BREAK KEY CLP15740
1575 * CLP15750
1576 * OPTIONS: CLP15760
1577 * THE FOLLOWING OPTIONS ARE APPLICABLE TO THIS TEST. CLP15770
1578 * DEVADR,TEST,TIMVAL,CONTIN,NOMSG,LOOP,LWIDTH,EOLCHR CLP15780
1579 * CLP15790
1580 * ERROR: CLP15800
1581 * 0001, 0002, 0003, 0004, 0005, 0006, 0007, 0008, CLP15810
1582 * 0009, 0010, 0011, 0012, 0013, 0014, 0015, 00F1, CLP15820
1583 * 00F2, 00F3, 00F4, 00F5. CLP15830
1584 * CLP15840
1585 * * * * * CLP15850
1586 * CLP15860
1587 TEST0 BAL RET,SET2 SET UP FOR DEV ADR ETC. CLP15870
1588 LHI WORK,INT0 CLP15880
1589 STH WORK,DEVINT SET FOR DEVICE INT CLP15890
1590 XHR QFLG,QFLG RESET Q FLAG CLP15900
1591 LIS CNT2,1 SET CHAR COUNT CLP15910
1592 LIS BUMP,1 CLP15920
1593 BAL LINK,LWSET SET LINE WIDTH IN R14 CLP15930
1594 LB DATA,RCHAR+7 CLP15940
1595 LHI R2,STACHK CLP15950
1596 TOA BAL RTN,LDBUF LOAD BUFFER CLP15960
18A0 41E0 18A2
18A4 C800 1904
18A8 4000 1C48
18AC 0755
18AE 24C1
18B0 2401
18B2 41F0 1C10
18B6 D390 17A9
18BA C820 1A82
18BE 41F0 19FE

```

## TEST0

18C2	2202		1597	BS	T0A	TILL LINE FULL & PRINTED	CLP15970
18C4	41B0 1A82		1598	BAL	RTNA,STACHK	WAIT TILL LINE IS PRINTED	CLP15980
18C8	2451		1599	LIS	QFLG,1		CLP15990
18CA	0E40 1C4A		1600	OC	DEV,ENABLE	ENABLE DEV INT	CLP16000
18CE	4200 0000		1601	NOP			CLP16010
18D2	4200 0000		1602	NOP			CLP16020
18D6	<del>C800</del> 1914		1603	LHI	WORK,INT00		CLP16030
18DA	4000 1C48		1604	STH	WORK,DEVINT	SET FOR DEVICE INT	CLP16040
18DE	0755		1605	XHR	QFLG,QFLG		CLP16050
18E0	0E40 1C48		1606	OC	DEV,DISABL	DISABLE DEV INT	CLP16060
18E4	24C1		1607	LIS	CNT2,1	SET CHAR COUNT	CLP16070
18E6	D390 17A9		1608	LB	DATA,RCHAR+7		CLP16080
18EA	41F0 19FE		1609	BAL	RTN,LOBUF		CLP16090
18EE	2202		1610	BS	T0B	LOOP TILL LINE IS PRINTED	CLP16100
18F0	2451		1611	LIS	QFLG,1	SET Q FLAG	CLP16110
18F2	0E40 1C4A		1612	OC	DEV,ENABLE	ENABLE DEV INT	CLP16120
18F6	4200 0000		1613	NOP			CLP16130
18FA	4200 0000		1614	NOP			CLP16140
18FE	C800 3036		1615	LHI	WORK,C'06'	SET ERROR # 06	CLP16150
1902	2307		1616	BS	ERR04+4		CLP16160
1904	C800 3033		1617	LHI	WORK,C'03'	SET ERROR # 03	CLP16170
1908	0855		1618	LHR	QFLG,QFLG		CLP16180
190A	2133		1619	BNZS	ERR04+4		CLP16190
190C	C800 3034		1620	LHI	WORK,C'04'	ERROR # 04	CLP16200
1910	4300 1A66		1621	B	COMERR		CLP16210
1914	0855		1622	LHR	QFLG,QFLG	Q FLAG SET ?	CLP16220
1916	4230 0DEC		1623	BNZ	TSTEND	YES, EXIT TO ETPE	CLP16230
191A	C800 3035		1624	LHI	WORK,C'05'	ERROR # 05	CLP16240
191E	2207		1625	BS	ERR04+4		CLP16250

TEST1

```

1627 *
1628 * * * * *
1629 *
1630 *          T E S T 1
1631 *
1632 * PURPOSE:
1633 * TO ALLOW THE SERVICE ENGINEER TO MECHANICALLY
1634 * ADJUST THE PRINTER AND SEND ALL ASCII CHARACTERS
1635 * TO THE PRINTER.
1636 *
1637 * DESIGN SPECIFICATIONS:
1638 * THIS TEST SENDS ONE CHARACTER TO THE PRINTER
1639 * CONTINUOUSLY UNTIL THE END OF LINE CHARACTER IS
1640 * SENT. THE BUFFER IS PRINTED AND THE CYCLE REPEATS
1641 * UNTIL SIXTY LINES HAVE BEEN PRINTED. THE DEVICE
1642 * IS CONTINUOUSLY INTERROGATED THROUGHOUT THE TEST
1643 * FOR THE CORRECT STATUS AND MAY BE EXECUTED UNDER
1644 * INTERRUPT CONTROL IF DESIRED.
1645 *
1646 * HOW TO RUN THE TEST:
1647 * DEPRESS THE POWER PUSHBUTTON OF THE LINE PRINTER
1648 * AND INSURE THAT THE DEVICE IS ON LINE. ENTER TEST 1*
1649 * AND ANY OTHER OPTION INFORMATION DESIRED. THE TEST *
1650 * IS EXECUTED BY ENTERING THE RUN COMMAND. THE TEST *
1651 * WILL EXECUTE UNTIL 60 LINES HAVE BEEN OUTPUT OR *
1652 * UNTIL AN ERROR CONDITION EXISTS. THE TEST MAY BE *
1653 * TERMINATED BY THE USER AT ANY TIME BY DEPRESSING *
1654 * THE BREAK KEY ON CONSOLE. IF THE LINE PRINTER IS TO*
1655 * BE RUN UNDER INTERRUPT CONTROL THE INTRPT OPTION *
1656 * MUST BE SET EQUAL TO 1.
1657 *
1658 * OPTIONS:
1659 * THE FOLLOWING OPTIONS ARE APPLICABLE TO THIS TEST. *
1660 * DEVADR, TEST, TIMVAL, HALT, INTRPT, NOMSG, RCHAR, *
1661 * LWIDTH, EXPAND, EOLCHR, LOOP, AND CONTIN.
1662 *
1663 * ERROR:
1664 * 0101, 0102, 0104, 0107, 0108, 0109, 0110, 0111,
1665 * 0112, 0113, 0114, 0115, 01F1, 01F2, 01F3, 01F4,
1666 * 01F5.
1667 *
1668 * * * * *
1669 *
1920 41C0 1B58
1924 24C1
1926 0390 17A9
192A 41F0 19FE
192E 2202
1930 41F0 18C4
1934 4300 1924

1670 TEST1 BAL R12,SET SET FOR INT/SS,DEVADR,FF ETC.
1671 T1A LIS CNT2,1 SET CHARACTER COUNT
1672 LB DATA,RCHAR+7 GET CHARACTER TO BE PRINTED
1673 T1B BAL RTN,LDBUF LOAD BUFFER UNDER SS/INT CONTROL
1674 BS T1B LOOP TILL LINE IS PRINTED
1675 BAL LINK,CHKEND RETURN IF NOT DONE/EXE DEPRESSED
1676 B T1A LOOP FOR NEXT LINE
CLP16270
CLP16280
CLP16290
CLP16300
CLP16310
CLP16320
CLP16330
CLP16340
CLP16350
CLP16360
CLP16370
CLP16380
CLP16390
CLP16400
CLP16410
CLP16420
CLP16430
CLP16440
CLP16450
CLP16460
CLP16470
CLP16480
CLP16490
CLP16500
CLP16510
CLP16520
CLP16530
CLP16540
CLP16550
CLP16560
CLP16570
CLP16580
CLP16590
CLP16600
CLP16610
CLP16620
CLP16630
CLP16640
CLP16650
CLP16660
CLP16670
CLP16680
CLP16690
CLP16700
CLP16710
CLP16720
CLP16730
CLP16740
CLP16750
CLP16760

```



## TEST2

```

1678 *
1679 * * * * *
1680 *
1681 *           T E S T 2
1682 *
1683 * PURPOSE:
1684 * THIS TEST INSURES THAT EVERY CHARACTER FROM X'20'
1685 * TO X'7F' CAN BE PRINTED IN EVERY PRINT POSITION.
1686 *
1687 * DESIGN SPECIFICATIONS:
1688 * THIS TEST SENDS EACH CHARACTER FROM X'20' THROUGH
1689 * X'7E' TO THE PRINTER, WHEN THE CHARACTER X'7F' IS
1690 * DETECTED THE TEST ISSUES THE CHARACTERS FROM X'20'
1691 * AGAIN, WHEN AN END OF LINE CHARACTER IS DETECTED
1692 * THE BUFFER IS PRINTED AND THE CYCLE REPEATS UNTIL
1693 * 60 LINES HAVE BEEN PRINTED, EACH LINE STARTS WITH
1694 * THE VALUE THAT THE PREVIOUS LINE STARTED WITH PLUS
1695 * ONE (EX. X'20',X'21',X'22',ETC.), THE DEVICE IS
1696 * CONTINUOUSLY INTERROGATED THROUGHOUT THE TEST FOR
1697 * THE CORRECT STATUS AND MAY BE EXECUTED UNDER
1698 * INTERRUPT CONTROL.
1699 *
1700 * HOW TO RUN THE TEST:
1701 * DEPRESS THE POWER PUSHBUTTON OF THE LINE PRINTER
1702 * AND INSURE THAT THE DEVICE IS ON LINE, ENTER TEST 2*
1703 * AND ANY OTHER OPTION INFORMATION DESIRED, THE TEST *
1704 * IS EXECUTED BY ENTERING THE RUN COMMAND, THE TEST *
1705 * WILL EXECUTE UNTIL 60 LINES HAVE BEEN OUTPUT OR *
1706 * UNTIL AN ERROR CONDITION EXISTS, THE TEST MAY BE *
1707 * TERMINATED BY THE USER AT ANY TIME BY DEPRESSING *
1708 * THE BREAK KEY ON CONSOLE, IF THE LINE PRINTER IS TO*
1709 * BE RUN UNDER INTERRUPT CONTROL THE INTRPT OPTION *
1710 * MUST BE SET EQUAL TO 1.
1711 *
1712 * OPTIONS:
1713 * THE FOLLOWING OPTIONS ARE APPLICABLE TO THIS TEST, *
1714 * DEVADR, TEST, TIMVAL, HALT, INTRPT, NOMSG, LWIDTH, *
1715 * EXPAND, EOLCHR, LOOP AND CONTIN,
1716 *
1717 * ERROR:
1718 * 0201, 0202, 0204, 0207, 0208, 0209, 0210, 0211,
1719 * 0212, 0213, 0214, 0215, 02F1, 02F2, 02F3, 02F4,
1720 * 02F5.
1721 *
1722 * * * * *
1723 *
1938 41C0 1858
193C C800 0020
1940 D200 1C4D
1944 24C1
1946 D390 1C4D
194A 2691
194C C590 007F
1950 2183

1724 TEST2  BALS  R12,SET          SET FOR INT/SS,DEVADR,FF ETC.
1725      LHI  WORK,X'20'
1726      STB  WORK,CHAR1
1727 T2A    LIS  CNT2,1          SET CHARACTER COUNT
1728      LB   DATA,CHAR1      GET LAST CHAR
1729      AIS  DATA,1
1730      CLHI DATA,X'7F'
1731      BLS  T2B

```

```

CLP16780
CLP16790
CLP16800
CLP16810
CLP16820
CLP16830
CLP16840
CLP16850
CLP16860
CLP16870
CLP16880
CLP16890
CLP16900
CLP16910
CLP16920
CLP16930
CLP16940
CLP16950
CLP16960
CLP16970
CLP16980
CLP16990
CLP17000
CLP17010
CLP17020
CLP17030
CLP17040
CLP17050
CLP17060
CLP17070
CLP17080
CLP17090
CLP17100
CLP17110
CLP17120
CLP17130
CLP17140
CLP17150
CLP17160
CLP17170
CLP17180
CLP17190
CLP17200
CLP17210
CLP17220
CLP17230
CLP17240
CLP17250
CLP17260
CLP17270
CLP17280
CLP17290
CLP17300
CLP17310

```

## TEST2

1952	<del>C090</del> 0020	1732		LHI	DATA,X*20*	INITIALIZE TO SPACE	CLP17320
1956	D290 1C4D	1733	T2B	STB	DATA,CHAR1		CLP17330
195A	2307	1734		BS	T2D		CLP17340
195C	2691	1735	T2C	AIS	DATA,1	INCREMENT TO NEXT CHAR	CLP17350
195E	C590 007F	1736		CLHI	DATA,X*7F*		CLP17360
1962	2183	1737		BLS	T2D		CLP17370
1964	<del>C090</del> 0020	1738		LHI	DATA,X*20*		CLP17380
1968	41F0 19FE	1739	T2D	BAL	RTN,LDBUF	LOAD BUFFER UNDER SS/INT CONTROL	CLP17390
196C	2208	1740		BS	T2C	LOOP TILL LINE IS PRINTED	CLP17400
196E	41F0 1BC4	1741		BAL	LINK,CHKEND	RETURN IF NOT DONE/EXE DEPRESSED	CLP17410
1972	4300 1944	1742		B	T2A	LOOP FOR NEXT LINE	CLP17420

TEST3

```

1744 * * * * * CLP17440
1745 * * * * * CLP17450
1746 * * * * * CLP17460
1747 * * * * * CLP17470
1748 * * * * * CLP17480
1749 * * * * * CLP17490
1750 * * * * * CLP17500
1751 * * * * * CLP17510
1752 * * * * * CLP17520
1753 * * * * * CLP17530
1754 * * * * * CLP17540
1755 * * * * * CLP17550
1756 * * * * * CLP17560
1757 * * * * * CLP17570
1758 * * * * * CLP17580
1759 * * * * * CLP17590
1760 * * * * * CLP17600
1761 * * * * * CLP17610
1762 * * * * * CLP17620
1763 * * * * * CLP17630
1764 * * * * * CLP17640
1765 * * * * * CLP17650
1766 * * * * * CLP17660
1767 * * * * * CLP17670
1768 * * * * * CLP17680
1769 * * * * * CLP17690
1770 * * * * * CLP17700
1771 * * * * * CLP17710
1772 * * * * * CLP17720
1773 * * * * * CLP17730
1774 * * * * * CLP17740
1775 * * * * * CLP17750
1776 * * * * * CLP17760
1777 * * * * * CLP17770
1778 * * * * * CLP17780
1779 * * * * * CLP17790
1780 * * * * * CLP17800
1781 * * * * * CLP17810
1782 * * * * * CLP17820
1783 * * * * * CLP17830
1784 * * * * * CLP17840
1785 * * * * * CLP17850
1786 * * * * * CLP17860
1787 * * * * * CLP17870
1788 * * * * * CLP17880
1789 * * * * * CLP17890
1790 * * * * * CLP17900
1791 * * * * * CLP17910
1792 * * * * * CLP17920
1793 * * * * * CLP17930
1794 * * * * * CLP17940
1795 * * * * * CLP17950
1796 * * * * * CLP17960
1797 * * * * * CLP17970

TEST3
PURPOSE:
* TO TEST THE OPERATION OF THE INTERFACE AND PRINTER *
* WHEN CONTINUOUSLY PRESENTED WITH ALTERNATING DATA. *
DESIGN SPECIFICATIONS:
* THIS TEST SENDS THE BINARY CHARACTERS 01010101 *
* (=ASCII U) ALTERNATED WITH ITS COMPLEMENT 10101010 *
* (=ASCII *) TO THE PRINTER CONTINUOUSLY UNTIL THE *
* END OF LINE CHARACTER IS SENT. THE BUFFER IS *
* PRINTED AND THE CYCLE REPEATS UNTIL SIXTY LINES *
* HAVE BEEN PRINTED. THE DEVICE IS CONTINUOUSLY *
* INTERROGATED THROUGHOUT THE TEST FOR THE CORRECT *
* STATUS AND MAY BE EXECUTED UNDER INTERRUPT CONTROL *
* IF DESIRED. *
HOW TO RUN THE TEST:
* DEPRESS THE POWER PUSHBUTTON OF THE LINE PRINTER *
* AND INSURE THAT THE DEVICE IS ON LINE. ENTER TEST 3 *
* AND ANY OTHER OPTION INFORMATION DESIRED. THE TEST *
* IS EXECUTED BY ENTERING THE RUN COMMAND. THE TEST *
* WILL EXECUTE UNTIL 60 LINES HAVE BEEN OUTPUT OR *
* UNTIL AN ERROR CONDITION EXISTS. THE TEST MAY BE *
* TERMINATED BY THE USER AT ANY TIME BY DEPRESSING *
* THE BREAK KEY ON CONSOLE. IF THE LINE PRINTER IS TO *
* BE RUN UNDER INTERRUPT CONTROL THE INTRPT OPTION *
* MUST BE SET EQUAL TO 1. *
OPTIONS:
* THE FOLLOWING OPTIONS ARE APPLICABLE TO THIS TEST. *
* DEVAUR, TEST, TIMVAL, HALT, INTRPT, NOMSG, LWIDTH, *
* EXPAND, EOLCHR, LOOP AND CONTIN. *
ERROR:
* 0301, 0302, 0304, 0307, 0308, 0309, 0310, 0311, *
* 0312, 0313, 0314, 0315, 03F1, 03F2, 03F3, 03F4, *
* 03F5. *
1976 41C0 1858
197A C800 002A
197E 0200 1C4E
1982 24C1
1984 0390 1C4E
1988 C790 007F
198C 0290 1C4E
1990 2303
1992 C790 007F
1996 41F0 19FE
199A 2204

TEST3 BAL R12,SET SET FOR INT/SS,DEVADR,FF ETC.
LHI WORK,C**
1789 STB WORK,CHAR2
T3A LIS CNT2,1 SET CHARACTER COUNT
LB DATA,CHAR2 GET START CHAR OF LAST LINE
1792 XHI DATA,X'7F' CONVERT * TO U / U TO *
1793 STB DATA,CHAR2
1794 BS T3B+4
1795 T3B XHI DATA,X'7F' CONVERT * TO U / U TO *
1796 BAL RTN,LDBUF
1797 BS T3B LOOP TILL LINE BUFFER IS LOADED

```

TEST3

199C 41F0 18C4  
19A0 4300 1982

1798  
1799

BAL LINK+CHKEND  
8 T3A

RETURN IF NOT DONE/EXE DEPRESSED

CLPI7980  
CLPI7990

## TEST4

```

1801 * CLP18010
1802 * * * * * CLP18020
1803 * CLP18030
1804 * T E S T 4 CLP18040
1805 * CLP18050
1806 * PURPOSE: CLP18060
1807 * TO TEST THE PAPER ADVANCE COMMANDS AND VERTICAL CLP18070
1808 * FORMAT UNIT (DATA PRINTER LP ONLY) CLP18080
1809 * CLP18090
1810 * DESIGN SPECIFICATIONS: CLP18100
1811 * THE LINE PRINTER INTERFACE IS SENT THE CHARACTER CLP18110
1812 * X'2A' (*) FOLLOWED BY A X'0D' (CR) AND THE PAPER CLP18120
1813 * ADVANCE CHARACTER. THEN ANOTHER X'2A' (*) CLP18130
1814 * FOLLOWED BY A X'0A' (LF) IS ISSUED. CLP18140
1815 * CLP18150
1816 * HOW TO RUN THE TEST: CLP18160
1817 * DEPRESS THE POWER PUSHBUTTON OF THE LINE PRINTER CLP18170
1818 * AND INSURE THAT THE DEVICE IS ON LINE. ENTER TEST 4* CLP18180
1819 * AND ANY OTHER OPTION INFORMATION DESIRED. TEST IS CLP18190
1820 * EXECUTED BY ENTERING THE RUN COMMAND. TWO ASTERISKS* CLP18200
1821 * WILL BE PRINTED ON THE LINE PRINTER. THE DISTANCE CLP18210
1822 * BETWEEN THE ASTERISKS SHOULD BE EQUAL TO THE PAPER CLP18220
1823 * ADVANCE CHARACTER SPECIFIED. CLP18230
1824 * WHEN THE CHARACTERS X'78' THROUGH X'7F' ARE CLP18240
1825 * SPECIFIED BY THE PACHAR OPTION THE PAPER IS CLP18250
1826 * ADVANCED ACCORDING TO CHANNELS 1 TO 8 ON VERTICAL CLP18260
1827 * FORMAT TAPE. CLP18270
1828 * THIS TEST MAY BE TERMINATED BY THE USER AT ANY CLP18280
1829 * TIME BY DEPRESSING THE BREAK KEY. THIS TEST SHOULD CLP18290
1830 * BE EXECUTED ON THE 02-307 INTERFACE ONLY. CLP18300
1831 * CLP18310
1832 * OPTIONS: CLP18320
1833 * THE FOLLOWING OPTIONS ARE APPLICABLE TO THIS TEST. CLP18330
1834 * DEVADR,TEST,TIMVAL,NOMSG,PACHAR,LOOP & CONTIN. CLP18340
1835 * CLP18350
1836 * ERROR: CLP18360
1837 * 0401, 0404, 0407, 0408, 0409, 0410, 0411, 0412, CLP18370
1838 * 0413. CLP18380
1839 * CLP18390
1840 * * * * * CLP18400
1841 * CLP18410
1842 TFST4 BAL RET.SET2 SET FOR INT,DEVADR ETC. CLP18420
1843 BAL RTNA,STACHK RETURN IF GOOD STATUS CLP18430
1844 WD DEV,LF1 ONE LINE FEED CLP18440
1845 BAL RTNA,STACHK CLP18450
1846 WD DEV,STAR FIRST * CLP18460
1847 BAL RTNA,STACHK CLP18470
1848 WD DEV,CR CLP18480
1849 BAL RTNA,STACHK CLP18490
1850 WD DEV,PACHAR+7 PAPER ADVANCE CHARACTER CLP18500
1851 BAL RTNA,STACHK CLP18510
1852 WD DEV,STAR SECOND * CLP18520
1853 BAL RTNA,STACHK CLP18530
1854 WD DEV,LF1 LAST LINE FEED CLP18540
19A4 41E0 1BA2
19A8 41B0 1A82
19AC DA40 1C52
19B0 41B0 1A82
19B4 DA40 1C4F
19B8 41B0 1A82
19BC DA40 1C51
19C0 41B0 1A82
19C4 DA40 1785
19C8 41B0 1A82
19CC DA40 1C4F
19D0 41B0 1A82
19D4 DA40 1C52

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COMMON LINE PRINTER TEST 06-170M96R02A13

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TEST4

1908 4300 00EC

1855

B TSTEND

EXIT TO ETYPE

CLP18550

## TESTS

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1857 * CLP18570
1858 * * * * * CLP18580
1859 * * * * * CLP18590
1860 * T E S T 5 * CLP18600
1861 * * * * * CLP18610
1862 * PURPOSE: * CLP18620
1863 * THE WRITE BLOCK TEST IS USED TO TROUBLESHOOT THE * CLP18630
1864 * INTERFACE. * CLP18640
1865 * * * * * CLP18650
1866 * DESIGN SPECIFICATIONS: * CLP18660
1867 * THIS TEST LOADS THE 80 BYTE BUFFER WITH SPACES & * CLP18670
1868 * THEN CONTINUOUSLY OUTPUTS THE BUFFER TO THE LINE * CLP18680
1869 * PRINTER INTERFACE USING THE WRITE BLOCK INSTRUCTION* CLP18690
1870 * * * * * CLP18700
1871 * HOW TO RUN THE TEST: * CLP18710
1872 * DEPRESS THE POWER PUSHBUTTON OF THE LINE PRINTER * CLP18720
1873 * AND INSURE THAT THE DEVICE IS ON LINE. ENTER TEST 5* CLP18730
1874 * AND ANY OTHER OPTION INFORMATION DESIRED. THE TEST * CLP18740
1875 * WILL EXECUTE UNTIL THE BREAK IS DEPRESSED. * CLP18750
1876 * * * * * CLP18760
1877 * OPTIONS: * CLP18770
1878 * THE FOLLOWING OPTIONS ARE APPLICABLE TO THIS TEST. * CLP18780
1879 * DEVADR,TEST & NOMSG. * CLP18790
1880 * * * * * CLP18800
1881 * ERROR: * CLP18810
1882 * 0501, 0504, 05F1, 05F2, 05F3, 05F4, 05F5. * CLP18820
1883 * * * * * CLP18830
1884 * * * * * CLP18840
1885 * * * * * CLP18850
1886 TEST5 BAL RET,SET2 SET FOR INT, DEVADR ETC. CLP18860
1887 LHI DATA,X*20' CLP18870
1888 LHI CNT,BUFR CLP18880
1889 LIS INCRMT,1 CLP18890
1890 LHI LIMIT,BUFR+80 CLP18900
1891 T5A STB DATA,0(CNT) FILL 80 BYTE BUFFER CLP18910
1892 BXLE CNT,T5A CLP18920
1893 LHI INCRMT,BUFR SET WB START ADR CLP18930
1894 T5B WBR DEV,INCRMT WRITE BLOCK OF CHARACTERS CLP18940
1895 BS T5B LOOP TILL 'BREAK' DEPRESSED CLP18950

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190C 41E0 18A2
19E0 C890 0020
19E4 C860 1CB2
19E8 2471
19EA C880 1002
19EE 0296 0000
19F2 C160 19EE
19F6 C870 1CB2
19FA 9647
19FC 2201

```

## SUPPORT SUBROUTINES

```

1897 *
1898 * * * * *
1899 *
1900 *           L D B U F
1901 *
1902 * THIS ROUTINE LOADS THE LP BUFFER AND PRINTS A
1903 * LINE UNDER INTERRUPT CONTROL OR SENSE STATUS.
1904 *
1905 * ERRORS APPLICABLE TO THIS ROUTINE:
1906 * XXF4 = SPURIOUS EXTERNAL INTERRUPT.
1907 * XX04 = AN INTERRUPT WAS GENERATED BY THE LINE
1908 * PRINTER WHILE IT WAS DISARMED.
1909 * XX07 = BUSY FAILED TO GO LOW IN THE TIMEOUT PERIOD.
1910 * XX08 = DEVICE UNAVAILABLE.
1911 * XX09 = PAPER OUT CONDITION EXISTS.
1912 * XX10 = INTERLOCK CONDITION EXISTS.
1913 * XX11 = ONLY THE EX BIT SET.
1914 * XX12 = PAPER OUT DID NOT SET EX.
1915 * XX13 = INTERLOCK DID NOT SET EX.
1916 * XX14 = AN INVALID STATUS BIT WAS SET.
1917 * XX15 = RECEIVED AN INTERRUPT WHEN ONLY THE BUSY
1918 * BIT WAS SET.
1919 *
1920 * XX= NUMBER OF TEST BEING EXECUTED.
1921 *
1922 * * * * *
1923 *
1924 LDBUF  BALR  RTNA,R2      RETURN IF GOOD STATUS/INT
1925 WRT    WDR   DEV,DATA    WRITE CHARACTER IN LINE BUFFER
1926      BXLE  CNT2,RETRN    RETURN TO TEST UNTIL LINE IS FULL
1927      LH    WORK,EXPAND+6
1928      BZS  WRTEXP2        NO,WRITE END OF LINE CHAR
1929      LHI  DATA,X'0E'    YES,LOAD EXPCHR INTO LINE BUFFER
1930      BALR RTNA,R2        RETURN IF GOOD STATUS/INT
1931 WRTEXP WDR   DEV,DATA    WRITE TO LINE BUFFER
1932 WRTEXP2 BALR  RTNA,R2    RETURN IF GOOD STATUS/INT
1933 EOLSTA LB    DATA,EOLCHR+6 GET END OF LINE CHAR
1934      CLHI DATA,X'0D'    IS IT A CARRIAGE RETURN ?
1935      BNES EOL1           NO,GET SECOND EOL CHARACTER
1936      WDR  DEV,DATA        YES,WRITE EOL CHARACTER
1937      BALR RTNA,R2        RETURN IF GOOD STATUS/INT
1938 EOL1  LB    DATA,EOLCHR+7 SECOND EOL CHAR
1939      WDR  DEV,DATA        WRITE SECOND EOL CHARACTER
1940      B    2(RTN)         END OF LINE RETURN
1941 RETRN  BR    RTN         RETURN TO TEST FOR NEXT CHARACTER
1942 *-----*
1943 *
1944 * TO WAIT FOR PRINTER INTERRUPT
1945 *
1946 WAIT  LH    VALUE,TIMVAL+6 ESTABLISH TIMEOUT VALUE
1947      LIS  INCRMT,1        ESTABLISH INCREMENT VALUE
1948      LHI  LIMIT,X'7FFF'   SET BXLE LIMIT
1949      LHR  CNT3,CNT3       IS THIS FIRST LINE?
1950      BNZS WAIT2           NO WAIT FOR INTRPT

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CLP18970
CLP18980
CLP18990
CLP19000
CLP19010
CLP19020
CLP19030
CLP19040
CLP19050
CLP19060
CLP19070
CLP19080
CLP19090
CLP19100
CLP19110
CLP19120
CLP19130
CLP19140
CLP19150
CLP19160
CLP19170
CLP19180
CLP19190
CLP19200
CLP19210
CLP19220
CLP19230
CLP19240
CLP19250
CLP19260
CLP19270
CLP19280
CLP19290
CLP19300
CLP19310
CLP19320
CLP19330
CLP19340
CLP19350
CLP19360
CLP19370
CLP19380
CLP19390
CLP19400
CLP19410
CLP19420
CLP19430
CLP19440
CLP19450
CLP19460
CLP19470
CLP19480
CLP19490
CLP19500

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## SUPPORT SUBROUTINES

1A3E	C5C0	0001	1951	GLHI	CNT2+1	YES IS THIS FIRST CHAR?	CLP19510
1A42	2138		1952	BNES	WAIT2	NO WAIT FOR INTRPT	CLP19520
1A44	40B0	1C80	1953	STH	RTNA,TEMP	SAVE RTNA REGISTER	CLP19530
1A48	4180	1A82	1954	BAL	RTNA,STACHK	GO TO SENSE STATUS	CLP19540
1A4C	48B0	1C80	1955	LH	RTNA,TEMP	RESTORE RTNA REGISTER	CLP19550
1A50	9A47		1956	WDR	DEV,INCRMT	SEND INVALID CHAR TO GEN INTRPT	CLP19560
1A52	4890	0A22	1957	WAIT2	LH	WORK,PSW	GET INTRPT PSW
1A56	9550		1958	EPSR	QFLG,WORK	ENABLE INTRPT @PROC LEVEL	CLP19580
1A58	0766		1959	XHR	CNT,CNT	ZERO CNT REGISTER	CLP19590
1A5A	C160	1A5A	1960	BXLE	CNT**	WAIT FOR INTRPT	CLP19600
1A5E	2711		1961	SIS	VALUE,1	DECREMENT TIMEOUT VALUE	CLP19610
1A60	2037		1962	BNZS	WAIT2	LOOK AGAIN FOR INTRPT	CLP19620
1A62	C800	3032	1963	LHI	WORK,C*02'	SET ERROR 02	CLP19630
1A66	4000	16BE	1964	COMERR	STH	WORK,ERRNO	CLP19640
1A6A	41F0	0ED8	1965	BAL	LINK,ERR	'ERROR TTNN'	CLP19650
1A6E	4300	0DEC	1966	B	TSTEND		CLP19660
			1967				CLP19670
			1968				CLP19680
			1969			* TO CHECK STATUS @ INTERRUPT	CLP19690
			1970				CLP19700
1A72	4800	179C	1971	INT	LH	WORK,INTRPT+6	CLP19710
1A76	4330	190C	1972		BZ	ERR04	CLP19720
1A7A	D330	1652	1973		LB	STAT,INTSTA	CLP19730
1A7E	4300	1A94	1974		B	SENSE1	CLP19740
			1975				CLP19750
			1976				CLP19760
			1977			* TO SENSE & CHECK PRINTER STATUS	CLP19770
			1978				CLP19780
1A82	4810	1784	1979	STACHK	LH	VALUE,TIMVAL+6	CLP19790
1A86	2471		1980		LIS	INCRMT,1	CLP19800
1A88	C880	7FFF	1981		LHI	LIMIT,X*7FFF'	CLP19810
1A8C	0766		1982	ZROCNT	XHR	CNT,CNT	CLP19820
1A8E	9D43		1983	SENSE	SSR	DEV,STAT	CLP19830
1A90	D230	1652	1984		STB	STAT,ERRSTA	CLP19840
1A94	DE70	1C4A	1985	SENSE1	OC	INCRMT,ENABLE	CLP19850
1A98	0700		1986		XHR	WORK,WORK	CLP19860
1A9A	9A73		1987		WDR	INCRMT,STAT	CLP19870
1A9C	9A70		1988		WDR	INCRMT,WORK	CLP19880
1A9E	C330	00A2	1989		THI	STAT,X'A2'	CLP19890
1AA2	4230	1842	1990		BNZ	ERR14	CLP19900
1AA6	C330	0001	1991		THI	STAT,1	CLP19910
1AAA	4230	1AE6	1992		BNZ	DU	CLP19920
1AAE	C330	0004	1993		THI	STAT,4	CLP19930
1AB2	4230	1AFE	1994		BNZ	EX	CLP19940
1AB6	C330	0010	1995		THI	STAT,X*10'	CLP19950
1AB9A	4230	1816	1996		BNZ	INTLOC	CLP19960
1ABE	C330	0040	1997		THI	STAT,X*40'	CLP19970
1AC2	4230	1826	1998		BNZ	PAPOUT	CLP19980
1AC6	C330	0008	1999		THI	STAT,8	CLP19990
1ACA	0338		2000		BZR	RTNA	CLP20000
1ACC	4800	1C3A	2001		LH	WORK,INTRUN	CLP20010
1AD0	4230	1852	2002		BNZ	ERR15	CLP20020
1AD4	C160	1A8E	2003		BXLE	CNT,SENSE	CLP20030
1AD8	2711		2004		SIS	VALUE,1	CLP20040

## SUPPORT SUBROUTINES

1ADA	4230	1A8C	2005	BNZ	ZROCNT		CLP20050	
1ADE	C800	3037	2006	LHI	WORK,C'07'	SET ERRNO = 07	CLP20060	
1AE2	4300	1B46	2007	B	COMERR2		CLP20070	
			2008	*-----*				CLP20080
			2009	*				CLP20090
			2010	* ROUTINES TO PROCESS ERRONEOUS STATUS				CLP20100
			2011	*				CLP20110
1AE6	C330	0010	2012	DU	THI	STAT,X'10'	CLP20120	
1AEA	4230	1B16	2013	BNZ	INTLOC	INTERLOCK BIT IS SET	CLP20130	
1AEE	C330	0040	2014	THI	STAT,X'40'		CLP20140	
1AF2	4230	1B26	2015	BNZ	PAPOUT		CLP20150	
1AF6	C800	3038	2016	LHI	WORK,C'08'	NO,SET ERRNO = 08	CLP20160	
1AFA	4300	1B46	2017	B	COMERR2		CLP20170	
1AFE	C330	0010	2018	EX	THI	STAT,X'10'	CLP20180	
1B02	4230	1B3C	2019	BNZ	ERR10	INTLOC BIT IS SET	CLP20190	
1B06	C330	0040	2020	THI	STAT,X'40'		CLP20200	
1B0A	4230	1B36	2021	BNZ	ERR09		CLP20210	
1B0E	C800	3131	2022	LHI	WORK,C'11'	SET ERRNO = 11	CLP20220	
1B12	4300	1B46	2023	B	COMERR2		CLP20230	
1B16	C330	0004	2024	INTLOC	THI	STAT,4	CLP20240	
1B1A	4230	1B3C	2025	BNZ	ERR10		CLP20250	
1B1E	C800	3133	2026	LHI	WORK,C'13'	NO, SET ERRNO = 13	CLP20260	
1B22	4300	1B46	2027	B	COMERR2		CLP20270	
1B26	C330	0004	2028	PAPOUT	THI	STAT,4	CLP20280	
1B2A	4230	1B36	2029	BNZ	ERR09		CLP20290	
1B2E	C800	3132	2030	LHI	WORK,C'12'	NO,SET ERRNO = 12.	CLP20300	
1B32	4300	1B46	2031	B	COMERR2		CLP20310	
1B36	C800	3039	2032	ERR09	LHI	WORK,C'09'	CLP20320	
1B3A	2306		2033	BS	COMERR2	ERROR # TT09	CLP20330	
1B3C	C800	3130	2034	ERR10	LHI	WORK,C'10'	CLP20340	
1B40	2303		2035	BS	COMERR2	ERROR # TT10	CLP20350	
1B42	C800	3134	2036	ERR14	LHI	WORK,C'14'	CLP20360	
1B46	4000	168E	2037	COMERR2	STH	WORK,ERRNO	CLP20370	
1B4A	41F0	0F0A	2038	BAL	LINK,ERRS	'ERROR TTNM' & 'STA SS'	CLP20380	
1B4E	4300	0DEC	2039	B	TSTENJ	EXIT TEST	CLP20390	
1B52	C800	3135	2040	ERR15	LHI	WORK,C'15'	CLP20400	
1B56	2208		2041	BS	COMERR2	ERROR # 15	CLP20410	
			2042	*-----*				CLP20420
			2043	*				CLP20430
			2044	* TO SET UP FOR TEST 1, 2, & 3				CLP20440
			2045	*				CLP20450
1B58	C800	1A72	2046	SET	LHI	WORK,INT	CLP20460	
1B5C	4000	1C48	2047	STH	WORK,DEVINT	SET INT RETURN ADR	CLP20470	
1B60	41F0	135E	2048	BAL	LINK,KBRD		CLP20480	
1B64	4840	1748	2049	LH	DEV,DEVADR+6	GET DEVICE ADDRESS	CLP20490	
1B68	0E40	1C4C	2050	OC	DEV,DISARM		CLP20500	
1B6C	07AA		2051	XHR	CNT3,CNT3	ZERO LINE COUNT	CLP20510	
1B6E	40A0	1C3A	2052	STH	CNT3,INTRUN		CLP20520	
1B72	41B0	1A82	2053	BAL	RTNA,STACK	RETURN IF GOOD STATUS	CLP20530	
1B76	0A40	1C50	2054	WD	DEV,FF	FORM FEED	CLP20540	
1B7A	41B0	1A82	2055	BAL	RTNA,STACK		CLP20550	
1B7E	24D1		2056	LIS	BUMP,1	SET CHAR INCREMENT	CLP20560	
1B80	41F0	1C10	2057	BAL	LINK,LWSET	SET LINE WIDTH IN R14	CLP20570	
1B84	4800	0A24	2058	LH	WORK,PSW2		CLP20580	

## SUPPORT SUBROUTINES

1888	9550		2959	EPSR	QFLG,WORK	DISABLE INT @ PROCESSOR LEVEL	CLP20590	
188A	C820 1A82		2060	LHI	R2,STACHK	SET R2 FOR TEST UNDER SS	CLP20600	
188E	4800 179C		2061	LH	WORK,INTRPT+6	LOOK @ INTRPT OPTION	CLP20610	
1892	033C		2062	BZR	R12	RETURN TO TEST	CLP20620	
1894	4000 1C3A		2063	STH	WORK,INTRUN	SET FLAG	CLP20630	
1898	C820 1A30		2064	LHI	R2,WAIT	SET R2 FOR TEST UNDER INT	CLP20640	
189C	DE40 1C4A		2065	OC	DEV,ENABLE		CLP20650	
18A0	030C		2066	BR	R12	RETURN	CLP20660	
			2067	*-----*			CLP20670	
			2068	*			CLP20680	
			2069	* TO SET UP FOR TESTS 0, 4, & 5			CLP20690	
			2070	*			CLP20700	
18A2	C800 190C		2071	SET2	LHI	WORK,ERR04	CLP20710	
18A6	4000 1C48		2072	STH	WORK,DEVINT	SET FOR INT	CLP20720	
18AA	41F0 135E		2073	BAL	LINK,KBRD		CLP20730	
18AE	0700		2074	XHR	WORK,WORK		CLP20740	
18B0	4000 1C3A		2075	STH	WORK,INTRUN	RESET FLAG FOR RUN UNDER INT	CLP20750	
18B4	4840 1748		2076	LH	DEV,DEVADR+6	GET DEVICE ADDRESS	CLP20760	
18B8	DE40 1C4C		2077	OC	DEV,DISARM		CLP20770	
18BC	4800 0A22		2078	LH	WORK,PSW		CLP20780	
18C0	9550		2079	EPSR	QFLG,WORK	ENABLE INT @ PROCESSOR LEVEL	CLP20790	
18C2	030E		2080	BR	RET	RETURN TO TEST	CLP20800	
			2081	*-----*			CLP20810	
			2082	*			CLP20820	
			2083	* TO CHECK END OF TESTS 1, 2, & 3			CLP20830	
			2084	*			CLP20840	
18C4	26A1		2085	CHKEND	AIS	CNT3,1	CLP20850	
18C6	45A0 1C36		2086	CLH	CNT3,LINES	ALL LINES PRINTED ?	CLP20860	
18CA	4330 0DEC		2087	BE	TSTEND		CLP20870	
18CE	4800 1790		2088	CHKEND1	LH	WORK,HALT+6	LOOK AT HALT OPTION	CLP20880
18D2	4330 1C02		2089	BZ	CHKEND3		CLP20890	
18D6	40F0 1F18		2090	CHKEND2	STH	LINK,TRSAVE	SAVE RETURN REGISTER	CLP20900
18DA	41F0 135E		2091	BAL	LINK,KBRD	LOOK AT CONSOLE	CLP20910	
18DE	0300 165A		2092	LB	WORK,CONADR	GET CONSOLE ADDRESS	CLP20920	
18E2	0E00 1669		2093	OC	WORK,CONENRD	ENABLE CONSOLE AGAIN	CLP20930	
18E6	9009		2094	WAITLF	SSR	WORK,DATA	IS CONSOLE BSY?	CLP20940
18E8	2081		2095	BT&S	8,1	YES CHECK AGAIN	CLP20950	
18EA	0B00 1F1C		2096	RD	WORK,HLTSAVE	NO LOOK FOR LF KEY.	CLP20960	
18EE	0300 1F1C		2097	LB	WORK,HLTSAVE		CLP20970	
18F2	C700 000A		2098	XHI	WORK,X'0A'	WAS IT LF KEY?	CLP20980	
18F6	2038		2099	BNZS	WAITLF	NO LOOK AGAIN.	CLP20990	
18F8	2400		2100	LIS	WORK,X'0'		CLP21000	
18FA	D200 1F1C		2101	STB	WORK,HLTSAVE	CLEAR THE LF FLAG.	CLP21010	
18FE	48F0 1F18		2102	LH	LINK,TRSAVE	RESTORE RETURN REGISTER	CLP21020	
1C02	40F0 1F18		2103	CHKEND3	STH	LINK,TRSAVE	SAVE RETURN REGISTER	CLP21030
1C06	41F0 12A2		2104	BAL	R15,TSTBRK		CLP21040	
1COA	48F0 1F18		2105	LH	R15,TRSAVE		CLP21050	
	0000 1C0E		2106	CHKEND4	EQU	*	CLP21060	
1COE	030F		2107	BR	LINK		CLP21070	
			2108	*-----*			CLP21080	
			2109	*			CLP21090	
			2110	* TO SET # OF CHARACTER/LINE IN R14			CLP21100	
			2111	*			CLP21110	
1C10	48E0 1C38		2112	LWSET	LH	LIMIT2,LINWID	GET LINE WIDTH	CLP21120

## SUPPORT SUBROUTINES

1C14	4800 17CC	2113	LH	WORK,EXPAND+6	LOOK @ EXPAND OPTION	CLP21130	
1C18	033F	2114	BZR	LINK		CLP21140	
1C1A	90E1	2115	SRLS	LIMIT2,1		CLP21150	
1C1C	030F	2116	BR	LINK		CLP21160	
		2117	*-----*				CLP21170
		2118	*				CLP21180
		2119	* TO PRINT 'ERROR TT01' MESSAGE				CLP21190
		2120	*				CLP21200
1C1E	C800 3031	2121	ERR01	LHI	WORK,C'01'	SET ERROR # 01	
1C22	4000 168E	2122		STH	WORK,ERRNO		
1C26	4040 1650	2123		STH	DEV,ERRDEV		
1C2A	41F0 11D4	2124		BAL	LINK,CRLF		
1C2E	41F0 0EF6	2125		BAL	LINK,ERRD	PRINT 'ERROR TT01' & 'DEV ODD'	
1C32	4300 0AEA	2126		B	OPTIN1		
		2127	*-----*				CLP21260
		2128	*				CLP21270
		2129	* DATA CONSTANTS *				CLP21280
		2130	*				CLP21290
1C36	003C	2131	LINES	DC	60		
1C38	0084	2132	LINEWID	DC	132	LINE WIDTH IN HEX	
1C3A	0000	2133	INTRUN	DC	0		
1C3C	0005	2134	MAXTST	DC	5		
1C3E	F000	2135	DEFTSTS	DC	X'F000',0	TESTS 0,1,2,3	
1C40	0000						
1C42	0060	2136	INTLVL	DC	0	CLP21360	
1C44	0000	2137	DEVSADR	DC	0,-1	CLP21370	
1C46	FFFF						
1C48	0000	2138	DEVINT	DC	0	CLP21380	
		2139	*				CLP21390
1C4A	40	2140	ENABLE	DB	X'40'	CLP21400	
1C4B	80	2141	DISABL	DB	X'80'	CLP21410	
1C4C	C0	2142	DISARM	DB	X'C0'	CLP21420	
1C4D	20	2143	CHAR1	DB	X'20'	CHARACTER SAVE AREA TEST 2	
1C4E	2A	2144	CHAR2	DB	X'2A'	CHARACTER SAVE AREA TEST 3	
1C4F	2A	2145	STAR	DB	X'2A'	CLP21450	
1C50	0C	2146	FF	DB	X'0C'	CLP21460	
1C51	0D	2147	CR	DB	X'0D'	CLP21470	
1C52	0A	2148	LF1	DB	X'0A'	CLP21480	
1C53	00060C12	2149	CONST	DB	0,6,12,18,24,30,36,42,48,54	CLP21490	
	181E242A						
	3036						
1C5E	0000	2150	CONSTT	DC	0,156,312,468,624,780,936,1092,1248,1404	CLP21500	
1C60	009C						
1C62	0138						
1C64	01D4						
1C66	0270						
1C68	030C						
1C6A	03A8						
1C6C	0444						
1C6E	04E0						
1C70	057C						
1C72	18A0	2151	TESTS	DC	TEST0,TEST1,TEST2,TEST3,TEST4,TEST5	CLP21510	
1C74	1920						
1C76	1938						

## SUPPORT SUBROUTINES

1C78	1976							
1C7A	19A4							
1C7C	19DC							
1C7E	434F4040	2152	TITLE	DC	C'COMMON LINE PRINTER TEST 06-170R02	'X'0000'		CLP21520
	4F4E204C							
	494E4520							
	5052494E							
	54455220							
	54455354							
	20303620							
	31373052							
	30322020							
	20202020							
1CA6	0D00							
	0000 1CA7	2153	*					CLP21530
		2154	LNZB	EQU	*-1	LAST BYTE OF TEST PROGRAM		CLP21540
		2155	*					CLP21550
		2156	*					CLP21560
		2157	* STORAGE AREAS					CLP21570
		2158	*					CLP21580
		2159	*					CLP21590
1CA8		2160	IF1	IF	1			CLP21600
1CA8		2161		ALIGN	4			CLP21610
1CA8		2162	OPTBUF	DS	6			CLP21620
1CAE		2163	IQSAVE	DS	2			CLP21630
1CB0		2164	TEMP	DS	2			CLP21640
1CR2		2165	BUFR	DS	80			CLP21650
1D02		2166	TEMP2	DS	2			CLP21660
1D08		2167		ALIGN	8			CLP21670
1D08	0000 0000	2168	PSWSAVE	DCY	0,0			CLP21680
1D0C	0000 0000							
1D10		2169	RSAVE	DS	128			CLP21690
1D90		2170	INTSAV	DS	64			CLP21700
1DD0		2171	ERRSAVE	DS	64			CLP21710
1E10		2172		DS	264			CLP21720
1F18		2173	TRSAVE	DS	4			CLP21730
1F1C	00	2174	HLTSAVE	DB	0			CLP21740
1F1D	00	2175		DB	0			CLP21750
1F1E		2176		DS	60			CLP21760

## CHASUM/17 PUNCHER

1F5A	2400	2178	\$CHKSUM	LIS	R0,0		CLP21780
1F5C	9510	2179		EPSR	R1,R0		CLP21790
		2180	*				CLP21800
1F5E	C810 0A00	2181		LDAI	R1,ORIGIN1	START	CLP21810
1F62	2421	2182		LIS	R2,1	INCREMENT	CLP21820
1F64	C830 1CA7	2183		LDAI	R3,LNZB	FINAL	CLP21830
1F68	2440	2184		LIS	R4,0	CHECKSUM BYTE	CLP21840
1F6A	D351 0000	2185	\$GEN	LB	R5,0(R1)		CLP21850
1F6E	0745	2186		XAR	R4,R5		CLP21860
1F70	C110 1F6A	2187		BXLE	R1,\$GEN		CLP21870
1F74	D240 0097	2188		STB	R4,MN+3	CHECKSUM BYTE TO ROOT LOADER	CLP21880
		2189	*				CLP21890
1F78	C810 0080	2190	\$TAPE	LHI	R1,X'0080'		CLP21900
1F7C	9E21	2191		OCR	R2,R1	DISPLAY : NORMAL MODE	CLP21910
1F7E	9444	2192		EXBR	R4,R4		CLP21920
1F80	9824	2193		WHR	R2,R4	CHECKSUM BYTE TO D1	CLP21930
1F82	9411	2194		EXBR	R1,R1		CLP21940
1F84	9501	2195		EPSR	R0,R1	HALT PROCESSOR.	CLP21950
1F86	D360 007A	2197	\$PUNCH	LB	R6,X'7A'	GET BOUTOV (PUNCH) ADDRESS.	CLP21970
1F8A	DE60 007B	2198		OC	R6,X'7B'	START TAPE PUNCH	CLP21980
1F8E	9D60	2199		SSR	R6,R0		CLP21990
1F90	2081	2200		BTBS	8,1		CLP22000
1F92	41F0 1FD4	2201		BAL	R15,\$TAPL	PUNCH LEADER	CLP22010
1F96	9411	2202		EXBR	R1,R1	(R1) = X'0080'	CLP22020
1F98	C830 00CF	2203		LHI	R3,X'CF'		CLP22030
1F9C	DA61 0000	2204	\$PNCH1	WD	R6,0(R1)	PUNCH BOOT LOADER	CLP22040
1FA0	9D60	2205		SSR	R6,R0		CLP22050
1FA2	2081	2206		BTBS	8,1		CLP22060
1FA4	C110 1F9C	2207		BXLE	R1,\$PNCH1		CLP22070
1FA8	41F0 1FDA	2208		BAL	R15,\$TAPL1	PUNCH ONE-FOLD GAP.	CLP22080
		2209	*				CLP22090
1FAC	D340 0097	2210		LB	R4,MN+3	GET CHECKSUM BYTE	CLP22100
1FB0	C810 0A00	2211		LDAI	R1,ORIGIN1	(NORMALLY X'A00')	CLP22110
1FB4	C830 1CA7	2212		LDAI	R3,LNZB		CLP22120
1FB8	D351 0000	2213	\$PNCH2	LB	R5,0(R1)	PUNCH PROGRAM	CLP22130
1FB3	0745	2214		XAR	R4,R5		CLP22140
1FBE	9A65	2215		WDR	R6,R5		CLP22150
1FC0	9401	2216		EXBR	R0,R1		CLP22160
1FC2	9820	2217		WHR	R2,R0	DATA ADDRESS TO DISPLAY.	CLP22170
1FC4	9D60	2218		SSR	R6,R0		CLP22180
1FC6	2081	2219		BTBS	8,1		CLP22190
1FC8	C110 1F88	2220		BXLE	R1,\$PNCH2		CLP22200
1FCC	41F0 1FD4	2221		BAL	R15,\$TAPL	PUNCH TRAILER.	CLP22210
1FD0	4300 1F78	2222		B	\$TAPE	DISPLAY CHECKSUM, HALT PROCESSOR.	CLP22220
1FD4	C800 0100	2224	\$TAPL	LHI	R0,256	TO PUNCH BLANK LEADER	CLP22240
1F08	2303	2225		BS	\$TAPLP		CLP22250
1FDA	C800 0055	2226	\$TAPL1	LHI	R0,85	TO PUNCH 1-FOLD GAP	CLP22260
1FDE	2701	2227	\$TAPLP	SIS	R0,1		CLP22270
1FE0	032F	2228		BNPR	R15	RETURN	CLP22280
1FE2	2430	2229		LIS	R3,0		CLP22290

CHKSUM/17 PUNCHER

1FE4	9A63	2230	WDR	R6,R3	PUNCH-BLANK-FRAME	CLP22300
1FE6	9D68	2231	SSR	R6,R8		CLP22310
1FE8	2081	2232	BTBS	8,1		CLP22320
1FEA	2206	2233	BS	STAPLP	CONTINUE.	CLP22330
		2234	*			CLP22340
1FEC		2235	END			CLP22350







## CHKSUM/17 PUNCHER

ERRCOM1	0F7E	623																		
ERRCOM2	0EE4	593	598	603	609	615														
ERRD	0EF6	2125																		
ERRD1	0F9E	592																		
ERRDEV	1650	648	668	2123																
ERRDS	0F1E																			
ERRDS1	0FCE	602	613																	
ERRL	0F32																			
ERRL1	0FF4	608																		
ERRLVL	1720	1251																		
ERRMSG	16B6	640																		
ERRNO	16BE	445	1241	1249	1272	1281	1300	1313	1964	2037	2122									
ERRPL1	100C	614	1294																	
ERRS	0F0A	2038																		
ERRS1	0FB6	597																		
ERRSAVE	10D0	580	587	589	594	599	604	610												
ERRSTA	1652	658	672	1984																
ETESTNO	16BC	444	477																	
EX	1AFE	1994																		
EXPAND	17C6	1927	2113																	
FF	1C50	2054																		
FIRST	1640	286	293	297																
FOUND1	0D4A	422	428																	
FP	159A	1088																		
GETCHR	1254	227	339	705	714															
HALT	178A	2088																		
HALT9	0E8E	545	558	634																
HEXASC	10F4	475	650	660	670	674	684	694	697											
HEXASC1	10FE	801																		
HEXTAB	109C	303	707	757	797	822	1250													
HLTSAVE	1F1C	2096	2097	2101																
IF1	1CA8																			
II	15E0	1073																		
II32	15F6	1303																		
IMPTOP	0000R																			
INCR	1655	537																		
INCRMT	0007	1889	1893	1894	1947	1956	1980	1985	1987	1988										
INIT	1882	415																		
INITRET	0D26																			
INT	1A72	2046																		
INT0	1904	1588																		
INT00	1914	1603																		
INTCONTR	1876																			
INTDEV	1650	1151	1186	1203	1353															
INTLEV	1772																			
INTLOC	1B16	1996	2013																	
INTLVL	1C42	1224	1530																	
INTLVLM	170A	1254																		
INTPSW	1644	1185	1204																	
INTRPT	1796	1971	2061																	
INTRUN	1C3A	2001	2052	2063	2075															
INTSAV	1D90	1170	1177	1202	1234															
INTSTA	1652	1152	1187	1355	1973															
IO	0A10	165	166	174	175	181	187	332	412	969	1005	1019	1052	1119						







## CHKSUM/17 PUNCHER

		989	995	996	997	1005	1006	1007	1019	1020	1021	1027	1028	1029
		1033	1038	1039	1042	1043	1044	1052	1053	1062	1062	1063	1067	1069
		1071	1106	1107	1119	1122	1146	1157	1170	1177	1191	1194	1202	1232
		1234	1290	1291	1332	1333	1334	1498	1520	1523	2178	2179	2195	2199
R1	0001	2205	2216	2217	2218	2224	2226	2227						
		76	86	87	89	94	143	143	144	151	151	152	153	156
		165	168	170	174	185	186	187	189	191	193	194	215	226
		226	235	238	244	246	247	252	254	259	266	268	351	360
		364	420	421	426	427	442	443	444	445	470	484	485	488
		489	497	498	510	511	520	523	532	533	534	535	541	544
		551	552	553	620	621	629	630	631	632	648	658	668	672
		682	692	695	737	740	769	770	772	794	814	816	835	839
		843	866	867	895	897	902	903	904	906	910	913	914	916
		918	921	924	966	967	974	975	981	984	989	990	1003	1004
		1005	1006	1009	1010	1012	1012	1014	1020	1021	1022	1040	1049	1050
		1051	1052	1053	1059	1059	1063	1064	1065	1067	1068	1071	1072	1082
		1104	1105	1105	1107	1108	1108	1110	1114	1158	1192	1195	1201	1328
		1329	2179	2181	2185	2187	2190	2191	2194	2194	2195	2202	2202	2204
R10	000A	2207	2211	2213	2216	2220								
		1184	1184	1185	1204	1222	1223	1224	1250	1250	1251	1311	1311	1323
		1324												
R11	000B													
R12	000C	221	236	245	256	356	359	369	373	377	394	431	711	1474
		1478	1480	1484	1486	1524	1670	1724	1787	2062	2066			
R13	000D													
R14	000E	275	311	357	360	362	392	397	401	720	723	729	1265	1285
		1288	1304	1314	1319	1322	1324	1325						
R15	000F	207	227	362	368	372	376	417	418	605	705	706	707	
		709	713	714	758	785	888	901	992	994	1266	1286	1289	1305
		1315	1320	1326	2104	2105	2201	2208	2221	2228				
R2	0002	71	75	90	96	145	146	148	149	155	157	166	171	173
		175	176	180	181	182	189	190	191	192	199	199	200	214
		215	272	273	277	277	278	280	281	287	290	312	320	322
		324	329	346	347	456	459	460	467	469	470	471	472	474
		476	477	486	487	488	536	537	540	542	543	553	581	585
		586	590	595	600	606	611	619	624	625	649	659	669	673
		683	693	696	738	750	751	753	755	759	798	799	823	824
		837	969	970	973	979	983	986	986	1060	1110	1112	1112	1113
		1124	1125	1127	1128	1135	1136	1141	1148	1151	1159	1178	1179	1186
		1200	1201	1203	1209	1271	1272	1280	1281	1283	1291	1299	1300	1302
		1312	1313	1317	1334	1499	1500	1501	1503	1504	1505	1506	1517	1595
		1924	1930	1932	1937	2060	2064	2182	2191	2193	2217			
R3	0003	77	167	168	171	187	188	200	253	253	257	261	263	274
		287	312	321	325	398	402	568	571	727	730	730	739	768
		770	778	782	791	792	793	795	800	809	810	811	813	825
		849	851	1061	1066	1070	1073	1074	1077	1078	1088	1089	1102	1103
		1109	1113	1120	1125	1128	1129	1136	1141	1142	1152	1178	1187	1514
		1516	1517	1518	2183	2203	2212	2229	2230					
R4	0004	79	80	81	83	91	93	194	195	196	197	197	217	219
		228	230	231	233	240	242	246	278	283	288	289	292	295
		300	302	303	303	305	306	307	308	322	327	340	342	355
		358	381	403	569	707	715	719	721	754	755	756	757	757
		773	776	784	794	795	796	797	797	798	812	812	817	818
		820	822	822	823	845	845	846	847	848	859	861	865	870







