

LP07/25/26

LP25/26/07 DIAG  
CZLPLDO

AH-E635D-MC  
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IDENTIFICATION

PRODUCT CODE : AC-E634D-MC  
PRODUCT NAME : CZLPLDO LP25/26/07 DIAG  
MAINTAINER : SMALL SYSTEMS DIAGNOSTICS  
PRODUCT DATE : 12-JAN-81  
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## 1.0 GENERAL INFORMATION

## 1.1 PROGRAM ABSTRACT

THIS DIAGNOSTIC PROGRAM VERIFIES PROPER OPERATION OF THE LP25, LP26, OR LP07 LINE PRINTER AND ITS ASSOCIATED M7258 CONTROL UNIT WHICH INTERFACES TO THE PDP-11 CPU. THE BROAD RANGE OF TESTS ASSURES A COMPREHENSIVE TEST OF THE FUNCTIONAL CAPABILITY OF THE LINE PRINTER. THE INDIVIDUAL TESTS ARE IDENTIFIED AS FOLLOWS:

TEST 1	INTERFACE LOGIC
TEST 2	READY LINE INTERLOCKS
TEST 3	FORMS LENGTH SELECTION
TEST 4	PRINTING SPEED
TEST 5	DATA TRANSFER PATHS
TEST 6	PRINTABLE CHARACTERS
TEST 7	NON-PRINTABLE CHARACTERS
TEST 8	BAND PATTERN
TEST 9	SPURIOUS HAMMER FIRING
TEST 10	PRINT CONTROL
TEST 11	MULTIPLE LINE ADVANCE
TEST 12	CHARACTER ALIGNMENT

ANY MIX OF PRINTER TYPES (LP25, LP26, LP07) CAN BE TESTED UP TO A TOTAL OF SIXTEEN UNITS. BAND CONFIGURATION (64 OR 96 CHAR) IS HANDELED ON A UNIT BY UNIT BASIS. ALL UNITS NEED NOT HAVE THE SAME BAND.

THIS DIAGNOSTIC HAS BEEN WRITTEN FOR USE WITH THE DIAGNOSTIC RUNTIME SERVICES SOFTWARE (SUPERVISOR). THESE SERVICES PROVIDE THE INTERFACE TO THE OPERATOR AND TO THE SOFTWARE ENVIRONMENT. THIS PROGRAM CAN BE USED WITH XXDP+, ACT, APT, SLIDE AND PAPER TAPE. FOR A COMPLETE DESCRIPTION OF THE RUNTIME SERVICES, REFER TO THE XXDP+ USER'S MANUAL. THERE IS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES IN SECTION 2 OF THIS DOCUMENT.

## 1.2 SYSTEM REQUIREMENTS

## 1.2 SYSTEM REQUIREMENTS

A TEST STATION IS REQUIRED CONSISTING OF A PDP-11 CPU WITH A MINIMUM OF 16K WORDS OF MEMORY AND A CONSOLE TERMINAL WITH INTERFACE AT DEVICE ADDRESS 777560. THE SYSTEM ALSO REQUIRES AN XXDP SUPPORTED DEVICE SUCH AS AN RK05/RK11 DISK DRIVE TO AFFORD A MEANS TO LOAD THE DIAGNOSTIC PROGRAM. A KW11-L LINE TIME CLOCK OR A KW11-P PROGRAMMABLE REAL-TIME CLOCK IS NECESSARY FOR MEASURING THE TIME INTERVAL FROM WHICH PRINTING SPEED IS DETERMINED. IF A CLOCK IS NOT INSTALLED IN THE SYSTEM, THE OPERATOR WILL HAVE TO USE MANUAL MODE TO MANUALLY TIME PRINTER OPERATION FOR A FIXED TIME INTERVAL TO CALCULATE THE PRINTING SPEED.

IN A MANUFACTURING ENVIRONMENT WHERE APT/ACT/SLIDE ARE USED, THE TEST STATION MUST BE EQUIPPED WITH THE APPROPRIATE INTERFACE AND A HOST PROCESSOR WITH THE NECESSARY SOFTWARE.

### 1.3 RELATED DOCUMENTS AND STANDARDS

PROJECT PLAN FOR LP25 DIAGNOSTIC PROGRAM  
DOCUMENT: RAS-78-008-00-U  
DATE: 6-SEP-78

DIAGNOSTIC ENGINEERING FUNCTIONAL SPECIFICATION  
FOR CZLPLA0 LP25 DIAGNOSTIC PROGRAM (PRELIMINARY)  
DATE: 29-SEP-78

LINE PRINTER, 250 LPM (LP25) PURCHASE SPECIFICATION  
(PRELIMINARY)

DATAPRODUCTS 300 LPM LINE PRINTER FIELD MAINTENANCE  
GUIDE (PRELIMINARY)

DATAPRODUCTS 300 LPM LINE PRINTER OPERATOR'S GUIDE  
(PRELIMINARY)

LINE PRINTER, LP-07 PURCHASE SPECIFICATION (PRELIMINARY)

### 1.4 DIAGNOSTIC HIERARCHY PREREQUISITES

THIS DIAGNOSTIC IS COMPATIBLE WITH ALL MEMBERS OF THE PDP-11  
COMPUTER FAMILY. THE DIAGNOSTIC IS INTERFACED TO THE PDP-11  
DIAGNOSTIC SUPERVISOR THROUGH WHICH IT INTERFACES TO THE  
ENVIRONMENT.

THE DIAGNOSTIC CAN BE USED IN A VARIETY OF OPERATING SYSTEMS  
TO FULFILL DIFFERENT REQUIREMENTS. THE DIAGNOSTIC CAN BE  
LOADED USING XXDP IN A FIELD SERVICE OPERATION, LOADED USING  
THE APT/ACT/SLIDE DIAGNOSTIC MONITORS IN A MANUFACTURING  
ENVIRONMENT, OR MANUALLY LOADED USING PAPER TAPE.

THE APPLICABLE PDP-11 CPU, MEMORY, AND PERIPHERALS SHOULD BE  
RUN TO VALIDATE PROPER OPERATION OF THE SYSTEM BEFORE RUNNING  
THIS DIAGNOSTIC.

### 1.5 ASSUMPTIONS

THE LINE PRINTERS UNDER TEST SHOULD HAVE POWER APPLIED AND BE  
PLACED ON LINE IN READINESS FOR TESTING. EACH LINE PRINTER  
MUST HAVE ITS OWN M7258 CONTROLLER SET UP AT A DIFFERENT DEVICE  
ADDRESS. THE DIAGNOSTIC PROVIDES A DEFAULT DEVICE ADDRESS OF  
777514 WHICH CAN BE USED WHEN A SINGLE LINE PRINTER IS BEING  
TESTED OR FOR THE FIRST UNIT WHEN MULTIPLE LINE PRINTERS ARE  
UNDER TEST. IT WILL BE NECESSARY FOR THE OPERATOR TO RUN THE  
LINE PRINTER OFF LINE IN THE SELF TEST MODE BEFORE RUNNING THE  
DIAGNOSTIC IN ORDER TO DETERMINE WHETHER THE 64 OR 96 CHARACTER  
BAND IS INSTALLED.

FORMS LENGTH MUST BE PRESET TO 11 INCHES. VERTICAL PRINTING  
MUST BE PRESET TO 6 LINES PER INCH.  
IF PRINTER IS LP07, IT MUST BE EQUIPPED WITH SPECIAL DIAG.

TCVPU PAPER TAPE.

A PATCH IS REQUIRED IN THE DIAGNOSTIC TO CIRCUMVENT AN INCOMPATIBILITY IN THE DIAGNOSTIC SUPERVISOR. IT IS NECESSARY TO ADD 11236 TO THE CONTENTS OF THE ADDRESS 'L\$LAST' WHICH IS FOUND AT THE END OF THE ASSEMBLY LISTING. THIS SUM IS USED AS THE ADDRESS INTO WHICH 42760 IS DEPOSITED. 177777 IS DEPOSITED INTO THE SUBSEQUENT MEMORY ADDRESS.

## 2.0 OPERATING INSTRUCTIONS

THIS SECTION CONTAINS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES. FOR DETAILED INFORMATION, REFER TO THE XXDP+ USER'S MANUAL (CHQUS).

### 2.1 COMMANDS

THERE ARE ELEVEN LEGAL COMMANDS FOR THE DIAGNOSTIC RUNTIME SERVICES (SUPERVISOR). THIS SECTION LISTS THE COMMANDS AND GIVES A VERY BRIEF DESCRIPTION OF THEM. THE XXDP+ USER'S MANUAL HAS MORE DETAILS.

COMMAND	EFFECT
START	START THE DIAGNOSTIC FROM AN INITIAL STATE
RESTART	START THE DIAGNOSTIC WITHOUT INITIALIZING
CONTINUE	CONTINUE AT TEST THAT WAS INTERRUPTED (AFTER ^C)
PROCEED	CONTINUE FROM AN ERROR HALT
EXIT	RETURN TO XXDP+ MONITOR (XXDP+ OPERATION ONLY.)
ADD	ACTIVATE A UNIT FOR TESTING (ALL UNITS ARE CONSIDERED TO BE ACTIVE AT START TIME)
DROP	DEACTIVATE A UNIT
PRINT	PRINT STATISTICAL INFORMATION (IF IMPLEMENTED BY THE DIAGNOSTIC - SECTION 4.0)
DISPLAY	TYPE A LIST OF ALL DEVICE INFORMATION
·FLAGS	TYPE THE STATE OF ALL FLAGS (SEE SECTION 2.3)
·ZFLAGS	CLEAR ALL FLAGS (SEE SECTION 2.3)

A COMMAND CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. SO YOU MAY, FOR EXAMPLE, TYPE 'STA' INSTEAD OF 'START'.

### 2.2 SWITCHES

THERE ARE SEVERAL SWITCHES WHICH ARE USED TO MODIFY SUPERVISOR OPERATION. THESE SWITCHES ARE APPENDED TO THE LEGAL COMMANDS. ALL OF THE LEGAL SWITCHES ARE TABULATED BELOW WITH A BRIEF DESCRIPTION OF EACH. IN THE DESCRIPTIONS BELOW, A DECIMAL NUMBER IS DESIGNATED BY 'DDDD'.

SWITCH	EFFECT
/TESTS:LIST	EXECUTE ONLY THOSE TESTS SPECIFIED IN THE LIST. LIST IS A STRING OF TEST NUMBERS, FOR EXAMPLE - /TESTS:1:5:7-10. THIS LIST WILL CAUSE TESTS 1,5,7,8,9,10 TO BE RUN. ALL OTHER TESTS WILL NOT BE RUN.
/PASS:DDDD	EXECUTE DDDD PASSES (DDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 2.3.
/EOP:DDDD	REPORT END OF PASS MESSAGE AFTER EVERY

/UNITS:LIST DDDDD PASSES ONLY. (DDDDD = 1 TO 64000)  
 TEST/ADD/DROP ONLY THOSE UNITS SPECIFIED  
 IN THE LIST. LIST EXAMPLE - /UNITS:0:5:10-12  
 USE UNITS 0,5,10,11,12 (UNIT NUMBERS = 0-63)

EXAMPLE OF SWITCH USAGE:

START/TESTS:1-5/PASS:1000/EOP:100

THE EFFECT OF THIS COMMAND WILL BE: 1) TESTS 1 THROUGH 5 WILL BE EXECUTED, 2) ALL UNITS WILL TESTED 1000 TIMES AND 3) THE END OF PASS MESSAGES WILL BE PRINTED AFTER EACH 100 PASSES ONLY. A SWITCH CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. YOU MAY, FOR EXAMPLE, TYPE '/TES:1-5' INSTEAD OF '/TESTS:1-5'.

BELOW IS A TABLE THAT SPECIFIES WHICH SWITCHES CAN BE USED BY EACH COMMAND.

	TESTS	PASS	FLAGS	EOP	UNITS
START	X	X	X	X	X
RESTART	X	X	X	X	X
CONTINUE		X	X	X	
PROCEED			X		
DROP					X
ADD					X
PRINT					
DISPLAY					X
FLAGS					
ZFLAGS					
EXIT					

### 2.3 FLAGS

FLAGS ARE USED TO SET UP CERTAIN OPERATIONAL PARAMETERS SUCH AS LOOPING ON ERROR. ALL FLAGS ARE CLEARED AT STARTUP AND REMAIN CLEARED UNTIL EXPLICITLY SET USING THE FLAGS SWITCH. FLAGS ARE ALSO CLEARED AFTER A START COMMAND UNLESS SET USING THE FLAG SWITCH. THE ZFLAGS COMMAND MAY ALSO BE USED TO CLEAR ALL FLAGS. WITH THE EXCEPTION OF THE START AND ZFLAGS COMMANDS, NO COMMANDS AFFECT THE STATE OF THE FLAGS; THEY REMAIN SET OR CLEARED AS SPECIFIED BY THE LAST FLAG SWITCH.

FLAG	EFFECT
HOE	HALT ON ERROR - CONTROL IS RETURNED TO RUNTIME SERVICES COMMAND MODE
LOE	LOOP ON ERROR
IER*	INHIBIT ALL ERROR REPORTS
IBR*	INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS ERROR TYPE, NUMBER, PC, TEST AND UNIT)
IXR*	INHIBIT EXTENDED ERROR REPORTS (THOSE CALLED BY PRINTX MACRO'S)
K.	DIRECT MESSAGES TO LINE PRINTER
PNT	PRINT TEST NUMBER AS TEST EXECUTES

BOE	'BELL' ON ERROR
JAM	UNATTENDED MODE (NO MANUAL INTERVENTION)
ISR	INHIBIT STATISTICAL REPORTS (DOES NOT APPLY TO DIAGNOSTICS WHICH DO NOT SUPPORT STATISTICAL REPORTING)
IDR	INHIBIT PROGRAM DROPPING OF UNITS
ADR	EXECUTE AUTODROP CODE
LOT	LOOP ON TEST
EVL	EXECUTE EVALUATION (ON DIAGNOSTICS WHICH HAVE EVALUATION SUPPORT)

\*ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

SEE THE XXDP+ USER'S MANUAL FOR MORE DETAILS ON FLAGS. YOU MAY SPECIFY MORE THAN ONE FLAG WITH THE FLAG SWITCH. FOR EXAMPLE, TO CAUSE THE PROGRAM TO LOOP ON ERROR, INHIBIT ERROR REPORTS AND TYPE A 'BELL' ON ERROR, YOU MAY USE THE FOLLOWING STRING:

```
/FLAGS:LOE:IER:BOE
```

#### 2.4 HARDWARE QUESTIONS

WHEN A DIAGNOSTIC IS STARTED, THE RUNTIME SERVICES WILL PROMPT THE USER FOR HARDWARE INFORMATION BY TYPING 'CHANGE HW (L) ?' YOU MUST ANSWER 'Y' AFTER A START COMMAND UNLESS THE HARDWARE INFORMATION HAS BEEN 'PRELOADED' USING THE SETUP UTILITY (SEE CHAPTER 6 OF THE XXDP+ USER'S MANUAL). WHEN YOU ANSWER THIS QUESTION WITH A 'Y', THE RUNTIME SERVICES WILL ASK FOR THE NUMBER OF UNITS (IN DECIMAL). YOU WILL THEN BE ASKED THE FOLLOWING QUESTIONS FOR EACH UNIT.

```
#UNITS (D) ? 1
```

```
UNIT 1
```

```
LP11 ADDRESS: (0) (177514) ?
INTERRUPT VECTOR : (0) (200) ?
ENTER 0 IF LP25, 1 IF LP26, 2 IF LP07 (0) (0) ?
96 CHARACTER BAND (L) ? ANSWER Y OR N.
```

#### 2.5 SOFTWARE QUESTIONS

AFTER YOU HAVE ANSWERED THE HARDWARE QUESTIONS OR AFTER A RESTART OR CONTINUE COMMAND, THE RUNTIME SERVICES WILL ASK FOR SOFTWARE PARAMETERS. THESE PARAMETERS WILL GOVERN SOME DIAGNOSTIC SPECIFIC OPERATION MODES. YOU WILL BE PROMPTED BY 'CHANGE SW (L) ?' IF YOU WISH TO CHANGE ANY PARAMETERS, ANSWER BY TYPING 'Y'. THE SOFTWARE QUESTIONS AND THE DEFAULT VALUES ARE DESCRIBED IN THE NEXT PARAGRAPH(S).

```
RUN MANUAL INTERVENTION TESTS (N) ? DEFAULT IS NO
```

```
PERFORM MANUAL PRINT SPEED MEASUREMENTI (N) ? DEFAULT IS AUTOMATIC
DESIRED TIME INTERVAL FOR PRINT SPEED CALCULATION (60) ? DEFAULT IS 60 SECONDS
```



MAXIMUM IS 60 SEC.  
MINIMUM IS 4 SEC.

TESTING IN U.S.A. (Y) ?      SELECTS U.S. OR BRITISH BAND PATTERN  
AUTODROP ERROR COUNT (D) 5 ?      DROPS ANY UNIT FROM TEST WHICH EXCEEDS SPECIFIED NO. OF ERRORS

## 2.6 EXTENDED P-TABLE DIALOGUE

WHEN YOU ANSWER THE HARDWARE QUESTIONS, YOU ARE BUILDING ENTRIES IN A TABLE THAT DESCRIBES THE DEVICES UNDER TEST. THE SIMPLEST WAY TO BUILD THIS TABLE IS TO ANSWER ALL QUESTIONS FOR EACH UNIT TO BE TESTED. IF YOU HAVE A MULTIPLEXED DEVICE SUCH AS A MASS STORAGE CONTROLLER WITH SEVERAL DRIVES OR A COMMUNICATION DEVICE WITH SEVERAL LINES, THIS BECOMES TEDIOUS SINCE MOST OF THE ANSWERS ARE REPETITIOUS.

TO ILLUSTRATE A MORE EFFICIENT METHOD, SUPPOSE YOU ARE TESTING A FICTIONAL DEVICE, THE XY11. SUPPOSE THIS DEVICE CONSISTS OF A CONTROL MODULE WITH EIGHT UNITS (SUB-DEVICES) ATTACHED TO IT. THESE UNITS ARE DESCRIBED BY THE OCTAL NUMBERS 0 THROUGH 7. THERE IS ONE HARDWARE PARAMETER THAT CAN VARY AMONG UNITS CALLED THE Q-FACTOR. THIS Q-FACTOR MAY BE 0 OR 1. BELOW IS A SIMPLE WAY TO BUILD A TABLE FOR ONE XY11 WITH EIGHT UNITS.

# UNITS (D) ? 8<CR>

UNIT 1  
CSR ADDRESS (O) ? 160000<CR>  
SUB-DEVICE # (O) ? 0<CR>  
Q-FACTOR (O) 0 ? 1<CR>

UNIT 2  
CSR ADDRESS (O) ? 160000<CR>  
SUB-DEVICE # (O) ? 1<CR>  
Q-FACTOR (O) 1 ? 0<CR>

UNIT 3  
CSR ADDRESS (O) ? 160000<CR>  
SUB-DEVICE # (O) ? 2<CR>  
Q-FACTOR (O) 0 ? <CR>

UNIT 4  
CSR ADDRESS (O) ? 160000<CR>  
SUB-DEVICE # (O) ? 3<CR>  
Q-FACTOR (O) 0 ? <CR>

UNIT 5  
CSR ADDRESS (O) ? 160000<CR>  
SUB-DEVICE # (O) ? 4<CR>  
Q-FACTOR (O) 0 ? <CR>

UNIT 6  
CSR ADDRESS (O) ? 160000<CR>  
SUB-DEVICE # (O) ? 5<CR>  
Q-FACTOR (O) 0 ? <CR>

UNIT 7  
CSR ADDRESS (O) ? 160000<CR>

```
SUB-DEVICE # (C) ? 6<CR>
Q-FACTOR (O) 0 ? 1<CR>
```

```
UNIT 8
CSR ADDRESS (O) 160000<CR>
SUB-DEVICE # (O) ? 7<CR>
Q-FACTOR (O) 1 ? <CR>
```

NOTICE THAT THE DEFAULT VALUE FOR THE Q-FACTOR CHANGES WHEN A NON-DEFAULT RESPONSE IS GIVEN. BE CAREFUL WHEN SPECIFYING MULTIPLE UNITS.

AS YOU CAN SEE FROM THE ABOVE EXAMPLE, THE HARDWARE PARAMETERS DO NOT VARY SIGNIFICANTLY FROM UNIT TO UNIT. THE PROCEDURE SHOWN IS NOT VERY EFFICIENT.

THE RUNTIME SERVICES CAN TAKE MULTIPLE UNIT SPECIFICATIONS HOWEVER. LET'S BUILD THE SAME TABLE USING THE MULTIPLE SPECIFICATION FEATURE.

```
# UNITS (D) ? 8<CR>
```

```
UNIT 1
CSR ADDRESS (O) ? 160000<CR>
SUB-DEVICE # (O) ? 0,1<CR>
Q-FACTOR (O) 0 ? 1,0<CR>
```

```
UNIT 3
CSR ADDRESS (O) ? 160000<CR>
SUB-DEVICE # (O) ? 2-5<CR>
Q-FACTOR (O) 0 ? 0<CR>
```

```
UNIT 7
CSR ADDRESS (O) ? 160000<CR>
SUB-DEVICE # (O) ? 6,7<CR>
Q-FACTOR (O) 0 ? 1<CR>
```

AS YOU CAN SEE IN THE ABOVE DIALOGUE, THE RUNTIME SERVICES WILL BUILD AS MANY ENTRIES AS IT CAN WITH THE INFORMATION GIVEN IN ANY ONE PASS THROUGH THE QUESTIONS. IN THE FIRST PASS, TWO ENTRIES ARE BUILT SINCE TWO SUB-DEVICES AND Q-FACTORS WERE SPECIFIED. THE SERVICES ASSUME THAT THE CSR ADDRESS IS 160000 FOR BOTH SINCE IT WAS SPECIFIED ONLY ONCE. IN THE SECOND PASS, FOUR ENTRIES WERE BUILT. THIS IS BECAUSE FOUR SUB-DEVICES WERE SPECIFIED. THE '-' CONSTRUCT TELLS THE RUNTIME SERVICES TO INCREMENT THE DATA FROM THE FIRST NUMBER TO THE SECOND. IN THIS CASE, SUB-DEVICES 2, 3, 4 AND 5 WERE SPECIFIED. (IF THE SUB-DEVICE WERE SPECIFIED BY ADDRESSES, THE INCREMENT WOULD BE BY 2 SINCE ADDRESSES MUST BE ON AN EVEN BOUNDARY.) THE CSR ADDRESSES AND Q-FACTORS FOR THE FOUR ENTRIES ARE ASSUMED TO BE 160000 AND 0 RESPECTIVELY SINCE THEY WERE ONLY SPECIFIED ONCE. THE LAST TWO UNITS ARE SPECIFIED IN THE THIRD PASS.

THE WHOLE PROCESS COULD HAVE BEEN ACCOMPLISHED IN ONE PASS AS SHOWN BELOW.

```
# UNITS (D) ? 8<CR>
```

```

UNIT 1
CSR ADDRESS (0) ? 160000<CR>
SUB-DEVICE # (0) ? 0-7<CR>
Q-FACTOR (0) 0 ? 0,1,0,,,,,1,1<CR>

```

AS YOU CAN SEE FROM THIS EXAMPLE, NULL REPLIES (COMMAS ENCLOSING A NULL FIELD) TELL THE RUNTIME SERVICES TO REPEAT THE LAST REPLY.

## 2.7 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

1. BOOT XXDP+
2. GIVE THE DATE AND ANSWER THE LSI AND 50HZ (IF THERE IS A CLOCK) QUESTIONS
3. TYPE 'R NAME', WHERE NAME IS THE NAME OF THE BIN OR BIC FILE FOR THIS PROGRAM
4. TYPE 'START'
5. ANSWER THE 'CHANGE HW' QUESTION WITH 'Y'
6. ANSWER ALL THE HARDWARE QUESTIONS
7. ANSWER THE 'CHANGE SW' QUESTION WITH 'N'

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE DEFAULTS FOR FLAGS AND SOFTWARE PARAMETERS. THESE DEFAULTS ARE DESCRIBED IN SECTIONS 2.3 AND 2.5.

## 3.0 ERROR INFORMATION

### 3.1 TYPES OF ERROR MESSAGES

THERE ARE THREE LEVELS OF ERROR MESSAGES THAT MAY BE ISSUED BY A DIAGNOSTIC: GENERAL, BASIC AND EXTENDED. GENERAL ERROR MESSAGES ARE ALWAYS PRINTED UNLESS THE 'IER' FLAG IS SET (SECTION 2.3). THE GENERAL ERROR MESSAGE IS OF THE FORM:

```

NAME TYPE NUMBER ON UNIT NUMBER TST NUMBER PC:XXXXXX
ERROR MESSAGE

```

WHERE: NAME = DIAGNOSTIC NAME  
 TYPE - ERROR TYPE (SYS FATAL, DEV FATAL, HARD OR SOFT)  
 NUMBER - ERROR NUMBER  
 UNIT NUMBER = 0 - N (N IS LAST UNIT IN PTABLE)  
 TST NUMBER TEST AND SUBTEST WHERE ERROR OCCURRED  
 PC:XXXXXX = ADDRESS OF ERROR MESSAGE CALL

BASIC ERROR MESSAGES ARE MESSAGES THAT CONTAIN SOME ADDITIONAL INFORMATION ABOUT THE ERROR. THESE ARE ALWAYS PRINTED UNLESS THE 'IER' OR 'IBR' FLAGS ARE SET (SECTION 2.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL MESSAGE.

EXTENDED ERROR MESSAGES CONTAIN SUPPLEMENTARY ERROR INFORMATION SUCH AS REGISTER CONTENTS OR GOOD/BAD DATA. THESE ARE ALWAYS PRINTED UNLESS THE 'IER', 'IBR' OR 'IXR' FLAGS ARE SET (SECTION 2.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL ERROR MESSAGE AND ANY ASSOCIATED BASIC ERROR MESSAGES.

### 3.2 SPECIFIC ERROR MESSAGES

ERROR	DESCRIPTION
1	'PRINTER ERROR' ERROR CONDITION IN THE PRINTER.
2	'PRINTER NOT READY' PRINTER NOT READY TO ACCEPT DATA.
3	'PRINTER DID NOT INTERRUPT' FAILURE IN INTERFACE LOGIC.
4	'LOADING PRINTER BUFFER DOES NOT CLEAR READY' FAILURE IN INTERFACE LOGIC.
5	'PRINTER INTERRUPTED AT SAME LEVEL AS THE PROCESSOR' FAILURE IN INTERFACE LOGIC.
6	'PRINTER ERROR' ERROR CONDITION IN THE PRINTER.
7	'PRINTER NOT READY' PRINTER NOT READY TO ACCEPT DATA.
8	'PAPER LOW INTERLOCK SWITCH FAILURE' FAULTY INTERLOCK SWITCH.
9	'HAMMER BANK INTERLOCK SWITCH FAILURE' FAULTY INTERLOCK SWITCH.
10	'CHARACTER BAND INTERLOCK SWITCH FAILURE' FAULTY INTERLOCK SWITCH.
	'NOTE' ERROR MESSAGES #11 AND #12 HAVE BEEN ELIMINATED
13	'INTERRUPT SERVICING FOR THE FOLLOWING DEVICE DID NOT OCCUR' GLOBAL ERROR INDICATING INTERRUPT FOR DATA TRANSFER DID NOT OCCUR.
14	'PRINTER STATUS ERROR' GLOBAL ERROR INDICATING PRINTER ERROR CONDITION.
15	'OUTPUT TIMEOUT ERROR' GLOBAL ERROR INDICATING TRANSMISSION OF LAST CHARACTER DID NOT OCCUR

WITHIN A GIVEN TIME.

- 16 'VFU INTERLOCK FAILURE'  
 FAULTY INTERLOCK SWITCH ON VFU TAPE READER COVER
- 17 'BAND GATE LATCH INTERLOCK FAILURE'  
 FAULTY INTERLOCK SWITCH

#### 4.0 PERFORMANCE AND PROGRESS REPORTS

PERFORMANCE AND PROGRESS REPORTS ARE NOT SUPPLIED.

#### 5.0 DEVICE INFORMATION TABLES

DEVICE INFORMATION APPEARS IN THE GLOBAL DATA SECTION.

#### 6.0 TEST SUMMARIES

TEST 1  
 INTERFACE LOGIC  
 VERIFIES OPERATION OF INTERFACE LOGIC BETWEEN THE PRINTER AND THE CPU.

TEST 2  
 READY LINE INTERLOCKS  
 VERIFIES OPERATION OF THE READY INTERLOCK SWITCHES.

TEST 3  
 FORMS LENGTH SELECTION  
 VERIFIES ALL POSITIONS OF THE FORM LENGTH SELECT SWITCH FOR PROPER PAPER MOVEMENT.

TEST 4  
 PRINTING SPEED MEASUREMENT  
 DETERMINES PRINTING SPEED ON THE BASIS OF THE PRINTING TIME INTERVAL AND THE NUMBER OF LINES PRINTED.

TEST 5  
 DATA TRANSFER PATHS  
 CHECKS THE DATA TRANSFER PATHS FROM THE PRINTER OUTPUT TO THE PROCESSOR INTERFACE.

TEST 6  
 PRINTABLE CHARACTERS  
 CHECKS FOR PROPER PRINTING OF ALL PRINTABLE CHARACTERS.

TEST 7  
 NON-PRINTABLE CHARACTERS  
 CHECKS FOR PROPER DETECTION OF ALL NON-PRINTABLE CHARACTERS.  
 ALSO, ON PRINTERS WITH 64 CHARACTER BANDS, IT CHECKS TO MAKE SURE THAT CODES (140 THRU 177) ARE CONVERTED TO CODES (100 THRU 137).

TEST 8  
 BAND PATTERN

PRODUCES AN IMAGE OF THE ENTIRE BAND PATTERN.

TEST 9  
SPURIOUS HAMMER FIRING  
CHECKS FOR SPURIOUS HAMMER FIRINGS BY TAKING NOTE OF ANY  
PRINTING THAT MAY OCCUR OUTSIDE A WEDGE PATTERN.

TEST 10  
PRINT CONTROL  
CHECKS THAT CHARACTERS IN EXCESS OF 132 CHARACTERS ON A LINE  
ARE DISREGARDED.

TEST 11  
CHECKS MULTIPLE LINE ADVANCE  
CHECKS THE MULTIPLE LINE ADVANCE FOR PROPER PAPER MOVEMENT.

TEST 12  
CHARACTER ALIGNMENT  
CHECKS CHARACTER ALIGNMENT BY OVERPRINTING EACH LINE.

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.TITLE CZLPLD0 LP25, LP26, LP07 DIAGNOSTIC  
.ENABL AMA  
.SBTTL IDENTIFICATION  
: PRODUCT CODE: AC-E634D-MC  
: PRODUCT NAME: CZLPLD0 LP25, LP26, LP07 DIAG  
: MAINTAINER: SMALL SYSTEMS DIAGNOSTICS  
: AUTHORS: JOHN CHATALIAN  
: DONALD RICE  
: RALPH SCHAUBER  
: GLENN A. PERNA  
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IDENTIFICATION

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```

:++
: FUNCTIONAL DESCRIPTION
:
: THIS DIAGNOSTIC PROGRAM VERIFIES PROPER OPERATION OF THE LP25, LP26, LP07
: LINE PRINTER, AND IT'S ASSOCIATED INTERFACE MODULE.
:
: ANY MIX OF LP25, LP26, LP07 PRINTERS MAY BE TESTED, UP TO A TOTAL OF
: SIXTEEN UNITS.
:
: THE PROGRAM CONSISTS OF TWELVE TESTS,
: THREE OF THE PRINTER TESTS INVOLVE MANUAL INTERVENTION.
:
: THE PROGRAM IS COMPATIBLE TO THE PDP-11 DIAGNOSTIC SUPERVISOR, ACT/SLIDE, AND
: XXDP+.
:--
:
: VERSION      A-0    27-SEP-79      R. SCHAUBER
:
: HISTORY      REV. A-0  INITIAL RELEASE
:              REV-C SUPERVISOR / XXDP+ COMPATABLE
:
:              REV. B-0  DOCUMENTATION CHANGE 29-NOV-79
:              CHANGE INIT CODE TO SET PRIO ON NEW PASS
:
:              REV. C-0   INCLUDE LP26 SUPPORT    13-JUN-80
:              INCLUDE TEST MESSAGES TO THE PRINTERS
:              INCLUDES L.NE CLOCK SUPPORT FOR LSI-11
:
:              REV. D-0   INCLUDE LP07 SUPPORT    12-JAN-81

```



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 9  
IDENTIFICATION

```

758 .TITLE CZLPLD0 LP25, LP26, LP07 TEST
759 .SBTTL PROGRAM HEADER
760
761 .MCALL SVC ;INITIALIZE SUPERVISOR MACROS
762 000000 SVC
763 .MCALL STRUCT
764 000000 STRUCT ;STRUCTURED MACRO PACKAGE
765 000000 $LSTIN= 0 ;LIST ASSY CODE LEFT
766 000000 $LSTTAG= 0 ;LIST TAGS LEFT
767 177777 $LOCTAG= -1
768
769 SVCINS= 0 ;LIST INSTRUCTIONS
770 SVCTST= 0 ;LIST TEST TAGS
771 SVCSUB= 0 ;LIST SUBTEST TAGS
772 SVCGBL= 0 ;LIST GLOBAL TAGS
773 SVCTAG= 0 ;LIST OTHER TAGS
774
775 .ENABL AMA
776 C00000 .ENABL ABS
777 .ENABL LC
778 002000 .=2000
779
780 002000 BGNMOD
781 002000 POINTER BGNSW,BGNSFT
782
783 002000 HEADER CZLPL,D,0,60,1,340
002000 L$NAME:: ;DIAGNOSTIC NAME
002000 .ASCII /C/
002001 .ASCII /Z/
002002 .ASCII /L/
002003 .ASCII /P/
002004 .ASCII /L/
002005 .BYTE 0
002006 .BYTE 0
002007 .BYTE 0
002010 L$REV:: ;REVISION LEVEL
002010 104 .ASCII /D/
002011 L$DEPO:: ;0
002011 060 .ASCII /O/
002012 L$UNIT:: ;NUMBER OF UNITS
002012 000000 .WORD 0
002014 L$TIML:: ;LONGEST TEST TIME
002014 000060 .WORD 60
002016 L$HPCP:: ;PTR. TO H.W. PTABLE
002016 036700 .WORD L$HARD
002020 L$SPCP:: ;PTR. TO S.W. PTABLE
002020 037072 .WORD L$SOFT
002022 L$HPTP:: ;PTR. TO DEF. H.W. PTABLE
002022 002244 .WORD L$HW
002024 L$SPTP:: ;PTR. TO S.W. PTABLE
002024 002262 .WORD L$SW
002026 L$LADP:: ;DIAG. END ADDRESS
002026 037450 .WORD L$LAST
002030 L$STA:: ;RESERVED FOR APT STATS
002030 000000 .WORD 0
002032 L$CO::
002032 000000 .WORD 0

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 9-1  
PROGRAM HEADER

002034		L\$DTYP::		;DIAGNOSTIC TYPE
002034	000001	L\$APT::	.WORD 1	;APT EXPANSION
002036		L\$DTP::	.WORD 0	;PTR. TO DISPATCH TABLE
002040		L\$PRI0::	.WORD L\$DISPATCH	;DIAGNOSTIC RUN PRIORITY
002040	002132	L\$ENVI::	.WORD 340	;FLAGS DESCRIBE HOW IT WAS SETUP
002042		L\$EXP1::	.WORD 0	;EXPANSION WORD
002042	000340	L\$MREV::	.WORD 0	;SVC REV AND EDIT #
002044		L\$EF::	.BYTE C\$REVISION	
002044	000000		.BYTE C\$EDIT	
002046		L\$SPC::	.WORD 0	;DIAG. EVENT FLAGS
002046	000000		.WORD 0	
002050		L\$DEVP::	.WORD 0	; POINTER TO DEVICE TYPE LIST
002050	003	L\$REPP::	.WORD L\$DVTYP	;PTR. TO REPORT CODE
002051	003	L\$EXP4::	.WORD 0	
002052		L\$EXP5::	.WORD 0	
002052	000000	L\$AUT::	.WORD 0	;PTR. TO ADD UNIT CODE
002054	000000	L\$DUT::	.WORD 0	;PTR. TO DROP UNIT CODE
002056		L\$LUN::	.WORD 0	;LUN FOR EXERCISERS TO FILL
002056	000000	L\$DESP::	.WORD 0	;PTR. TO DIAG. DESCRIPTION
002060		L\$LOAD::	.WORD L\$DESC	;GENERATE SPECIAL AUTOLOAD EMT
002060	002222		EMT E\$LOAD	
002062		L\$ETP::	.WORD 0	;PTR. TO ERR_TBL
002062	000000	L\$ICP::	.WORD L\$INIT	;PTR. TO INIT CODE
002064		L\$CCP::	.WORD L\$CLEAN	;PTR. TO CLEAN-UP CODE
002064	000000	L\$ACP::	.WORD I\$AUTO	;PTR. TO AUTO CODE
002066		L\$PRT::	.WORD L\$PROT	;PTR. TO PROTECT TABLE
002066	000000	L\$TEST::	.WORD 0	;TEST NUMBER
002070		L\$DLY::	.WORD 0	;DELAY COUNT
002070	000000	L\$HIME::	.WORD 0	;PTR. TO HIGH MEM
002072				
002072	000000			
002074				
002074	000000			
002076				
002076	002162			
002100				
002100	104035			
002102				
002102	000000			
002104				
002104	005754			
002106				
002106	010064			
002110				
002110	002254			
002112				
002112	002122			
002114				
002114	000000			
002116				
002116	000000			
002120				
002120	000000			

784  
785  
786

; THE FOLLOWING IS A LOAD PROTECTION TABLE

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 9-2  
PROGRAM HEADER

787  
788 002122  
002122  
789 002122 000000  
790 002124 177777  
791 002126 177777  
792 002130

;  
BGNPROT  
L\$PROT::  
.WORD 0  
.WORD -1  
.WORD -1  
ENDPROT

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 10  
DISPATCH TABLE

794  
795  
796  
797  
798  
799  
800  
801

002130  
002130 000014  
002132  
002132 010260  
002134 011550  
002136 014542  
002140 017650  
002142 025256  
002144 025702  
002146 026600  
002150 030320  
002152 033020  
002154 033476  
002156 035034  
002160 035512

.SBTTL DISPATCH TABLE

:::  
::: THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.  
::: IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.  
:::--

DISPATCH 12 ;X= NUMBER OF TESTS  
.WORD 12  
L\$DISPATCH::  
.WORD T1  
.WORD T2  
.WORD T3  
.WORD T4  
.WORD T5  
.WORD T6  
.WORD T7  
.WORD T8  
.WORD T9  
.WORD T10  
.WORD T11  
.WORD T12

802  
803  
804  
805

002162  
002162 103 132 114  
002165 120 114 104  
002170 060 040 114  
002173 111 116 105  
002176 040 120 122  
002201 111 116 124  
002204 104 122 040  
002207 104 111 101  
002212 107 116 117  
002215 123 124 111  
002220 103 000

:::  
::: FOR USE ON REVISION C OF THE SUPERVISOR  
:::  
DESCRIP <CZLPLD0 LINE PRINTER DIAGNOSTIC>  
L\$DESC::  
.ASCIZ /CZLPLD0 LINE PRINTER DIAGNOSTIC/

806  
807  
808  
809

002222  
002222 114 120 062  
002225 065 054 114  
002230 120 062 066  
002233 054 114 120  
002236 060 067 000

.EVEN  
DEV TYP <LP25,LP26,LP07>  
L\$DVTYP::  
.ASCIZ /LP25,LP26,LP07/  
  
.EVEN

CZLPLDO LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 11  
DEFAULT HARDWARE P-TABLE

811  
812  
813  
814  
815  
816  
817  
818  
819 002242  
002242 000004  
002244  
002244  
820 002244 177514  
821 002246 000200  
822 002250 000000  
823  
824  
830 002252 000000  
831  
832  
833  
834  
835  
836 002254  
002254  
837  
838  
839  
840 002254  
002254  
841  
842 002254 000240  
843  
844 002256  
002256  
002256 104461

.SBTTL DEFAULT HARDWARE P-TABLE

\*\*\*  
: THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF  
: THE TEST-DEVICE PARAMETERS. THE STRUCTURE OF THIS TABLE  
: IS IDENTICAL TO THE RUN-TIME P-TABLE.  
:--

BGNHW DFPTBL  
.WORD L10001-L\$HW/2  
L\$HW::  
DFPTBL::  
.WORD 177514 ;LP25 REGISTER ADDRESS  
.WORD 200 ;LP25 INTERRUPT VECTOR  
.WORD 0 ; 0 IF LP25  
; 1 IF LP26  
; 2 IF LP07  
.WORD 0 ; 0 IF 64 CHAR BAND  
; 1 IF 96 CHAR BAND

: INTERRUPT VECTOR PRIORITY IS 4 AND CANNOT BE CHANGED

ENDHW  
L10001:

BGNAUTO  
L\$AUTO::

NOP ; NOT USED

ENDAUTO  
L10002:  
TRAP C\$AUTO

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 12  
 SOFTWARE P-TABLE

```

846          .SBTTL  SOFTWARE P-TABLE
847
848          : **
849          : THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
850          : PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
851          : --
852
853          BGNSW  SFPTBL
          002260      .WORD  L10003-L$Sw/2
          002260      000005
          002262
          002262
854
855          INHINT: .WORD  0
856
857          MANSPPD: .WORD  0
858          002264      000000
859
860          PERIOD:  .WORD  60.
861          002266      000074
862
863          USA:      .WORD  1
864          002270      000001
865
866          MAXERR:  .WORD  5
867          002272      000005
868
869          ; IF ERROR COUNT EXCEEDS MAXERR THE UNIT WILL BE DROPPED FROM TEST
870
871          ENDSW
          002274
          L10003:
872
    
```

```

:0 IF NO INTERVENTION TESTS
:1 IF MANUAL INTERVENTION TESTS
:DEFAULT IS NO
:0 FOR AUTOMATIC PRINT SPEED
:1 FOR MANUAL PRINT SPEED TEST
:AUTOMATIC DEFAULT VALUE
:OPERATOR TO SELECT TIMING VALUE
:FROM 4 TO 60 SECONDS. INITIAL
:DEFAULT VALUE IS 60 SECONDS.
: 1 FOR TESTING IN U.S.A.
: 0 FOR TESTING IN G.B./EUROPE
: * DIFFERENT BAND PATTERNS *
: AUTODROP ERROR COUNT
    
```

874 .  
875 -  
876  
877  
878  
879 -  
880  
881  
882  
883  
884  
885  
886  
887  
888  
889  
890  
891  
892  
893  
894  
895  
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915  
916  
917  
918  
919  
920  
921  
922  
923  
924 002274

```

.SBTTL  I/O MACRO DEFINITIONS

.MACRO  OUTPUT  ADD,BFCNT,ERR,PRINTS
          MOV    ADD,BUFADD           ;SAVE THE BUFFER ADDRESS
          MOV    BFCNT,BUFCNT        ;BUFFER BYTE COUNT BFCNT
          MOV    #-1,PRINTR          ; OUTPUT TO ALL UNITS

      .IF B    ERR
          MOV    #LPERR,ERRSVC

      .ENDC
      .IF NB   ERR
          MOV    ERR,ERRSVC

      .ENDC
      .IF B PRINTS
          MOV    #1,BUFREP           ; PRINT ONCE DEFAULT

      .ENDC
      .IF NB PRINTS
          MOV    PRINTS,BUFREP       ; SUPPLY PRINT COUNT

      .ENDC
          JSR    PC,IOCTRL           ;CALL THE DRIVER
      .ENDM  OUTPUT

.MACRO  OUTPUTI  ADD,BFCNT,ERR,UNIT,PRINTS
          MOV    ADD,BUFADD           ;SAVE BUFFER ADDRESS
          MOV    BFCNT,BUFCNT        ;BUFFER BYTE COUNT BFCNT

      .IF B    ERR
          MOV    #LPERR,ERRSVC

      .ENDC
      .IF NB   ERR
          MOV    ERR,ERRSVC

      .ENDC
      .IF B PRINTS
          MOV    #1,BUFREP           ; PRINT ONCE DEFAULT

      .ENDC
      .IF NB PRINTS
          MOV    PRINTS,BUFREP       ; SUPPLY PRINT COUNT

      .ENDC
          MOV    UNIT,PRINTR         ; SUPPLY UNIT NUMBER
          JSR    PC,IOCTRL           ;CALL THE DRIVER
      .ENDM

: PRINTS IS A PARAMETER CONTROLLING THE NUMBER IF TIMES THE DATA OR
: MESSAGE IS TO BE PRINTED (SENT TO THE PRINTER). DEFAULT IS 1.
:
: A TIMEOUT OF 20. SECONDS IS FURNISHED BASED ON THE FOLLOWING ASSUMPTIONS :
: 1  A PRINTER SPEED OF 300 LPM
: 2  A REPEAT COUNT OF 88 MAX. ( 1 PAGE OF LINES AT 8 LPI. )
: 3  AN INITIAL BAND STARTUP TIME OF 2.5 SECONDS.
:.....
      ENDMOD

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 14  
GLOBAL AREAS

926  
927  
928 002274  
929  
930  
931  
932  
933  
934  
938 002274

.SBTTL GLOBAL AREAS

BGNMOD

;++  
: THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES  
: THAT ARE USED IN MORE THAN ONE TEST.  
:--

EQUALS

: BIT DEFINITIONS

100000	BIT15== 100000
040000	BIT14== 40000
020000	BIT13== 20000
010000	BIT12== 10000
004000	BIT11== 4000
002000	BIT10== 2000
001000	BIT09== 1000
000400	BIT08== 400
000200	BIT07== 200
000100	BIT06== 100
000040	BIT05== 40
000020	BIT04== 20
000010	BIT03== 10
000004	BIT02== 4
000002	BIT01== 2
000001	BIT00== 1

001000	BIT9== BIT09
000400	BIT8== BIT08
000200	BIT7== BIT07
000100	BIT6== BIT06
000040	BIT5== BIT05
000020	BIT4== BIT04
000010	BIT3== BIT03
000004	BIT2== BIT02
000002	BIT1== BIT01
000001	BIT0== BIT00

: EVENT FLAG DEFINITIONS  
: EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION

000040	EF.START== 32.	: START COMMAND WAS ISSUED
000037	EF.RESTART== 31.	: RESTART COMMAND WAS ISSUED
000036	EF.CONTINUE== 30.	: CONTINUE COMMAND WAS ISSUED
000035	EF.NEW== 29.	: A NEW PASS HAS BEEN STARTED
000034	EF.PWR== 28.	: A POWER-FAIL/POWER-UP OCCURRED

: PRIORITY LEVEL DEFINITIONS

000340	PRI07== 340
000300	PRI06== 300
000240	PRI05== 240
000200	PRI04 = 200



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 14-1  
GLOBAL AREAS

```

000140      PRI03== 140
000100      PRI02== 100
000040      PRI01== 40
000000      PRI00== 0
:
:OPERATOR FLAG BITS
:
000004      EVL==      4
000010      LOT==     10
000020      ADR==     20
000040      IDU==     40
000100      ISR==    100
000200      UAM==    200
000400      BOE--    400
001000      PNT==   1000
002000      PRI==   2000
004000      IXE--  4000
010000      IBE-- 10000
020000      IER==  20000
040000      LOE==  40000
100000      HOE== 100000

939
943      000012      LF==12
944      000014      FF==14
945      000015      CR==15
946      000177      DEL=-177
947
948      :PRIORITY LEVEL DEFINITIONS
949
950      000340      PRI07-- 340
951      000300      PRI06-- 300
952      000240      PRI05-- 240
953      000200      PRI04-- 200
954      000140      PRI03-- 140
955      000100      PRI02-- 100
956      000040      PRI01-- 40
957      000000      PRI00-- 0
958
959
960      :GLOBAL ERROR CODES FOR USE BY GENERAL ERROR ROUTINE
961
962      000001      STATER- 1      ;TRANSMITTER STATUS ERROR IN OUTPUT
963      000002      TIMEOUT= 2     ;TIMEOUT ERROR IN IO DRIVER MODULE
964
965
966      000003      NOINTR- 3      ;THIS ERROR INDICATES THE LAST CHARACTER
967
968
969
970      :SBTTL GENERAL REGISTER USAGE DEFINITIONS
971
972      :R0      RESERVED FOR USE BY THE MACRO PACKAGES
973      :R1      MAXIMUM NUMBER OF UNITS TO TEST L$UNIT-1
974      :R2      UNIT NUMBER BY 2. USED TO CALCULATE OFFSET INTO PROPER
975      :        PRINTER TABLE
976      :R3      TEMPORARY STORAGE
977      :R4

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 14-2  
GENERAL REGISTER USAGE DEFINITIONS

```

978      ;R5
979      ;R6      STACK POINTER
980      ;R7      PROGRAM COUNTER
981      :
982      :
983      :
984      :
985      : LP STATUS TABLE BIT DEFINITIONS
986      :
987      100000  ERROR = BIT15
988      040000  DROPED = BIT14
989      020000  ACTIVE = BIT13
990      010000  FLAG96 = BIT12 ; 96 CHAR BAND
991      :BIT11
992      002000  FLAG07 = BIT10 ;SEE DEVICE CODE BELOW
993      001000  FLAG26 = BIT9  ;SEE DEVICE CODE BELOW
994      000377  LOBYTE = 377  ; BIT MASK FOR CLEARING LOBYTE (COUNTER)
995
996
997
998
999

```

DEVICE CODE

BITS 9 AND 10 ARE A DEVICE CODE , SUCH THAT:

	BIT 10	BIT 9	DEVICE
1000	0	0	LP25
1001	0	1	LP26
1002	1	0	LP07
1003	1	1	RESERVED FOR FUTURE EXPANSION
1004			
1005			
1006			

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 15  
 GLOBAL DATA SECTION

```

1008          .SBTTL  GLOBAL DATA SECTION
1009
1010
1011
1012 002274 000000 FLAG:  .WORD  0          ;<CR> FLAG FOR USE BY SUPERVISOR
1013 002276 000000 LINCNT: .WORD  0          ;LINE COUNTER
1014 002300 000000 LSTCNT: .WORD  C
1015 002302 000000 COUNT:  .WORD  0
1016 002304 000000 CCNT:   .WORD  0
1017 002306 000000 STRCNT: .WORD  0
1018 002310 000000 CHRGEN: .WORD  0
1019 002312 000000 UNIT:   .WORD  0          ;UNIT COUNTER FOR SINGLE UNIT TESTING
1020 002314 000000 LUNIT:  .WORD  0          ;UNIT COUNTER FOR ERRORS
1021                                     ;AND TESTS NOT USING THE OUTPUT
1022                                     ;MACROS.
1023 002316 000000 PTABAD: .WORD  0          ;P-TABLE ADDRESS RETURNED BY GPHARD
1024 002320 000000 PRINTR: .WORD  0          ;SELECTED LINE NO.
1025                                     ;MACRO
1026 002322 000000 CLKTYP: .WORD  0          ;CLOCK TYPE CONTROL WORD
1027                                     ;1= NO CLOCK AVAILABLE
1028                                     ;2= KW11-L LINE CLOCK
1029                                     ;3= KW11-P PROGRAMABLE CLOCK
1030 002324 000000 CLOCKP: .WORD  0          ; CLOCK P-TABLE ADDRESS
1031 002326 000000 CLKCSR: .WORD  0          ;CLOCK CSR ADDRESS
1032 002330 000000 CLKSET: .WORD  0          ; CLOCK TIME SET REG ADDRESS
1033 002332 000000 CLKVEC: .WORD  0          ;CLOCK VECTOR ADDRESS
1034 002334 000000 CLKENA: .WORD  0          ;CLOCK ENABLE BITS
1035 002336 000000 ERRCOD: .WORD  0          ;ERROR CODE TYPE FOR GENERAL
1036                                     ;ERROR ROUTINE
1037 002340 000000 ERRFLG: .WORD  0          ;EXPECTED ERROR INDICATOR
1038 002342 000000 UUT:    .WORD  0          ; # UNITS ACTUALLY UNDER TEST
1039                                     ;EXITS BACK TO IO DRIVER EQUAL
1040                                     ;1 IF ERROR WAS EXPECTED.
1041
1042 002344 000000 INDEX:  .WORD  0
1043 002346 000000 VFUCMD: .WORD  0
1044                                     ;
1045                                     ;MACRO VARIABLES
1046
1047 002350 000000 BUFADD: .WORD  0          ;BUFFER ADDRESS OF DATA TO BE SENT
1048                                     ;TO THE PRINTER
1049 002352 000000 BUFCNT: .WORD  0          ;NUMBER OF BYTES TO TRANSFER
1050
1051 002354 000000 BUFREP: .WORD  0          ; NUMBER OF TIMES TO PRINT
1052                                     ;
1053                                     ;
1054                                     ;
1055                                     ;LP25 PARAMETER WORD TABLES
1056                                     ;
1057 002356 000020 LPCR:   .REPT 16.          ; ADDRESS OF CSR FOR EACH LP11
1058                                     .WORD  0
1059                                     .ENDR
1060 002416 000016 LPVEC:  .REPT 16          ; INTERRUPT VECTOR ADDRESS
1061                                     .WORD  0
1062                                     .ENDR
1063 002452 000020 LPBUF:  .REPT 16.          ; DATA BUFFER REGISTER ADDRESS
1064                                     .WORD  0
    
```



CZLPLDO LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 16  
 GLOBAL TEXT SECTION

```

1111          .SBTTL GLOBAL TEXT SECTION
1112
1113          .NLIST BEX
1114          :++
1115          : THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
1116          : MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
1117          : MORE THAN ONE TEST.
1118          :--
1119 003406     120     122     111  CSRERR: .ASCIZ /PRINTER ERROR/
1120 003424     120     122     111  RDYERR: .ASCIZ /PRINTER NOT READY/
1121 003446     120     101     120  PAPSWI: .ASCIZ /PAPER LOW INTERLOCK SWITCH FAILURE/
1122 003511     110     101     115  BNKSWI: .ASCIZ /HAMMER BANK INTERLOCK SWITCH FAILURE/
1123 003556     103     110     101  BNDSWI: .ASCIZ /CHARACTER BAND INTERLOCK SWITCH FAILURE/
1124 003626     124     122     101  INTER1: .ASCIZ /*RANSMIT INTERRUPT TIMEOUT/
1125 003661     120     122     111  TXERR: .ASCIZ /PRINTER STATUS ERROR/
1126 003706     117     125     124  OUTTIM: .ASCIZ /OUTPUT TIMEOUT ERROR/
1127 003733     125     116     111  TXNOIN: .ASCIZ /UNIT FAILED TO INTERRUPT/
1128 003764     101     114     114  UUTEQ0: .ASCIZ /ALL UNITS HAVE BEEN DROPPED..RESTART../
1129 004033     045     116     045  VFUSEL: .ASCII /%N%AINSURE THAT VFU-FLS SWITCH ON EACH UNIT IS IN THE /
1130 004121     045     116     045  VFUSE1: .ASCIZ /%N%A'VFU' POSITION.%N/
1131 004147     116     117     040  NOCLK: .ASCIZ /NO CLOCK AVAILABLE FOR TIMING TESTS/<7><7>
1132 004215     102     101     116  BGTSWI: .ASCIZ /BAND GATE LATCH INTERLOCK FAILURE/
1133 004257     126     106     125  VFUINF: .ASCIZ /VFU INTERLOCK FAILURE/
1134          .EVEN
1135
1136          :
1137          :
1138          :
1139          :
1140          .LIST BEX
1141          :
1142          : FORMAT STATEMENTS USED IN PRINT CALLS
1143          :
1144          :
1145 004306     045     101     114  LPDROP: .ASCIZ /%ALP11 UNIT %D2%A DROPPED FROM TEST%N/
1146          004311     120     061     061
1147          004314     040     125     116
1148          004317     111     124     040
1149          004322     045     104     062
1146          004325     045     101     040
1147          004330     104     122     117
1148          004333     120     120     105
1149          004336     104     040     106
1146          004341     122     117     115
1147          004344     040     124     105
1148          004347     123     124     045
1149          004352     116     000

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 17  
 GLOBAL SUBROUTINES SECTION

```

1151          .SBTTL GLOBAL SUBROUTINES SECTION
1152
1153          :++
1154          : THE GLOBAL SUBROUTINE SECTION CONTAINS THE SUBROUTINES
1155          : THAT ARE USED BY MORE THAN ONE TEST.
1156          :--
1157
1158          :++
1159          : FUNCTIONAL DESCRIPTION:
1160          : SUBROUTINE TO PRINT THE GENERAL ERROR INFORMATION.
1161          : PRINTS THE ERROR MESSAGE IN THE FOLLOWING FORMAT:
1162          :
1163          : 'ERROR AT CSR XXXXXX UNIT YY'
1164          :
1165          : WHERE XXXXXX=  DEVICE CSR ADDRESS
1166          :                YY=  UNIT NUMBER THAT FAILED
1167          :
1168          : CALLING SEQUENCE
1169          :       JSR PC,LPERR
1170          : REQUIRED PARAMETERS
1171          :       ERRCOD MUST BE SET TO ONE OF THE ERROR CODES DESCRIBED
1172          :       UNDER ERROR CODES.
1173          :
1174          :--
1175          :
1176          :
1177          :
1178          : R2 IS USED INTERNAL TO THE ROUTINE.
1179          : THE ROUTINE DOES A SAVE ON R2
1180          : AND RESTORES IT PRIOR TO EXITING.
1181          :
1182          :
1183          LPERR:  SELECT ERRCOD OF 3 VERIFY          ;SELECT PROPER MESSAGE FORMAT
                  MOV     ERRCOD,-(SP)
                  BLT     50005$
                  CMP     ERRCOD,#3
                  BGT     50005$
                  ASL     (SP)
                  ADD     #50000$,(SP)
                  MOV     @ (SP)+,PC
                  50000$:
                  .WORD   50004$
                  .WORD   50003$
                  .WORD   50002$
                  .WORD   50001$
1184
1185          50003$:  CASE 1          ;STATUS ERROR
1186
1187          LET ERRTBL(R2) := ERRTBL(R2) + #1
                  INC     ERRTBL(R2)
                  LET L$LUN : R2 SHIFT -1
                  MOV     R2,L$LUN
                  ASR     L$LUN
                  ERRHRD  14, TXERR
                  TRAP    C$ERRHRD
                  .WORD   14
                  .WORD   TXERR
1188
004354
004354 013746 002336
004360 002454
004362 023727 002336 000003
004370 003050
004372 006316
004374 062716 004402
004400 013607
004402
004402 004512
004404 004412
004406 004440
004410 004466
004412
004412
004412 005262 003114
004416 010237 002074
004422 006237 002074
004426 104456
004430 000016
004432 003661

```

CZLPLDO LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 17-1  
GLOBAL SUBROUTINES SECTION

```

1189 004434 000000 .WORD 0
1190 004436 000425 CASE 2 ;OUTPUT TIMEOUT ERROR
004440 50002$: BR 50005$
1191 004440 005262 003114 LET ERRTBL(R2) := ERRTBL(R2) + #1
004440 INC ERRTBL(R2)
1192 004444 010237 002074 LET L$LUN := R2 SHIFT -1
004444 MOV R2,L$LUN
004450 006237 002074 ASR L$LUN
1193 004454 104456 ERRHRD 15,OUTTIM ;
004454 TRAP C$ERHRD
004456 000017 .WORD 15
004460 003706 .WORD OUTTIM
004462 000000 .WORD 0

1194
1195 004464 000412 CASE 3
004466 50001$: BR 50005$
1196 ; NEVER RECIEVED THE INTERRUPT
1197 004466 005262 003114 LET ERRTBL(R2) := ERRTBL(R2) + #1
004466 INC ERRTBL(R2)
1198 004472 010237 002074 LET L$LUN := R2 SHIFT -1
004472 MOV R2,L$LUN
004476 006237 002074 ASR L$LUN
1199 004502 104456 ERRHRD 16,TXNOIN
004502 TRAP C$ERHRD
004504 000020 .WORD 16
004506 003733 .WORD TXNOIN
004510 000000 .WORD 0

1200
1201
1202
1203 004512 ENDSELECT
004512 50004$:
004512 50005$:

1204
1205 004512 026237 003114 002272 IF ERRTBL(R2) GT MAXERR THEN
004512 CMP ERRTBL(R2),MAXERR
004520 003402 BLE 50006$
1206 004522 004737 005612 JSR PC,DROPIT ; MAXIMUM ERROR COUNT EXCEEDED !
1207 004526 004526 ENDIF
004526 50006$:
1208 004526 042762 100000 002512 LET STATUS(R2) := STATUS(R2) CLR.BY #ERROR
004526 BIC #ERROR,STATUS(R2)
1209 004534 005037 002336 LET ERRCOD := #0
004534 CLR ERRCOD
1210 004540 012772 000100 002356 LET @LPCSR(R2) := #100 ; CLEAR THE ERROR BIT AND ENABLE INTERRUPTS
004540 MOV #100,@LPCSR(R2)
1211 004546 000207 RTS PC ;AND EXIT
1212
1213
1214 :-----:
1215 : BIN2DA BINARY TO DECIMAL ASCII CONVERSION ROUTINE
1216 : ENTER WITH NUMBER TO BE CONVERTED ON THE STACK
1217 : FOLLOWED BY THE ADDRESS OF A 5 BYTE BUFFER
1218 : FOR THE ASCII STRING. 5 DIGITS WILL BE CONVERTED
: LEADING ZEROES WILL BE CONVERTED TO SPACES.

```

CZLPLDO LP25, LP26, LP07 TEST  
GLOBAL SUBROUTINES SECTION

MACRO M1113 30-DEC-80 09:36 PAGE 17-2

```

1219          :----- CALL BY JSR PC,BIN2DA -----
1220          :-----
1221          :-----
1222 004550    BIN2DA: PUSH R4,R5
004550 010446    MOV     R4,-(SP)
004552 010546    MOV     R5,-(SP)
1223 004554    LET R4 := 6(SP)          ; GET ADDRESS FOR ASCII STRING
004554 016604 000006    MOV     6(SP),R4
1224 004560    LET R5 := #TABLDA        ; GET ADDRESS OF DECIMAL TABLE
004560 012705 004742    MOV     #TABLDA,R5
1225 004564    LET FLAGDA := #0        ; LEADING ZERO FLAG
004564 005037 004754    CLR     FLAGDA
1226 004570    LET COUNTD := #0
004570 005037 004756    CLR     COUNTD
1227          ; 8.(SP) HAS NUMBER TO BE CONVERTED
1228 004574    DECR DIGITS FROM #4 TO #0 BY #1 ; DO 5 DIGITS
004574 012737 000004 004760    MOV     #4,DIGITS
004602 000402    BR      50007$
004604    50010$: DEC     DIGITS
004604 005337 004760    50007$: TST     DIGITS
004610    50012$: BLT     50011$
004610 005737 004760    WHILE 8.(SP) GE (R5) DO ; CREATE A DIGIT
004614 002435    50012$: CMP     8.(SP),(R5)
1229 004616    50013$: BLT     50013$
004616 026615 000010    LET 8.(SP) := 8.(SP) - (R5)
004622 002405    SUB     (R5),8.(SP)
1230 004624    LET COUNTD := COUNTD + #1
004624 161566 000010    INC     COUNTD
1231 004630    ENDDO
004630 005237 004756    BR      50012$
1232 004634    50013$: BR      50012$
004634 000770    ; CONVERT DIGIT TO ASCII OR SUPPLY A SPACE
004636    IF COUNTD GT #0 OR FLAGDA GT #0 THEN
1233 004636    TST     COUNTD
1234 004636 005737 004756    BGT     50014$
004642 003003    TST     FLAGDA
004644 005737 004754    BLE     50015$
004650 003410    50014$: LET COUNTD := COUNTD SET.BY #60
004652    BIS     #60,COUNTD
1235 004652 052737 000060 004756    LET (R4)+ :B= COUNTD
004652 113724 004756    MOVB   COUNTD,(R4)+
1236 004660    LET FLAGDA := FLAGDA + #1
004660 113724 004756    INC     FLAGDA
1237 004664    ELSE
004664 005237 004754    BR      50016$
1238 004670    50015$: LET (R4)+ :B= #40
004670 000402    MOVB   #40,(R4)+
004672    ENDDO
1239 004672 112724 000040    50016$: ; DO THE NEXT DIGIT
1240 004676    LET R5 := R5 + #2
004676 062705 000002    ADD     #2,R5

```



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 17-3  
 GLOBAL SUBROUTINES SECTION

1243	004702					LET COUNTD := #0
	004702	005037	004756			CLR COUNTD
1244	004706					ENDDECR
	004706	000736				BR 50010\$
	004710					50011\$:
1245						: IF NUMBER WAS A ZERO PRINT A '0'
1246	004710					IF FLAGDA EQ #0 THEN
	004710	005737	004754			TST FLAGDA
	004714	001002				BNE 50017\$
1247	004716					LET -(R4) :B- #60
	004716	112744	000060			MOVB #60,-(R4)
1248	004722					ENDIF
	004722					50017\$:
1249						: CLEAN UP THE STACK AND EXIT
1250	004722					LET 8.(SP) := 4(SP)
	004722	016666	000004	000010		MOV 4(SP),8.(SP)
1251	004730					POP R5,R4
	004730	012605				MOV (SP)+,R5
	004732	012604				MOV (SP)+,R4
1252	004734					LET SP : SP + #4
	004734	062706	000004			ADD #4,SP
1253	004740	000207				RTS PC
1254						
1255						
1256	004742	023420	001750	000144	TABLDA: .WORD	10000.,1000.,100.,10.,1
	004750	000012	000001			
1257	004754	000000			FLAGDA: .WORD	0
1258	004756	000000			COUNTD: .WORD	0
1259	004760	000000			DIGITS: .WORD	0
1260						

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 18  
I/O DRIVER

```

1262          .SBTTL  I/O DRIVER
1263
1264          :
1265          :
1266          :++
1267          :THE I/O DRIVER ROUTINE IS INVOKED BY MEANS OF THE INTERRUPT SYSTEM.
1268          :CALL TO IT IS JMP  IODRV.
1269          :RETURN  RTI.
1270          :ENTER ROUTINE WITH R2 SET UP TO DESIRED UNIT *2. R2 IS USED
1271          :TO CALCULATE OFFSET INTO PROPER TABLE.
1272          :R1 EQUALS MAXIMUM NUMBER OF UNITS ON SYSTEM UNDFR TEST.
1273          :
1274          :--
1275          :
1276          : CHECK FOR ERROR FLAG IN STATUS REG.
1277          :
1278 004762      IODRV: IF #BIT15 NOTSET IN @LPCSR(R2) THEN
004762      BIT      #BIT15,@LPCSR(R2)
004770      BNE      50020$
1279          :
1280          : IF COUNT NOT ZERO SEND NEXT BYTE
1281          :
1282          :         IF CURCNT(R2) GT #0 THEN
004772      TST      CURCNT(R2)
004772      BLE      50021$
004776      MOV      @LPCSR(R2),@LPCSR(R2)
1283 005000      MOV      @LPCSR(R2),@LPCSR(R2)
005000      MOV      @LPCSR(R2),@LPCSR(R2)
1284 005006      MOV      @LPCSR(R2),@LPCSR(R2)
005006      MOV      @LPCSR(R2),@LPCSR(R2)
1285          :
1286          : ENABLE INTERRUPT FOR NEXT BYTE
1287          :
1288 005012      BIS      STATUS(R2) := STATUS(R2) SET BY #ACTIVE
005012      BIS      #ACTIVE,STATUS(R2)
1289 005020      DEC      CURCNT(R2) := CURCNT(R2) - #1
005020      DEC      CURCNT(R2)
1290 005024      BIS      @LPCSR(R2) := @LPCSR(R2) SET BY #100
005024      BIS      #100,@LPCSR(R2)
1291 005032      BR      ELSE
005032      BR      50022$
005034      50021$:
1292          : CURRENT MSG DONE, IF PRINT COUNT NOT ZERO SEND AGAIN
1293          :         LET REPCNT(R2) := REPCNT(R2) - #1
005034      DEC      REPCNT(R2)
1294 005040      IF REPCNT(R2) GT #0 THEN
005040      TST      REPCNT(R2)
005044      BLE      50023$
1295 005046      MOV      CURADD(R2) := MSGADR(R2) ; RESTORE THE MSG ADDR
005046      MOV      MSGADR(R2),CURADD(R2)
1296 005054      MOV      CURCNT(R2) := MSGCNT(R2) ; RESTORE THE BYTE COUNT
005054      MOV      MSGCNT(R2),CURCNT(R2)
1297 005062      MOV      @LPCSR(R2) := @LPCSR(R2) ; RESEND THE MESSAGE
005062      MOV      @LPCSR(R2),@LPCSR(R2)
1298 005070      INC      CURADD(R2) := CURADD(R2) + #1 ; BUMP THE POINTER
005070      INC      CURADD(R2)
1299 005074      DEC      CURCNT(R2) := CURCNT(R2) - #1 ; DROP BYTE COUNT
005074      DEC      CURCNT(R2)

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 18-1  
I/O DRIVER

```

1300 005100          LET STATUS(R2) := STATUS(R2) SET.BY #ACTIVE
      005100 052762 020000 002512      BIS #ACTIVE,STATUS(R2)
1301 005106          LET @LPCSR(R2) := #100 ; RE-ENABLE INTERRUPTS
      005106 012772 000100 002356      MOV #100,@LPCSR(R2)
1302 005114          ELSE
      005114 000406          BR 50024$
      005116
50023$:
; CURRENT MSG DONE, REPEAT COUNT =0
; CLEAR ACTIVE AND DISABLE INTERRUPTS.
1303          LET STATUS(R2) := STATUS(R2) CLR.BY #ACTIVE
1304          BIC #ACTIVE,STATUS(R2)
1305 005116 042762 020000 002512      MOV #00,@LPCSR(R2)
1306 005124          LET @LPCSR(R2) := #00
      005124 012772 000000 002356      MOV #00,@LPCSR(R2)
1307 005132          ENDIF
      005132
50024$:
1308 005132          ENDIF
      005132
50022$:
1309 005132          ELSE
      005132 000410          BR 50025$
      005134
50020$:
; CLEAR ERROR CONDITION, ENABLE INTERRUPTS
; SET ERROR FLAG
1310          LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
1311          BIS #ERROR,STATUS(R2)
1312 005134 052762 100000 002512      LET ERRCOD := #STATER ; STATUS ERROR
1313 005142          MOV #STATER,ERRCOD
      005142 012737 000001 002336      JSR PC,@ERRSVC
1314 005150 004777 175736          ; ERROR SERVICE SHOULD CLEAR ERROR BIT AND ENABLE INTR
1315          ENDIF
1316 005154          POP R2
      005154
50025$:
1317 005154          MOV (SP)+,R2
      005154 012602
1318 005156          RTI
      000002

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 19  
I/O CONTROL

```

1320
1321
1322
1323
1324
1325
1326
1327
1328
1329
1330
1331
1332
1333
1334 005160
      005160 010246
      005162 010346
1335
1336
1337
1338
1339 005164
      005164 023727 002320 177777
      005172 001005
1340 005174
      005174 013703 002012
1341 005200
      005200 005037 002074
1342 005204
      005204 000405
      005206
1343 005206
      005206 012703 000001
1344 005212
      005212 013737 002320 002074
1345 005220
      005220
1346
1347
1348
1349 005220
1350 005220
      005220 005703
      005222 001002
1351 005224
      005224 000137 005536
1352 005230
      005230
1353
1354
1355
1356 005230
      005230 013702 002074
      005234 006302
1357 005236
      005236 005037 002336
1358

```

```

.SBTTL I/O CONTROL
:++
: THE I/O CONTROL SUBROUTINE IS A SINGLE ENTRY QUEUE MANAGER.
: THIS ROUTINE IS INVOKED BY A JSR FROM AN I/O CALL.
: INPUTS:      PRINTR  -1 FOR ALL TERMINALS
:              N FOR PRINTER NUMBER 'N'
:              BUFADD  ADDRESS OF MESSAGE TO PRINT
:              BU'CNT  BYTE COUNT TO TRANSMIT TO PRINTER
:
:              ERRSVC  ADDRESS OF ERROR SERVICE SUBROUTINE
:              BUFREP  IS NO. OF TIMES TO PRINT THE MSG
:--
IOCTRL: PUSH R2,R3
        MOV   R2,-(SP)
        MOV   R3,-(SP)
:
: IF PRINTR IS -1 QUE OUTPUT TO ALL PRINTERS SELECTED
: OTHERWISE TO UNIT NUMBER IN PRINTR.
:
        IF PRINTR EQ #-1 THEN
        CMP   PRINTR,#-1
        BNE   50026$
        LET  R3 := L$UNIT
        MOV  L$UNIT,R3
        LET  L$LUN := #0
        CLR  L$LUN
        ELSE
        BR   50027$
50026$:
        LET  R3 := #1
        MOV  #1,R3
        LET  L$LUN := PRINTR
        MOV  PRINTR,L$LUN
        ENDIF
50027$:
: REPEAT TILL R3 = C
:CTLLOP:
        IF R3 EQ #0 THEN
        TST  R3
        BNE  50030$
        INLINE <JMP CTLEND>
        JMP  CTLEND
        ENDIF
50030$:
: USE R2 AS AN INDEX INTO THE UNIT TABLES
:
        LET  R2 := L$LUN SHIFT 1
        MOV  L$LUN,R2
        ASL  R2
        LET  ERRCOD := #0
        CLR  ERRCOD
:

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 19-1  
I/O CONTROL

```

1359      ; IF THE UNIT HAS BEEN DROPPED SELECT THE NEXT UNIT
1360      ;
1361 005242      IF #DROPED NOTSETIN STATUS(R2) THEN
005242 032762 040000 002512      BIT      #DROPED,STATUS(R2)
005250 001123      BNE      50031$

1362      ;
1363      ; TEST FOR DVC ERROR BIT SET
1364      ;
1365 005252      IF #BIT15 SETIN @LPCSR(R2) THEN
005252 032772 100000 002356      BIT      #BIT15,@LPCSR(R2)
005260 001407      BEQ      50032$
1366 005262      LET ERRCOD := #STATERR      ; STATUS REG ERROR BIT 15 SET IN CSR
005262 012737 000001 002336      MOV      #STATERR,ERRCOD
1367 005270      LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
005270 052762 100000 002512      BIS      #ERROR,STATUS(R2)
1368 005276      ELSE
005276 000455      BR      50033$
005300      50032$:

1369      ;
1370      ; MAKE SURE PREVIOUS MSG IS DONE
1371      ;
1372 005300      IF CURCNT(R2) GT #0 THEN
005300 005762 002752      TST      CURCNT(R2)
005304 003452      BLE      50034$
1373 005306      IF #ACTIVE NOTSETIN STATUS(R2) THEN
005306 032762 020000 002512      BIT      #ACTIVE,STATUS(R2)
005314 001004      BNE      50035$

1374      ;
1375      ; OUTPUT WAS QUEUED BUT I/O DRIVER WAS NEVER INVOKED (VIA INTERRUPT)
1376      ;
1377 005316      LET ERRCOD : #NOINTR      ; NO INTERRUPT
005316 012737 000003 002336      MOV      #NOINTR,ERRCOD
1378 005324      ELSE
005324 000442      BR      50036$
005326      50035$:
1379 005326      WHILE #ACTIVE SETIN STATUS(R2) DO
005326 032762 020000 002512      50037$: BIT      #ACTIVE,STATUS(R2)
005334 001436      BEQ      50040$

1380      ;
1381 005336      LET DELCNT(R2) := #100.      ; 20 SEC. DELAY MAX
005336 012762 000144 003052      MOV      #100.,DELCNT(R2)
1382 005344      DELAY 2.      ; 200MS LOOPS
005344 012727 000002      MOV      #2.,(PC)+
005350 000000      .WORD 0
005352 013727 002116      MOV      L$DLY,(PC)+
005356 000000      .WORD 0
005360 005367 177772      DEC      -6(PC)
005364 001375      BNE      -.4
005366 005367 177756      DEC      -22(PC)
005372 001367      BNE      .-20
1383 005374      LET DELCNT(R2) := DELCNT(R2) - #1
005374 005362 003052      DEC      DELCNT(R2)
1384 005400      IF DELCNT(R2) EQ #0 THEN
005400 005762 003052      TST      DELCNT(R2)
005404 001011      BNE      50041$
1385 005406      LET ERRCOD := #TIMOUT

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 19-2  
I/O CONTROL

```

1386 005406 012737 000002 002336      MOV      #TIMOUT,ERRCOD      LET STATUS(R2) := STATUS(R2) CLR.BY #ACTIVE
      005414 042762 020000 002512      BIC      #ACTIVE,STATUS(R2)
1387 005414 042762 020000 002512      BIC      #ACTIVE,STATUS(R2)      LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
      005422 052762 100000 002512      BIS      #ERROR,STATUS(R2)
1388 005422 052762 100000 002512      BIS      #ERROR,STATUS(R2)      ENDIF
      005430 50041$:
      005430 50041$:      ENDDO
1389 005430 000736      BR      50037$
      005430 50040$:
      005432 50040$:      ENDIF
1390 005432 50036$:
      005432 50036$:      ENDIF
1391 005432 50034$:
      005432 50034$:      ENDIF
1392 005432 50033$:
      005432 50033$:      ENDIF
1393 005432 005737 002336      TST     ERRCOD      IF ERRCOD NE #0 THEN
      005432 001403      BEQ     50042$      ERRCOD
      005436 001403      BEQ     50042$      50042$
1394 005436 001403      BEQ     50042$
1395 005436 001403      BEQ     50042$
1396 005436 001403      BEQ     50042$
1397 005440 004777 175446      JSR     PC,@ERRSVC
1398 005444 000425      BR      50043$      ELSE
      005444 000425      BR      50043$
      005446 50042$:
1399 005446 50042$:
1400 005446 50042$:      Q UP THE MESSAGE AND ENABLE INTERRUPTS
1401 005446 50042$:      THE I/O DRIVER WILL PICK UP FROM HERE.
1402 005446 50042$:
1403 005446      LET CURADD(R2) :- BUFADD      ; BYTE ADDRESS
1404 005446 013762 002350 002552      MOV     BUFADD,CURADD(R2)
1405 005454 013762 002350 002712      MOV     BUFADD,MSGADR(R2)      LET MSGADR(R2) :- BUFADD      ; MESSAGE ADDRESS
1406 005462 013762 002352 002752      MOV     BUFADD,MSGADR(R2)
1407 005470 013762 002352 002612      MOV     BUFADD,MSGADR(R2)      LET CURCNT(R2) : BUF CNT      ; OUTPUT COUNT
1408 005504 013762 002354 002652      MOV     BUF CNT,CURCNT(R2)
1409 005512 005762 002752      MOV     BUF CNT,MSGCNT(R2)      LET MSGCNT(R2) :- BUF CNT      ; BYTE COUNT
1410 005520 003403      MOV     BUF CNT,MSGCNT(R2)
1411 005520 012772 000100 002356      MOV     BUFREP,REPCNT(R2)      LET REPCNT(R2) : BUFREP      ; PRINT COUNT
1412 005520 012772 000100 002356      MOV     BUFREP,REPCNT(R2)
1413 005520 005762 002752      TST     CURCNT(R2)      IF CURCNT(R2) GT #0 THEN
1414 005520 003403      BLE     50044$
1415 005520 012772 000100 002356      MOV     #100,@LPCSR(R2)      LET @LPCSR(R2) : #100      ; ENABLE INTERRUPTS
1416 005520 005062 003052      MOV     #100,@LPCSR(R2)
1417 005520 005062 003052      MOV     #100,@LPCSR(R2)      ENDIF
      50044$:
1418 005520 50043$:
1419 005520 50043$:      ENDIF
1420 005520 50031$:
1421 005520 50031$:      ENDIF
1422 005520 50031$:
1423 005520 50031$:      CLEAR OUT ANY TIMEOUT COUNT
1424 005520 50031$:
1425 005520 50031$:
1426 005520 50031$:
1427 005520 50031$:      LET DELCNT(R2) : #0
1428 005520 50031$:      CLR     DELCNT(R2)
1429 005520 50031$:
1430 005520 50031$:

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 19-3  
I/O CONTROL

```

1418                                     ; SELECT THE NEXT UNIT AND DECRIMENT THE LINECOUNT
1419                                     ;
1420 005524                                LET R3 :- R3 - #1
      005524 005303                       DEC   R3
1421 005526                                LET L$LUN := L$LUN + #1
      005526 005237 002074                 INC   L$LUN
1422 005532 000137 005220                 JMP   CTLEND
1423 005536                                CTLEND:
1424 005536                                POP   R3,R2
      005536 012603                       MOV   (SP)+,R3
      005540 012602                       MOV   (SP)+,R2
1425 005542 000207                       RTS   PC
1426
1427                                     ;****
1428                                     ; SUBROUTINE QUIET
1429                                     ;
1430                                     ; THIS SUBROUTINE WILL EFFECTIVLY DELAY UNTIL ALL QUEUED OUTPUT
1431                                     ; IS FINISHED. THE DELAY IS ACCOMPLISHED BY QUEUEING A NULL
1432                                     ; MESSAGE TO ALL LINES.
1433                                     ;-----
1434
1435 005544                                QUIET: OUTPUT #0,#0           ; NULL MESSAGE OUTPUT
1436 005606 000240                        NOP
1437 005610 000207                        RTS   PC
1438

```

CZLPLDO LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 20  
I/O CONTROL

```

1440
1441
1442
1443
1444
1445
1446
1447
1448 005612
      005612 052762 040000 002512
1449 005620
      005620 012762 177777 002752
1450 005626
      005626 005072 002356
1451 005632
      005632 013746 002074
      005636 012746 004306
      C05642 012746 000002
      C05646 010600
      005650 104417
      005652 062706 000006
1452 005656
      005656 005062 003114
1453 005662
      005662 005337 002342
1454 005666
      005666 005737 002342
      005672 001011
1455 005674
      005674 012746 003764
      C05700 012746 000001
      005704 010600
      005706 104417
      005710 062706 000004
1456 005714
      005714 104444
1457 005716
      005716
1458 005716 000207
1459
1460
1461
1462
1463
1464
1465
1466
1467
1468
1469 005720
      005720 005037 002074
1470 005724
      005724
      005724 023737 002074 002012
      005732 002007
1471 005734
      005734 013700 002074

```

```

-----
: DROPIIT          FUNCTIONAL DESCRIPTION :
:
: THIS SUBROUTINE IS USED TO DROP A BAD PRINTER FROM THE TEST
: DISABLE ANY INTERRUPTS FROM THE PRINTER, AND NOTIFY THE
: OPERATOR THAT THE PRINTER WAS DROPPED.
:-----

```

```

DROPIIT: LET STATUS(R2) := STATUS(R2) SET.BY #DROPED
        BIS      #DROPED,STATUS(R2)
        LET CURCNT(R2) := #-1
        MOV      #-1,CURCNT(R2)
        LET @LPCSR(R2) := #0
        CLR      @LPCSR(R2)
        PRINTF #LPDROP, L$LUN
        MOV      L$LUN,-(SP)
        MOV      #LPDROP,-(SP)
        MOV      #2,-(SP)
        MOV      SP,R0
        TRAP     C$PNTF
        ADD      #6,SP
        LET ERRTBL(R2) := #0
        CLR      ERRTBL(R2)
        LET UUT := UUT - #1
        DEC      UUT
        IF UUT EQ #0 THEN
        TST      UUT
        BNE      50045$
        PRINTF #UUTEQ0
        MOV      #UUTEQ0,-(SP)
        MOV      #1,-(SP)
        MOV      SP,R0
        TRAP     C$PNTF
        ADD      #4,SP
        DOCLN   ; NOTHING TO TEST
        TRAP     C$DCLN
        ENDIF
50045$:  RTS      PC

```

```

-----
: FAKE          FUNCTIONAL DESCRIPTION:
:
: THIS SUBROUTINE IS REQUIRED TO INSURE PROPER PASS COUNT REPORTS
: IN A MULTI UNIT MODE OF OPERATION.
:-----

```

```

FAKE:   LET L$LUN := #0
        CLR      L$LUN
        WHILE L$LUN LT L$UNIT DO
50046$: CMP      L$LUN,L$UNIT
        BGE      50047$
        GPHARD   L$LUN, R3
        MOV      L$LUN,R0

```



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 20-1  
I/O CONTROL

005740 104442  
005742 010003  
1472 005744  
005744 005237 002074  
1473 005750  
005750 000765  
005752  
1474 005752 000207  
1475  
1476  
1477 005754

TRAP C\$GPHRD  
MOV RO,R3  
LET L\$LUN :- L\$LUN + #1  
INC L\$LUN  
ENDDG  
BR 50046\$  
50047\$:  
RTS PC  
ENDMOD

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 21  
INITIALIZATION SECTION

```

1479      .SBTTL  INITIALIZATION SECTION
1480      :++
1481      :THE INITIALIZE ROUTINE IS EXECUTED AT THE BEGINNING OF EACH SUB-PASS AND IS
1482      :PRIMARILY USED FOR REQUESTING P-TABLE PARAMETERS. INFORMATION REQUESTED FROM
1483      :THE OPERATOR INCLUDE THE NUMBER OF UNITS UNDER TEST, DEVICE ADDRESSES, VECTORS,
1484      :CLOCK TYPE, AUTO OR MANUAL PRINTING SPEED MEASUREMENT, AND WHETHER A DAVFU
1485      :OPTION IS INSTALLED IN THE SYSTEM.
1486      :--
1487 005754 BGNMOD
1488 005754 BGNINIT
1489      L$INIT::
1490      :RESET EXTERNAL BUS IF START EVENT FLAG IS SET
1491      :OR POWER FAIL RESTART
1491 005754      READEF #EF.START          ;TEST START EF INDICATOR
1491 005754 012700 000040      MOV #EF.START,R0
1491 005760 104447      TRAP C$REFG
1492 005762      BCOMPLETE 1$          ;BRANCH IF FROM START UP
1492 005762 103466      BCS 1$
1493 005764      READEF #EF.RESTART      ;NOW THE RESTARTFLAG
1493 005764 012700 000037      MOV #EF.RESTART,R0
1493 005770 104447      TRAP C$REFG
1494 005772      BCOMPLETE 1$          ;IF EITHER START OR POWER FAIL RESTART
1494 005772 103462      BCS 1$
1495      :DO A BUS RESET
1496 005774 004737 005720      JSR PC,FAKE          ; UPDATE PASS COUNT
1497 006000      SETPRI #PRI00          ; PRIORITY ZERO
1497 006000 012700 000000      MOV #PRI00,R0
1497 006004 104441      TRAP C$SPRI
1498 006006      LET OUTBUF :B= #14
1498 006006 112737 000014 003160      MOVB #14,OUTBUF
1499 006014      OUTPUT #OUTBUF,#1
1500 006056      DECR WORK1 FROM #6 TO #1 BY #1
1500 006056 012737 000006 003156      MOV #6,WORK1
1500 006064 000402      BR 50050$
1500 006066      50051$:
1500 006066 005337 003156      DEC WORK1
1500 006072      50050$:
1500 006072 023727 003156 000001      CMP WORK1,#1
1500 006100 002415      BLT 50052$
1501 006102      DELAY 250
1501 006102 012727 000250      MOV #250,(PC)+
1501 006106 000000      .WORD 0
1501 006110 013727 002116      MOV L$DLY,(PC)+
1501 006114 000000      .WORD 0
1501 006116 005367 177772      DEC -6(PC)
1501 006122 001375      BNE .-4
1501 006124 005367 177756      DEC -22(PC)
1501 006130 001367      BNE .-20
1502 006132      ENDDEC
1502 006132 000755      BR 50051$
1502 006134      50052$:
1503 006134      EXIT INIT          ; ELSE EXIT INIT CODE
1503 006134 104432      TRAP C$EXIT
1503 006136 001640      .WORD L10004-.
1504
1505      :POWER UP RESTART OR START COMMAND ISSUED
1506

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 21-1  
INITIALIZATION SECTION

```

1507 006140          15$: BRESET                               ;RESET THE BUS
      006140 104433 TRAP CSRESET
1508 006142          IF L$UNIT GT #16. THEN
      006142 023727 002012 000020 CMP L$UNIT,#16.
      006150 003420 BLE 50053$
1509 006152          PRINTF #NRGT16
      006152 012746 007156 MOV #NRGT16,-(SP)
      006156 012746 000001 MOV #1,-(SP)
      006162 010600 MOV SP,R0
      006164 104417 TRAP C$PNTF
      006166 062706 000004 ADD #4,SP
1510 006172          PRINTF #NRGT17
      006172 012746 007241 MOV #NRGT17,-(SP)
      006176 012746 000001 MOV #1,-(SP)
      006202 010600 MOV SP,R0
      006204 104417 TRAP C$PNTF
      006206 062706 000004 ADD #4,SP
1511 006212          50053$: ENDF
      006212 MANUAL                               ; CHECK FOR UNATTENDED MODE
1512 006212 104450 TRAP C$MANI
1513 006214          BNCOMPLETE 2$                ; IF UNATTENDED BYPASS MANUAL INSTRUCTIONS
      006214 103034 BCC 2$
1514 006216          PRINTF #RESET1
1515 006216 012746 007374 MOV #RESET1,-(SP)
      006222 012746 000001 MOV #1,-(SP)
      006226 010600 MOV SP,R0
      006230 104417 TRAP C$PNTF
      006232 062706 000004 ADD #4,SP
1516 006236          PRINTF #RESET2
      006236 012746 007467 MOV #RESET2,-(SP)
      006242 012746 000001 MOV #1,-(SP)
      006246 010600 MOV SP,R0
      006250 104417 TRAP C$PNTF
      006252 062706 000004 ADD #4,SP
1517          ;
1518          ;WAIT FOR A 'CR' BEFORE GOING ON
1519          ;
1520 006256          LET FLAG := #0
      006256 005037 002274 CLR FLAG
1521 006262          LET ERRCOD := #0
      006262 005037 002336 CLR ERRCOD
1522 006266          LET JUT := #0
      006266 005037 002342 CLR JUT
1523 006272          100$:
1524 006272          GMANIL READY,FLAG,100000,YES
      006272 104443 TRAP C$GMAN
      006274 000404 BR 10000$
      006276 002274 .WORD FLAG
      006300 000130 .WORD T$CODE
      006302 007603 .WORD READY
      006304 100000 .WORD 100000
1525          10000$:
1526          ;
1527          ;REQUEST P-TABLE FOR PRINTERS UNDER TEST
      ;

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M113 30-DEC-80 09:36 PAGE 21-2  
INITIALIZATION SECTION

```

1528 006306          2$:      LET R1 := L$UNIT - #1          ;MAXIMUM NUMBER OF UNITS
      006306 013701 002012      MOV      L$UNIT,R1
      006312 005301          DEC      R1
1529 006314          INCR L$LUN FROM #0 TO R1 BY #1
      006314 005037 002074      CLR      L$LUN
      006320 000402          BR       50054$
      006322          50055$:      INC      L$LUN
      006322 005237 002074      50054$:      CMP      L$LUN,R1
      006326          BGT      50056$
      006326 023701 002074      GP$HARD L$LUN,R3          ;REQUEST P-TABLE ADDRESS
      006332 003135          MOV      L$LUN,R0
1530 006334          TRAP    C$GPHRD
      006334 013700 002074      MOV      R0,R3
      006340 104442          MOV      BNCOMplete 3$          ;BRANCH IF DEVICE NOT PRESENT
      006342 010003          BCC     3$
1531 006344          LET R2 : L$LUN SHIFT 1
      006344 103124          MOV      L$LUN,R2
1532 006346          ASL     R2
      006346 013702 002074
      006352 006302
1533
1534      : CLEAR ERROR COUNT, OUTPUT COUNT, GET DEVICE TYPE TO STATUS.
1535      :
1536 006354          IF 4(R3) EQ #0 THEN
      006354 005763 000004      TST     4(R3)
      006360 001004          BNE     50057$
1537 006362          LET STATUS(R2) := STATUS(R2) CLR.BY #FLAG26.FLAG07
      006362 042762 003000 002512      BIC    #FLAG26.FLAG07,STATUS(R2)
1538 006370          ELSE
      006370 000421          BR     50060$
      006372          50057$:
1539 006372          IF 4(R3) EQ #1 THEN
      006372 026327 000004 000001      CMP    4(R3),#1
      006400 001007          BNE     50061$
1540 006402          LET STATUS(R2) := STATUS(R2) SET.BY #FLAG26
      006402 052762 001000 002512      BIS    #FLAG26,STATUS(R2)
1541 006410          LET STATUS(R2) := STATUS(R2) CLR.BY #FLAG07
      006410 042762 002000 002512      BIC    #FLAG07,STATUS(R2)
1542 006416          ELSE
      006416 000406          BR     50062$
      006420          50061$:
1543 006420          LET STATUS(R2) := STATUS(R2) CLR.BY #FLAG26
      006420 042762 001000 002512      BIC    #FLAG26,STATUS(R2)
1544 006426          LET STATUS(R2) := STATUS(R2) SET.BY #FLAG07
      006426 052762 002000 002512      BIS    #FLAG07,STATUS(R2)
1545 006434          ENDIF
      006434          50062$:
1546 006434          ENDIF
      006434          50060$:
1547
1548      : NOW GET THE BAND TYPE 64 OR 96 CHARACTER
1549      :
1550 006434          IF 6(R3) EQ #0 THEN
      006434 005763 000006      TST     6(R3)
      006440 001004          BNE     50063$
1551 006442          LET STATUS(R2) := STATUS(R2) CLR.BY #FLAG96
      006442 042762 010000 002512      BIC    #FLAG96,STATUS(R2)

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 21-3  
 !INITIALIZATION SECTION

```

1552 006450          ELSE
      006450 000403          BR      50064$
      006452          50063$:
1553 006452          LET STATUS(R2) := STATUS(R2) SET.BY #FLAG96
      006452 052762 010000 002512      BIS      #FLAG96,STATUS(R2)
1554 006460          ENDIF
      006460          50064$:
1555 006460          LET ERR?TBL(R2) := #0
      006460 005062 003114          CLR      ER?TBL(R2)
1556 006464          LET CURCNT(R2) := #-1
      006464 012762 177777 002752      MOV      #-1,CURCNT(R2)
1557 006472          LET DELCNT(R2) := #0
      006472 005062 003052          CLR      DELCNT(R2)
1558 006476          LET REPCNT(R2) := #0
      006476 005062 002652          CLR      REPCNT(R2)
1559
1560          ;:LOAD CSR ADDRESS INTO TABLE
1561
1562 006502          LET LPCSR(R2) := (R3)+          ;SET UP CSR ADDRESS FOR DEVICE
      006502 012362 002356          MOV      (R3)+,LPCSR(R2)
1563 006506          LET LPBUF(R2) := LPCSR(R2) + #2
      006506 016262 002356 002452      MOV      LPCSR(R2),LPBUF(R2)
      006514 062762 000002 002452      ADD      #2,LPBUF(R2)
1564
1565          ;:SET UP VECTOR ADDRESS INTO GIVEN TABLE
1566
1567 006522          LET LPVEC(R2) := (R3)+
      006522 012362 002416          MOV      (R3)+,LPVEC(R2)
1568
1569          ;:SET UP DEVICE INTERRUPT VECTOR INFORMATION
1570
1571 006526          LET WORK := R2 SHIFT 3
      006526 010237 003154          MOV      R2,WORK
      006532 006337 003154          ASL      WORK
      006536 006337 003154          ASL      WORK
      006542 006337 003154          ASL      WORK
1572 006546          LET WORK := WORK + #INT00
      006546 062737 036220 003154      ADD      #INT00,WORK
1573 006554          LET LPINTR(R2) := WORK
      006554 013762 003154 003012      MOV      WORK,LPINTR(R2)
1574 006562          SETVEC LPVEC(R2), LPINTR(R2), #PRI04
      006562 012746 000200          MOV      #PRI04,-(SP)
      006566 016246 003012          MOV      LPINTR(R2),-(SP)
      006572 016246 002416          MOV      LPVEC(R2),-(SP)
      006576 012746 000003          MOV      #3,-(SP)
      006602 104437          TRAP      C$SVEC
      006604 062706 000010          ADD      #10,SP
1575
1576          ;: ADD ONE TO UNIT UNDER TEST COUNT
1577
1578 006610          LET UUT := UUT + #1
      006610 005237 002342          INC      UUT
1579 006614 000403          BR      4$
1580
1581          ;:INDICATE L$LUN NOT AVAILABLE FOR TESTING
1582
1583 006616          3$:          LET STATUS(R2) := STATUS(R2) SET.BY #DROPE

```

(ZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 21-4  
INITIALIZATION SECTION

```

1584 006616 052762 040000 002512 4$: BIS #DROPE,STATUS(R2) ;GO BACK AND DO IT AGAIN
006624 ENDINC
006624 000636 BR 50055$
006626 50056$:
1585 .....
1586 : SETUP TO HANDLE CLOCK INTERRUPTS
1587 : IF AN L-CLOCK IS ON THE SYSTEM THEN SETUP A NOOP INTERRUPT
1588 : HANDLER BECAUSE LSI SYSTEMS MAY HAVE THE CLOCK ENABLD AT ALL TIMES.
1589 006626 LET CLKTYP := #1 ; DEFAULT FOR NO CLOCK ON SYSTEM
006626 012737 000001 002322 MOV #1,CLKTYP
006634 012700 000114 002322 CLOCK L,R4 ; TEST FOR L-CLOCK
006640 104462 MOV #L,R0
006642 010004 TRAP C$CLCK
1591 006644 IFCOND CS THEN ; WE HAVE AN L-CLOCK
006644 103031 BCC 50065$
1592 006646 LET CLKTYP := #2
006646 012737 000002 002322 MOV #2,CLKTYP
1593 006654 LET CLOCKP := R4
006654 010437 002324 MOV R4,CLOCKP
1594 006660 LET CLKCSR := @CLOCKP
006660 017737 173440 002326 MOV @CLOCKP,CLKCSR
1595 006666 LET @CLKCSR := #00 ; TRY TO DISABLE INTERRUPTS
006666 012777 000000 173432 MOV #00,@CLKCSR
1596 ; SETUP THE NOOP HANDLER
1597 006674 LET CLKVEC := 4(R4)
006674 016437 000004 002332 MOV 4(R4),CLKVEC
1598 006702 SETVEC CLKVEC,#IGNORE,#PRI06
006702 012746 000300 MOV #PRI06,-(SP)
006706 012746 010000 MOV #IGNORE,-(SP)
006712 013746 002332 MOV CLKVEC,-(SP)
006716 012746 000003 MOV #3,-(SP)
006722 104437 TRAP C$SVEC
006724 062706 000010 ADD #10,SP
1599 006730 ENDIF
006730 50065$:
1600 ; IF THE OPERATOR WANTS MANUAL SPEED TEST SET CLOCK TYPE = 4
1601 006730 005737 002264 TST MANSPP
1602 006734 001410 BEQ CK1
1603 006736 LET CLKTYP := #4
006736 012737 000004 002322 MOV #4,CLKTYP
1604 006744 SETPRI #PRI00 ; START TEST AT PRI 0
006744 012700 000000 MOV #PRI00,R0
006750 104441 TRAP C$SPRI
1605 006752 EXIT INIT
006752 104432 TRAP C$EXIT
006754 001022 .WORD L10004-
1606 ; IF A P-CLOCK IS ON THE SYSTEM UPGRADE CLOCK TYPE TO 3
1607 CK1: CLOCK P,R4
006756 012700 000120 MOV #P,R0
006762 104462 TRAP C$CLCK
006764 010004 MOV R0,R4
1608 006766 IFCOND CS THEN ; WE HAVE A P-CLOCK
006766 103016 BCC 50066$
1609 006770 LET CLKTYP := #3
006770 012737 000003 002322 MOV #3,CLKTYP
1610 006776 LET CLOCKP := R4

```

CZLPLDO LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 21-5  
INITIALIZATION SECTION

```

1611 006776 010437 002324      MOV     R4,CLOCKP
007002                        LET  CLKCSR := @CLOCKP
1612 007002 017737 173316 002326  MOV     @CLOCKP,CLKCSR
007010                        LET  CLKVEC := 4(R4)
1613 007010 016437 000004 002332  MOV     4(R4),CLKVEC
1614 007016                        ; TRY TO DISABLE THE P-CLOCK
007016 012777 000000 173302  MOV     LET @CLKCSR := #00
007024                        MOV     #00,@CLKCSR
007024                        ENDIF
1616 50066$:
1617 ; IF NO CLOCKS ON THE SYSTEM NOTIFY THE OPERATOR
007024 023727 002322 000001  IF  CLKTYP EQ #1 THEN
007032 001020  CMP     CLKTYP,#1
1618 007034  PRINTF #NOCLCK
007034 012746 007640  MOV     #NOCLCK,-(SP)
007040 012746 000001  MOV     #1,-(SP)
007044 010600  MOV     SP,R0
007046 104417  TRAP   C$PNTF
1619 007050 062706 000004  ADD     #4,SP
007054  PRINTF #NOTIM
007054 012746 007702  MOV     #NOTIM,-(SP)
007060 012746 000001  MOV     #1,-(SP)
007064 010600  MOV     SP,R0
007066 104417  TRAP   C$PNTF
1620 007070 062706 000004  ADD     #4,SP
007074  ENDIF
1621 50067$:
007074  SETPRI #PRI00
007074 012700 000000  MOV     #PRI00,R0
007100 104441  TRAP   C$SPRI
1622 007102  LET OUTBUF :B= #14
007102 112737 000014 003160  MOVB   #14,OUTBUF
1623 007110  OUTPUT #OUTBUF,#1
1624 007152  EXIT INIT
007152 104432  TRAP   C$EXIT
007154 000622  .WORD  L10004-.
1625  .NL IST BEX
1626
1627 007156 045 116 045  NRGT16: .ASCIZ  /%N%NUMBER OF LINE PRINTERS UNDER TEST EXCEEDS 16./
1628 007241 045 116 045  NRGT17: .ASCIZ  /%N%ONLY 16 WILL BE TESTED./
1629 007275 045 116 045  MRESET: .ASCIZ  /%N%ARESET LINE PRINTER(S), DO FORM FEED, AND PLACE ON LINE.%N/
1630 007374 045 116 045  RESET1: .ASCIZ  /%N%ARESET LINE PRINTER(S),SET FORMS LENGTH TO 11 INCHES.%N/
1631 007467 045 101 123  RESET2: .ASCIZ  /%A%SET VERTICAL DENSITY TO 6 LINES PER INCH,DO FORM FEED AND PLACE ON LINE.%N/
1632
1633 007603 104 105 120  READY: .ASCIZ  /DEPRESS 'RETURN' WHEN READY./
1634 007640 045 116 045  NOCLCK: .ASCIZ  /%N%AHARDWARE CLOCK NOT AVAILABLE./
1635 007702 045 116 045  NOTIM: .ASCIZ  /%N%AAUTO PRINTING SPEED MEASUREMENT CANNUT BE PERFORMED./
1636  .EVEN
1637 007774 000000  PLOC: .WORD  0
1638
1639  .LIST BEX
1640 007776  ENDINIT
007776  L10004:
007776 104411  TRAP   C$INIT
1641
1642

```

.....

CZLPLD0 P25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 21-6  
INITIALIZATION SECTION

```

1643
1644
1645
1646
1647
1648 010000
1649 010000 000002
1650
1651
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1659
1660
1661 010002
      010002 010346
      010004 010446
1662 010006
      010006 005004
1663 010010
      010010 013703 002012
1664 010014
      010014
      010014 005703
      010016 003417
1665 010020
      010020 012746 000200
      010024 016446 003012
      010030 016446 002416
      010034 012746 000003
      010040 104437
      010042 062706 000010
1666 010046
      010046 062704 000002
1667 010052
      010052 005303
1668 010054
      010054 000757
      010056
1669 010056
      010056 012604
      010060 012603
1670 010062 000207
1671

```

```

: IGNORE      AN INTERRUPT CATCHER FOR THE I-CLOCK
:             THAT IGNORES THE INTERRUPT.
:             USED FOR SYSTEMS WHERE CLOCK CANNOT BE TURNED OFF.
:             .....

```

```

IGNORE:      ; NOOP
             RTI

```

```

-----
: RESVEC      FUNCTIONAL DESCRIPTION
:             THIS SUBROUTINE WILL SETUP ALL UNITS VECTOR AREAS
:             TO THE 'NORMAL' INTERRUPT ROUTINES STARTING AT INT00.
-----

```

```

RESVEC::      PUSH    R3,R4
              MOV     R3,-(SP)
              MOV     R4,-(SP)
              LET    R4 := #0
              CLR    R4
              LET    R3 := LSUNIT
              MOV     LSUNIT,R3
              WHILE R3 GT #0 DO
50070$:      TST     R3
              BLE    50071$
              SETVEC LPVEC(R4), LPINTR(R4), #PRI04
              MOV     #PRI04,-(SP)
              MOV     LPINTR(R4),-(SP)
              MOV     LPVEC(R4),-(SP)
              MOV     #3,-(SP)
              TRAP   C$SVEC
              ADD    #10,SP
              LET    R4 := R4 + #2
              ADD    #2,R4
              LET    R3 := R3 - #1
              DEC    R3
              ENDDO
              BR     50070$
50071$:      POP    R4,R3
              MOV     (SP)+,R4
              MOV     (SP)+,R3
              RTS    PC

```



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 22  
CLEANUP CODING SECTION

```

1673
1674 010064

1675
1676
1677
1678
1679
1680
1681
1682
1683
1684 010064

1685 010064
010064
1686 010064 012700 000340
010064 104441
010070
1687 010072
010072 104433

1688
1689 010074
010074 013701 002012
010100 005301
1690 010102
010102 005037 002074
010106 000402
010110
010110 005237 002074
010114
010114 023701 002074
010120 003020

1691
1692
1693 010122
010122 013702 002074
010126 006302

1694
1695 010130
010130 042762 160377 002512
010136
1696 010136 012762 177777 002752
010144
1697 010144 005062 003114
010150
1698 010150 005062 003052
010154
1699 010154 005062 002652
010160
1700 010160 000753
010162
1701 010162 004737 110002
010166
1702 010166 023727 002322 000003
010174 001006
1703 010176

```

```

.SBTTL CLEANUP CODING SECTION
STARS
:*****
:++
:THE PURPOSE OF THE CLEANUP SECTION IS TO CLEANUP ALL PRINTERS UNDER TEST
:AND RETEST ANY UNITS WHICH HAVE BEEN DROPPED FROM TESTING TO INSURE THAT
:THEY HAVE NOT COME BACK ON LINE. IF THE DEVICE HAS COME BACK ON LINE
:TESTING WILL BE RESTARTED ON THE DEVICE. THIS INSURES THAT
:IN THE EVENT A PAPER OUT OCCURRED AND THE OPERATOR HAS PUT ADDITIONAL PAPER
:INTO THE UNIT UNDER TEST, THE INITIALIZATION SEQUENCE DOES NOT
:HAVE TO BE DONE AGAIN IN ORDER TO GET THE DEVICE ACTIVE.
:--
STARS
:*****
BGNCLN
L$CLEAN::
    SETPRI #PRI07
    MOV #PRI07,R0
    TRAP C$SPRI
        BRESET
    TRAP C$RESET

CLEAN: LET R1 := L$UNIT - #1 ;NUMBER OF UNITS-1
    MOV L$UNIT,R1
    DEC R1
    INCR L$LUN FROM #0 TO R1 BY #1
    CLR L$LUN
    BR 50072$

50073$: INC L$LUN
50072$: CMP L$LUN,R1
    BGT 50074$
; DISABLE ALL INTERRUPTS, SELECT ALL LINES
; ZERO ALL ERROR COUNTS
    LET R2 := L$LUN SHIFT 1
    MOV L$LUN,R2
    ASL R2
; CLEAR ALL BITS IN STATUS EXCEPT DEVICE TYPE
    LET STATUS(R2) := STATUS(R2) CLR BY #ERROR!DROPE!ACTIVE!LOBYTE
    BIC #ERROR!DROPE!ACTIVE!LOBYTE,STATUS(R2)
    LET CURCNT(R2) := #-1
    MOV #-1,CURCNT(R2)
    LET ERRTBL(R2) := #0
    CLR ERRTBL(R2)
    LET DELCNT(R2) := #0
    CLR DELCNT(R2)
    LET REPCNT(R2) := #0
    CLR REPCNT(R2)
    ENDINC
    BR 50073$

50074$: JSR PC,RESVEC ; RESET THE VECTORS
    IF CLKTYP EQ #3 THEN
    CMP CLKTYP,#3
    BNE 50075$
    CLRVEC @CLKVEC

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 22-1  
 CLEANUP CODING SECTION

1704	010176	017700	172130		MOV @CLKVEC,RO
	010202	104436			TRAP C\$CVEC
	010204				LET @CLKCSR :- #00
1705	010204	012777	000000	172114	MOV #00,@CLKCSR
	010212				ENDIF
1706	010212				50075\$: IF CLKTYP EQ #2 THEN
	010212	023727	002322	000002	CMP CLKTYP,#2
	010220	001013			BNE 50076\$
1707	010222				SETVEC CLKVEC,#IGNORE,#PRI06
	010222	012746	000300		MOV #PRI06,-(SP)
	010226	012746	010000		MOV #IGNORE,-(SP)
	010232	013746	002332		MOV CLKVEC,-(SP)
	010236	012746	000003		MOV #3,-(SP)
	010242	104437			TRAP C\$SVEC
1708	010244	062706	000010		ADD #10,SP
	010250				ENDIF
1709	010250				50076\$: SETPRI #PRI00
	010250	012700	000000		MOV #PRI00,RO
	010254	104441			TRAP C\$SPRI
1710	010256				ENDCLN
	010256				L10005:
	010256	104412			TRAP C\$CLEAN
1711					
1712	010260				ENDMOD



CZLPLDU LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 23-1  
INTERFACE LOGIC

```

1753 010374          DEC WORK1 FROM #12. TO #1 BY #1
      010374 012737 000014 003156      MOV #12, WORK1
      010402 000402          BR 50101$
      010404          50102$: DEC WORK1
      010410          50101$: CMP WORK1, #1
      010410 023727 003156 000001      BLT 50103$
      010416 002415          DELAY 250
1754 010420          MOV #250, (PC)+
      010420 012727 000250          .WORD 0
      010424 000000          MOV L$DLY, (PC)+
      010426 013727 002116          .WORD 0
      010432 000000          DEC -6(PC)
      010434 005367 177772          BNE -4
      010440 001375          DEC -22(PC)
      010442 005367 177756          BNE -20
1755 010450          BR ENDDDEC
      C10450 000755          BR 50102$
1756 010452          50103$: ENDF
      010452          50100$:
1757          :
1758          :NOW TEST FOR PRINTER READY
1759          :
1760 010452          IF #BIT07 NOTSETIN @LPCSR(R2) THEN ;TEST FOR THE READY BIT
      010452 032772 000200 002356      BIT #BIT07, @LPCSR(R2)
      010460 001014          BNE 50104$
1761 010462          LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
      010462 052762 100000 002512      BIS #ERROR, STATUS(R2)
1762 010470          LET L$LUN := LUNIT
      010470 013737 002314 002074      MOV LUNIT, L$LUN
1763 010476          LET ERRTBL(R2) := ERRTBL(R2) + #1
      010476 005262 003114          INC ERRTBL(R2)
1764 010502          ERRHRD 2, RDYERR ;REPORT AN ERROR
      010502 104456          TRAP C$ERRHRD
      010504 000002          .WORD 2
      010506 003424          .WORD RDYERR
      010510 000000          .WORD 0
1765 010512          ENDF
      010512          50104$:
1766          :
1767          :INSURE LOADING CHARACTER CAUSES PRINTER READY TO GO AWAY
1768          :
1769 010512          LET @LPBUF(R2) := #12
      010512 012772 000012 002452      MOV #12, @LPBUF(R2)
1770 010520          IF #BIT07 SETIN @LPCSR(R2) THEN
      010520 032772 000200 002356      BIT #BIT07, @LPCSR(R2)
      010526 001416          BEQ 50105$
1771 010530          LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
      010530 052762 100000 002512      BIS #ERROR, STATUS(R2)
1772 010536          LET ERRTBL(R2) := ERRTBL(R2) + #1
      010536 005262 003114          INC ERRTBL(R2)
1773 010542          LET L$LUN := LUNIT
      010542 013737 002314 002074      MOV LUNIT, L$LUN
1774 010550          ERRHRD 3, ERR11 ;REPORT AN ERROR
      010550 104456          TRAP C$ERRHRD

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 23-2  
 INTERFACE LOGIC

010552	000003				.WORD 3
010554	011332				.WORD ERR11
010556	000000				.WORD 0
1775	010560				LET @LPCSR(R2) := #0
	010560	005072	002356		CLR @LPCSR(R2)
1776	010564				ENDIF
	010564				50105\$:
1777					:
1778					:VERIFY THAT THE PRINTER WILL NOT INTERRUPT IF IT IS AT A PRIORITY LEVEL
1779					:THE SAME AS THE CPU
1780					:
1781	010564				SETPRI #PRI04 ;CPU TO PRIORITY 4
	010564	012700	000200		MOV #PRI04,R0
	010570	104441			TRAP C\$SPRI
1782	010572				SETVEC LPVEC(R2),#INTERR,#PRI04 ;LP VECTOR SET UP
	010572	012746	000200		MOV #PRI04,-(SP)
	010576	012746	011214		MOV #INTERR,-(SP)
	010602	016246	002416		MOV LPVEC(R2),-(SP)
	010606	012746	000003		MOV #3,-(SP)
	010612	104437			TRAP C\$SVEC
	010614	062706	000010		ADD #10,SP
1783	010620				LET @LPCSR(R2) := @LPCSR(R2) SET.BY #100 ;INTERRUPT ENABLE
	010620	052772	000100	002356	BIS #100,@LPCSR(R2)
1784	010626				DECR WORK1 FROM #12 TO #1 BY #1
	010626	012737	000012	003156	MOV #12,WORK1
	010634	000402			BR 50106\$
	010636				50107\$:
	010636	005337	003156		DEC WORK1
	010642				50106\$:
	010642	023727	003156	000001	CMP WORK1,#1
	010650	002415			BLT 50110\$
1785	010652				DELAY 250. ; ALLOW 3 SEC FOR DELAY
	010652	012727	000372		MOV #250.,(PC)+
	010656	000000			.WORD 0
	010660	013727	002116		MOV L\$DLY,(PC)+
	010664	000000			.WORD 0
	010666	005367	177772		DEC -6(PC)
	010672	001375			BNE .-4
	010674	005367	177756		DEC -22(PC)
	010700	001367			BNE .-20
1786	010702				ENDDEC
	010702	000755			BR 50107\$
	010704				50110\$:
1787					:
1788					:NOW TEST THAT THE PRINTER WILL INTERRUPT IF THE CPU PRIORITY IS LOWER THAN
1789					:THE PRINTER PRIORITY
1790					:
1791	010704				LET @LPCSR(R2) := @LPCSR(R2) CLR.BY #100 ;CLEAR INTERRUPT ENABLE
	010704	042772	000100	002356	BIC #100,@LPCSR(R2)
1792	010712				SETPRI #PRI03 ;CPU TO PRIORITY 3
	010712	012700	000140		MOV #PRI03,R0
	010716	104441			TRAP C\$SPRI
1793	010720				SETVEC LPVEC(R2),#INTHDL,#PRI04
	010720	012746	000200		MOV #PRI04,-(SP)
	010724	012746	011244		MOV #INTHDL,-(SP)
	010730	016246	002416		MOV LPVEC(R2),-(SP)
	010734	012746	000003		MOV #3,-(SP)



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 23-4  
INTERFACE LOGIC

```

1821 011214          INTERR: LET ERR1BL(R2) := ERR1BL(R2) + #1
      011214 005262 003114      INC      ERR1BL(R2)
1822 011220          LET L$LUN := LUNIT
      011220 013737 002314 002074  MOV      LUNIT,L$LUN
1823 011226          ERRHRD 5,ERR12
      011226 104456      TRAP      C$ERRHRD
      011230 C00005      .WORD      5
      011232 011406      .WORD      ERR12
      011234 000000      .WORD      0
1824 011236          LET (SP) := #END2
      011236 012716 011026      MOV      #END2,(SP)
1825 011242          ENDSRV
      011242          L10007:
      011242 000002          RTI

1826          ;
1827          ; INTERRUPT HANDLER FOR EXPECTED INTERRUPT
1828          ;
1829 011244          BGNSRV
1830          ;
1831 011244          INTHDL: LET (SP) := #END2
      011244 012716 011026      MOV      #END2,(SP)
1832 011250          ENDSRV
      011250          L10010:
      011250 000002          RTI

1833          ;
1834          ; .NLIST BEX
1835 011252          111      116      124  INTFAC: .ASCIZ /INTERFACE LOGIC TEST 1 ---- TEST COMPLETE/<12><12>
1836          ;
1837          ; ERROR MESSAGES ASSOCIATED WITH THIS TEST
1838          ;
1839 011332          114      117      101  ERR11: .ASCIZ /LOADING PRINTER BUFFER DOES NOT CLEAR READY/
1840 011406          120      122      111  ERR12: .ASCIZ /PRINTER INTERRUPTED AT SAME LEVEL AS THE PROCESSOR/
1841 011471          120      122      111  ERR13: .ASCIZ /PRINTER DID NOT INTERRUPT AT CPU PRIORITY 3/
1842          .EVEN
1843 011546          ENDTST
      011546          L10006:
      011546 104401      TRAP      C$ETST

1844          .LIST BEX
1845 011550          ENDMOD
1846

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 74  
 READY LINE INTERLOCKS TEST 2

```

1848 .SBTTL READY LINE INTERLOCKS TEST 2
1849
1850 01155^ BGNMOD
1851 :++
1852 :THIS TEST CHECKS THE OPERATION OF THE
1853 :PRINTER READY INTERLOCK SWITCHES.
1854 :MANUAL INTERVENTION IS USED TO
1855 :OPEN THE INTERLOCKS TO PRODUCE FAULTS
1856 :IN THE PRINTER AFTER WHICH THE RESULTANT ERROR
1857 :INDICATION IS VERIFIED.
1858 :--
1859
1860 011550 BGNTST 2
      011550 T2:
1861 :DETERMINE IF MANUAL INTERVENTION IS ALLOWED
1862 011550 MANUAL
      011550 104450 TRAP C$MANI
1863 011552 BCOMPLETE 11$
      C11552 103402 BCS 11$
1864 011554 EXIT TST
      011554 104432 TRAP C$EXIT
      011556 002762 .WORD L10011-.
1865 :EXIT TEST IF MANUAL INTERVENTION TESTS ARE NOT SPECIFIED
1866 011560 11$: IF INHINT EQ #0 THEN
      011560 005737 002262 TST INHINT
      011564 001002 BNE 50113$
1867 011566 EXIT TST
      011566 104432 TRAP C$EXIT
      011570 002750 .WORD L10011-.
1868
1869 011572 ENDIF
      011572 50113$:
1870 011572 LET FLAG := #0
      011572 005037 002274 CLR FLAG
1871 011576 LET R1 : L$UNIT - #1
      011576 013701 002012 MOV L$UNIT,R1
      011602 005301 DEC R1
1872
1873 :CHECK FOR ERROR IN EACH PRINTER UNDER TEST
1874 011604 INCR LUNIT FROM #0 TO R1 BY #1
      C11604 005037 002314 CLR LUNIT
      011610 000402 BR 50114$
1875 011612 50115$: INC LUNIT
      011612 005237 002314
      011616 50114$: CMP LUNIT,R1
      011616 023701 002314 BGT 50116$
      011622 003020 LET R2 := LUNIT SHIFT 1
1876 011624 MOV LUNIT,R2
      011624 013702 002314 ASL R2
      011630 006302 IF #BIT15 SET IN @LPCSR(R2) THEN
1877 011632 BIT #BIT15,@LPCSR(R2)
      011632 032772 100000 002356 BEQ 50117$
      011640 001410 LET ERRTABL(R2) := ERRTABL(R2) + #1
1878 011642 INC ERRTABL(R2)
      011642 005262 003114 ERRHRD 6, CSRERR
      011646 104456 TRAP C$ERRHRD

```



CZLPLDC LP25, LP26, LP07 TEST  
READY LINE INTERLOCKS TEST 2

MACRO M1113 30-DEC-80 09:36 PAGE 24-1

	011650	000006			.WORD	6
	011652	003406			.WORD	CSRERR
	011654	000000			.WORD	0
1879	011656					LET @LPCSR(R2) := #0
	011656	005072	002356		CLR	@LPCSR(R2)
1880	011662				ENDIF	
	011662			50117\$:		
1881	011662				ENDINC	
	011662	000753			BR	50115\$
	011664			50116\$:		
1882					:CHECK FOR READY IN EACH PRINTER UNDER TEST	
1883	011664				INCR LUNIT FROM #0 TO R1 BY #1	
	011664	005037	002314		CLR	LUNIT
	011670	000402			BR	50120\$
	011672			50121\$:		
	011672	005237	002314		INC	LUNIT
	011676			50120\$:		
	011676	023701	002314		CMP	LUNIT,R1
	011702	003021			BGT	50122\$
1884	011704				LET R2 :=	LUNIT SHIFT 1
	011704	013702	002314		MOV	LUNIT,R2
	011710	006302			ASL	R2
1885	011712				LET L\$LUN :=	LUNIT
	011712	013737	002314	002074	MOV	LUNIT,L\$LUN
1886	011720				IF #BIT07	NOTSET IN @LPCSR(R2) THEN
	011720	032772	000200	002356	BIT	#BIT07,@LPCSR(R2)
	011726	001006			BNE	50123\$
1887	011730				LET ERRABL(R2) :=	ERRABL(R2) + #1
	011730	005262	003114		INC	ERRABL(R2)
1888	011734				ERRHRD 7, RDYERR	
	011734	104456			TRAP	CSERRHRD
	011736	000007			.WORD	7
	011740	003424			.WORD	RDYERR
	011742	000000			.WORD	0
1889	011744				ENDIF	
	011744			50123\$:		
1890	011744				ENDINC	
	011744	000752			BR	50121\$
	011746			50122\$:		
1891					:	
1892					:	PRINT TEST NAME
1893					:	
1894	011746				:	OUTPUT #INTLK,#29.
1895					:	:VERIFY OPERATION OF PAPER LOW INTERLOCK SWITCH
1896					:	:HARD CODED INCREMENT LOOP
1897					:	
1898	012010				LET ERRFLG :=	#0
	012010	005037	002340		CLR	ERRFLG
1899	012014	005037	002314		CLR	LUNIT
1900	012020	000405			BR	1\$
1901	012022			2\$:		
1902	012022	005237	002314		INC	LUNIT
1903	012026				LET R2 :=	LUNIT SHIFT 1
	012026	013702	002314		MOV	LUNIT,R2
	012032	006302			ASL	R2
1904	012034			1\$:		
1905	012034	023701	002314		CMP	LUNIT,R1

CZ:PLD0 LP25, LP26, LP07 TEST  
READY LINE INTERLOCKS TEST 2

MACRO M1113 30-DEC-80 09:36 PAGE 24-2

1906 012040 003402  
 1907 012042 000137 012402  
 1908 012046  
 1909 012046  
 012046 005037 002274  
 1910 012052  
 012052 013746 002314  
 012056 012746 013416  
 012062 012746 000002  
 012066 010600  
 012070 104417  
 012072 062706 000006  
 1911 012076  
 012076 012746 013466  
 012102 012746 000001  
 012106 010600  
 012110 104417  
 012112 062706 000004  
 1912 012116  
 012116 104443  
 012120 000404  
 012122 002274  
 012124 000130  
 012126 007603  
 012130 100000  
 012132  
 1913 012132  
 012132 012737 000310 002276  
 1914 012140  
 012140 005037 002340  
 1915 012144  
 012144  
 1916 012144  
 1917 012206  
 012206 005337 002276  
 1918 012212  
 012212 005737 002276  
 012216 001403  
 012220 005737 002340  
 012224 001747  
 012226  
 1919 012226  
 012226 005737 002340  
 012232 001011  
 1920 012234  
 012234 104456  
 012236 000010  
 012240 003446  
 012242 000000  
 1921 012244  
 012244 005262 003114  
 1922 012250  
 012250 000137 012262  
 1923 012254  
 012254 000402  
 012256  
 1924 012256

BLE 3\$  
 MP 4\$  
 3\$:  
 LET FLAG := #0  
 CLR FLAG  
 PRINTF #PAPRSW,LUNIT  
 MOV LUNIT,-(SP)  
 MOV #PAPRSW,-(SP)  
 MOV #2,-(SP)  
 MOV SP,R0  
 TRAP C\$PNTF  
 ADD #6,SP  
 PRINTF #PAPSW1  
 MOV #PAPSW1,-(SP)  
 MOV #1,-(SP)  
 MOV SP,R0  
 TRAP C\$PNTF  
 ADD #4,SP  
 GMANIL READY, FLAG, 100000, YES  
 TRAP C\$GMAN  
 BR 10000\$  
 .WORD FLAG  
 .WORD T\$CODE  
 .WORD READY  
 .WORD 100000  
 10000\$:  
 LET LINCNT := #200. ; ALLOW FOR ABOUT 3 PAGES OF PAPER  
 MOV #200.,LINCNT  
 LET ERRFLG := #0  
 CLR ERRFLG  
 REPEAT  
 50124\$:  
 OUTPUTI #PAPTST,#15.,#5\$,LUNIT  
 LET LINCNT := LINCNT - #1  
 DEC LINCNT  
 UNTIL LINCNT EQ #0 OR ERRFLG NE #0  
 TST LINCNT  
 BEQ 50125\$  
 TST ERRFLG  
 BEQ 50124\$  
 50125\$:  
 IF ERRFLG EQ #0 THEN  
 TST ERRFLG  
 BNE 50126\$  
 ERRHRD 8,PAPSWI  
 TRAP C\$ERHRD  
 .WORD 8  
 .WORD PAPSWI  
 .WORD 0  
 LET ERRTBL(R2) := ERRTBL(R2) + #1  
 INC ERRTBL(R2)  
 INLINE <JMP 11002\$>  
 JMP 11002\$  
 ELSE  
 BR 50127\$  
 50126\$:  
 LET ERRFLG := #0

CZLPLDC LP25, LP26, LP07 TEST  
READY LINE INTERLOCKS TEST 2

MACRO M1113 30-DEC-80 09:36 PAGE 24-3

1925	012256	005037	C02340	CLR	ERRFLG	
	012262			ENDIF		
1926	012262			50127\$:		
	012262			11002\$:	PRINTF	#PAPRDY,LUNIT
	012262	013746	002314	MOV	LUNIT,-(SP)	
	012266	012746	013535	MOV	#PAPRDY,-(SP)	
	012272	012746	000002	MOV	#2,-(SP)	
	012276	010600		MOV	SP,R0	
	012300	104417		TRAP	C\$PNTF	
	012302	062706	000006	ADD	#6,SP	
1927	012306			LET FLAG := #0		
	012306	005037	002274	CLR	FLAG	
1928	012312			GMANIL	READY,FLAG,100000,YES	
	012312	104443		TRAP	C\$GMAN	
	012314	000404		BR	10001\$	
	012316	002274		.WORD	FLAG	
	012320	000130		.WORD	T\$CODE	
	012322	007603		.WORD	READY	
	012324	100000		.WORD	100000	
1929	012326			10001\$:		
	012326	013702	002314	LET R2 := LUNIT SHIFT 1		
	012332	006302		MOV	LUNIT,R2	
1930	012334			ASL	R2	
	012334	005072	002356	LET @LPCSR(R2) := #0		; RESET THE LP CSR
1931	012340	000137	012022	CLR	@LPCSR(R2)	
1932				JMP	2\$	
1933						
1934						
1935	012344					
	012344	012737	000001	5\$:	LET ERRFLG := #1	
1936	012352			MOV	#1,ERRFLG	
	012352	005037	002336	LET ERRCOD := #0		
1937	012356			CLR	ERRCOD	
	012356	042762	120000	LET STATUS(R2) := STATUS(R2) CLR.BY #ERROR!ACTIVE		
1938	012364			BIC	#ERROR!ACTIVE,STATUS(R2)	
	012364	005062	002752	LET CURCNT(R2) := #0		; CLEAN UP THE DRIVER PARAMETERS
1939	012370			CLR	CURCNT(R2)	
	012370	005062	002552	LET CURADD(R2) := #0		
1940	012374			CLR	CURADD(R2)	
	012374	005062	002652	LET REPCNT(R2) := #0		
1941	012400	000207		CLR	REPCNT(R2)	
1942				RTS	PC	; AND RETURN
1943	012402					
	012402	005037	002314	4\$:	INCR LUNIT FROM #0 TO R1 BY #1	; VERIFY OPERATION OF HAMMER BANK INTERLOCK SWITCH ON LP25,26 -OR- VERIFY BAND GATE LATCH ON
	012406	000402		CLR	LUNIT	
	012410			BR	50130\$	
	012410	005237	002314	50131\$:	INC	LUNIT
	012414			50130\$:		
	012414	023701	002314	CMP	LUNIT,R1	
	012420	003137		BGT	50132\$	
1944	012422			LET R2 := LUNIT SHIFT 1		
	012422	013702	002314	MOV	LUNIT,R2	
	012426	006302		ASL	R2	
1945	012430			LET L\$LUN := LUNIT		
	012430	013737	002314	MOV	LUNIT,L\$LUN	
1946	012436		002074	LET FLAG := #0		

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READY LINE INTERLOCKS TEST 2

1947	012436	005037	C02274		CLR	FLAG
	012442				IF	#FLAG07 SETIN STATUS(R2) AND #FLAG26 NOTSETIN STATUS(R2) THEN
	012442	032762	002000	002512	BIT	#FLAG07,STATUS(R2)
	012450	001417			BEQ	50133\$
	012452	032762	001000	002512	BIT	#FLAG26,STATUS(R2)
	012460	001013			BNE	50133\$
1948	012462				PRINTF	#BGTLCB,LUNIT
	012462	013746	002314		MOV	LUNIT,-(SP)
	012466	012746	014255		MOV	#BGTLCB,-(SP)
	012472	012746	000002		MOV	#2,-(SP)
	012476	010600			MOV	SP,R0
	012500	104417			TRAP	C\$PNTF
	012502	062706	000006		ADD	#6,SP
1949	012506				ELSE	
	012506	000422			BR	50134\$
	012510			50133\$:		
1950	012510				PRINTF	#HAMRSW,LUNIT
	012510	013746	002314		MOV	LUNIT,-(SP)
	012514	012746	013644		MOV	#HAMRSW,-(SP)
	012520	012746	000002		MOV	#2,-(SP)
	012524	010600			MOV	SP,R0
	012526	104417			TRAP	C\$PNTF
	012530	062706	000006		ADD	#6,SP
1951	012534				PRINTF	#HAMSW1
	012534	012746	013721		MOV	#HAMSW1,-(SP)
	012540	012746	000001		MOV	#1,-(SP)
	012544	010600			MOV	SP,R0
	012546	104417			TRAP	C\$PNTF
	012550	062706	000004		ADD	#4,SP
1952	012554				ENDIF	
	012554			50134\$:		
1953	012554				GMANIL	READY, FLAG, 100000, YES
	012554	104443			TRAP	C\$GMAN
	012556	000404			BR	10002\$
	012560	002274			.WORD	FLAG
	012562	000130			.WORD	T\$CODE
	012564	007603			.WORD	READY
	012566	100000			.WORD	100000
	012570			10002\$:		
1954	012570				IF	#BIT15 SETIN @LPCSR(R2) THEN
	012570	032772	100000	002356	BIT	#BIT15,@LPCSR(R2)
	012576	001421			BEQ	50135\$
1955	012600				PRINTF	#HAMRDY,LUNIT
	012600	013746	002314		MOV	LUNIT,-(SP)
	012604	012746	013762		MOV	#HAMRDY,-(SP)
	012610	012746	000002		MOV	#2,-(SP)
	012614	010600			MOV	SP,R0
	012616	104417			TRAP	C\$PNTF
	012620	062706	000006		ADD	#6,SP
1956	012624				GMANIL	READY, FLAG, 100000, YES
	012624	104443			TRAP	C\$GMAN
	012626	000404			BR	10003\$
	012630	002274			.WORD	FLAG
	012632	000130			.WORD	T\$CODE
	012634	007603			.WORD	READY
	012636	100000			.WORD	100000
	012640			10003\$:		

CZLPLD0 LP25, LP26, LP07 TEST  
READY LINE INTERLOCKS TEST 2

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```

1957 012640          ELSE
      012640 000426          BR          50136$
      012642          50135$:
1958 012642          LET ERRTBL(R2) := ERRTBL(R2) + #1
      012642 005262 003114          INC          ERRTBL(R2)
1959 012646          LET L$LUN := LUNIT
      012646 013737 002314 002074          MOV          LUNIT,L$LUN

1960
1961 012654          IF #FLAG07 SETIN STATUS(R2) AND #FLAG26 NOTSETIN STATUS(R2) THEN
      012654 032762 002000 002512          BIT          #FLAG07,STATUS(R2)
      012662 001411          BEQ          50137$
      012664 032762 001000 002512          BIT          #FLAG26,STATUS(R2)
      012672 001005          BNE          50137$
1962 012674          ERRHRD 17,BGTSWI
      012674 104456          TRAP          C$ERHRD
      012676 000021          .WORD          17
      012700 004215          .WORD          BGTSWI
      012702 000000          .WORD          0
1963 012704          ELSE
      012704 000404          BR          50140$
      012706          50137$:
1964 012706          ERRHRD 9,BNKSWI
      012706 104456          TRAP          C$ERHRD
      012710 000011          .WORD          9
      012712 003511          .WORD          BNKSWI
      012714 000000          .WORD          0
1965 012716          ENDIF
      012716          50140$:
1966 012716          ENDIF
      012716          50136$:
1967 012716          ENDINC
      012716 000634          BR          50131$
      012720          50132$:
1968          ;VERIFY OPERATION OF CHARACTER BAND INTERLOCK SWITCH ON LP25,26 - OR - VFU INTERLOCK ON LP07
1969 012720          INCR LUNIT FROM #0 TO R1 BY #1
      012720 005037 002314          CLR          LUNIT
      012724 000402          BR          50141$
      012726          50142$:
      012726 005237 002314          INC          LUNIT
      012732          50141$:
      012732 023701 002314          CMP          LUNIT,R1
      012736 003162          BGT          50143$
      012740          LET R2 := LUNIT SHIFT 1
      012740 013702 002314          MOV          LUNIT,R2
      012744 006302          ASL          R2
1970 012746          LET FLAG := #0
      012746 005037 002274          CLR          FLAG
1971 012752          IF #FLAG07 SETIN STATUS(R2) AND #FLAG26 NOTSETIN STATUS(R2) THEN
      012752 032762 002000 002512          BIT          #FLAG07,STATUS(R2)
      012760 001417          BEQ          50144$
      012762 032762 001000 002512          BIT          #FLAG26,STATUS(R2)
      012770 001013          BNE          50144$
1972 012772          PRINTF #VFUINT,LUNIT
      012772 013746 002314          MOV          LUNIT,-(SP)
      012776 012746 014355          MOV          #VFUINT,-(SP)
      013002 012746 000002          MOV          #2,-(SP)
      013006 010600          MOV          SP,R0

```

CZLPLD0 LP25, LP26, LP07 TEST  
READY LINE INTERLOCKS TEST 2

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1974	013010	104417			TRAP	C\$PNTF
	013012	062706	000006		ADD	#6,SP
	013016				ELSE	
	013016	000422			BR	50145\$
	013020			50144\$:		
1975	013020				PRINTF	#BANDSW,LUNIT
	013020	013746	002314		MOV	LUNIT,-(SP)
	013024	012746	014046		MOV	#BANDSW,-(SP)
	013030	012746	000002		MOV	#2,-(SP)
	013034	010600			MOV	SP,R0
	013036	104417			TRAP	C\$PNTF
	013040	062706	000006		ADD	#6,SP
1976	013044				PRINTF	#BND SW1
	013044	012746	014134		MOV	#BND SW1,-(SP)
	013050	012746	000001		MOV	#1,-(SP)
	013054	010600			MOV	SP,R0
	013056	104417			TRAP	C\$PNTF
	013060	062706	000004		ADD	#4,SP
1977	013064				ENDIF	
	013064			50145\$:		
1978	013064				GMANIL	READY, FLAG, 100000, YES
	013064	104443			TRAP	C\$GMAN
	013066	000404			BR	10004\$
	013070	002274			.WORD	FLAG
	013072	000130			.WORD	T\$CODE
	013074	007603			.WORD	READY
	013076	100000			.WORD	100000
	013100			10004\$:		
1979	013100				IF	#BIT15 SETIN @LPCSR(R2) THEN
	013100	032772	100000	002356	BIT	#BIT15,@LPCSR(R2)
	013106	001444			BEQ	50146\$
1980	013110				IF	#FLAG07 SETIN STATUS(R2) AND #FLAG26 NOTSETIN STATUS(R2) THEN
	013110	032762	002000	002512	BIT	#FLAG07,STATUS(R2)
	013116	001417			BEQ	50147\$
	013120	032762	001000	002512	BIT	#FLAG26,STATUS(R2)
	013126	001013			BNE	50147\$
1981	013130				PRINTF	#VFURDY,LUNIT
	013130	013746	002314		MOV	LUNIT,-(SP)
	013134	012746	014447		MOV	#VFURDY,-(SP)
	013140	012746	000002		MOV	#2,-(SP)
	013144	010600			MOV	SP,R0
	013146	104417			TRAP	C\$PNTF
	013150	062706	000006		ADD	#6,SP
1982	013154				ELSE	
	013154	000412			BR	50150\$
	013156			50147\$:		
1983	013156				PRINTF	#BNDRDY,LUNIT
	013156	013746	002314		MOV	LUNIT,-(SP)
	013162	012746	014164		MOV	#BNDRDY,-(SP)
	013166	012746	000002		MOV	#2,-(SP)
	013172	010600			MOV	SP,R0
	013174	104417			TRAP	C\$PNTF
	013176	062706	000006		ADD	#6,SP
1984	013202				ENDIF	
	013202			50150\$:		
1985	013202				GMANIL	READY, FLAG, 100000, YES
	013202	104443			TRAP	C\$GMAN

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 24-7  
READY LINE INTERLOCKS TEST 2

```

013204 000404 BR 10005$
013206 002274 .WORD FLAG
013210 000130 .WORD T$CODE
013212 007603 .WORD READY
013214 100000 .WORD 100000
1986 013216 10005$:
013216 000426 ELSE
013220 50146$: BR 50151$
1987 013220 LET ERRTBL(R2) :- ERRTBL(R2) + #1
013220 005262 003114 INC ERRTBL(R2)
1988 013224 LET L$LUN := LUNIT
013224 013737 002314 002074 MOV LUNIT,L$LUN
1989 013232 IF #FLAG07 SETIN STATUS(R2) AND #FLAG26 NOTSETIN STATUS(R2) THEN
013232 032762 002000 002512 BIT #FLAG07,STATUS(R2)
013240 001411 BEQ 50152$
013242 032762 001000 002512 BIT #FLAG26,STATUS(R2)
013250 001005 BNE 50152$
1990 013252 ERRHRD 16,VFUINF
013252 104456 TRAP C$ERHRD
013254 000020 .WORD 16
013256 004257 .WORD VFUINF
013260 000000 .WORD 0
1991 013262 ELSE
013262 000404 BR 50153$
1992 013264 50152$: ERRHRD 10, BNDSWI
013264 104456 TRAP C$ERHRD
013266 000012 .WORD 10
013270 003556 .WORD BNDSWI
013272 000000 .WORD 0
1993 013274 ENDIF
013274 50153$:
1994 013274 ENDIF
013274 50151$:
1995 013274 LET @LPCSR(R2) := #00
013274 012772 000000 002356 MOV #00,@LPCSR(R2)
1996 013302 ENDINC
013302 000611 BR 50142$
1997 013304 50143$:
013304 012737 000014 003160 LET OUTBUF := #14
MOV #14,OUTBUF
1998 013312 OUTPUT #OUTBUF,#1
1999 013354 EXIT TST
013354 104432 TRAP C$EXIT
013356 001162 .WORD L10011-.
2000
2001 .NLIST BEX
2002
2003 013360 122 105 101 INTLK: .ASCIZ /READY LINE INTERLOCK TEST 2/<12><12>
2004 013416 045 116 045 PAPRSW: .ASCIZ /%N%ATEAR OFF PAPER JUST BELOW LUNIT %D2/
2005 013466 045 101 040 PAPSW1: .ASCIZ /%A TO CHECK PAPER LOW %N%AINTERLOCK.%N/
2006 013535 045 116 045 PAPRDY: .ASCIZ /%N%ARESTORE PAPER, CLEAR, PLACE LUNIT %D2%A ON LINE.%N/
2007 013624 120 101 120 PAPTST: .ASCIZ /PAPER LOW TEST/<12>
2008 013644 045 116 045 HAMRSW: .ASCIZ /%N%ADISENGAGE HAMMER BANK LATCH ON LUNIT %D2/
2009 013721 045 116 045 HAMSW1: .ASCIZ /%N%ATO CHECK INTERLOCK SWITCH.%N/
2010 013762 045 116 045 HAMRDY: .ASCIZ /%N%AEENGAGE LATCH,CLEAR,PLACE LUNIT %D2%A ON LINE.%N/

```

CZLPLD0 LP25, LP26, LP07 TEST  
READY LINE INTERLOCKS TEST 2

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2011	014046	045	116
2012	014134	045	116
2013	014164	045	116
2014	014255	045	116
2015	014355	045	116
2016	014447	045	116
2017			
2018			
2019			
2020	014540		
	014540		
	014540	104401	
2021			
2022	014542		
2023			

```

045 BANDSW: .ASCIZ /%N%OPEN CHARACTER BAND COVER ON LUNIT %D2%A TO CHECK/
045 BNSW1: .ASCIZ /%N%INTERLOCK SWITCH.%N/
045 BNDRDY: .ASCIZ/%N%ACLOSE BAND COVER ON LUNIT %D2%A,CLEAR,PLACE ON LINE./
045 BGTLCH: .ASCIZ /%N%OPEN BAND GATE LATCH ON LUNIT %D2%A TO CHECK MICROSWITCH.%N/
045 VFUJNT: .ASCIZ /%N%LIFT VFU COVER ON LUNIT %D2%A TO CHECK MICROSWITCH.%N/
045 VFURDY: .ASCIZ /%N%ACLOSF VFU COVER ON LUNIT %D2%A,CLEAR,PLACE ONLINE.%N/
.FVEN

.LIST BEX
ENDTST
L10011: TRAP C$ETST

ENDMOD

```



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 25  
FORMS LENGTH SELECTION

```

2025          .SBTTL FORMS LENGTH SELECTION
2026 014542   BGNMOD
2027          :++
2028          :THIS TEST CHECKS ALL POSITIONS OF THE FORM LENGTH SELECT SWITCH. THE
2029          :PROGRAM INDICATES THE SPECIFIED SETTING OF THE FORM LENGTH SELECT SWITCH
2030          :AND WAITS FOR THE OPERATOR TO SET THE SWITCH ON THE PRINTER. THE PAPER
2031          :IS THEN ADVANCED UNDER PROGRAM CONTROL. THE PRINTER OUTPUT IS VISUALLY
2032          :INSPECTED AFTER ALL SWITCH SETTINGS HAVE BEEN RUN THROUGH BY THE OPERATOR
2033          :TO VERIFY THAT THE PROPER PAPER MOVEMENT HAS OCCURRED FOR EACH SWITCH
2034          :SETTING. ALL LP07'S WILL BE TESTED ON ALL TCVFU CHANNELS AND LINE COUNTS.
2035          :--
2036 014542   BGNST 3
                014542   T3::
2037          ;DETERMINE IF MANUAL INTERVENTION IS ALLOWED
2038 014542   MANUAL
                014542   104450   TRAP C$MANI
2039 014544   BCOMPLETE 1$
                014544   103402   BCS 1$
2040 014546   EXIT TST
                014546   104432   TRAP C$EXIT
                014550   003076   .WORD L10012-
2041          ;EXIT TEST IF MANUAL INTERVENTION TESTS ARE NOT SPECIFIED
2042 014552   005737   002262   1$: TST INHINT
2043 014556   001002   BNE 2$
2044 014560   EXIT TST
                014560   104432   TRAP C$EXIT
                014562   003064   .WORD L10012-
2045 014564   2$: LET R1 := L$UNIT - #1
                014564   013701   002012   MOV L$UNIT,R1
                014570   005301   DEC R1
2046          $BRJMP=1
2047 014572   INCR LUNIT FROM #0 TO R1 BY #1
                014572   005037   002314   CLR LUNIT
                014576   000402   BR 50155$
                014600   50154$: INC LUNIT
                014600   005237   002314   50155$: CMP LUNIT,R1
                014604   023701   002314   BLE 50156$
                014610   003402   JMP 50157$
                014612   000137   016366   50156$: LET R2 := LUNIT SHIFT 1
                014616   014616   MOV LUNIT,R2
                014616   013702   002314   ASL R2
                014622   006302   IF #FLAG07 NOTSET IN STATUS(R2) THEN
2049 014624   BIT #FLAG07,STATUS(R2)
                014624   032762   002000   002512   BEQ +6
                014632   001402   JMP 50160$
                014634   000137   015304   PRINTF #LINSWI,LUNIT
2050 014640   MOV LUNIT,-(SP)
                014640   013746   002314   MOV #LINSWI,-(SP)
                014644   012746   016434   MOV #2,-(SP)
                014650   012746   000002   MOV SP,R0
                014654   010600   TRAP C$PNTF
                014656   104417   ADD #6,SP
2051 014660   062706   000006   PRINTF #LINSW1
                014664   012746   016520   MOV #LINSW1,-(SP)

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 25-1  
FORMS LENGTH SELECTION

	014670	012746	000001		MOV	#1,-(SP)	
	014674	010600			MOV	SP,R0	
	014676	104417			TRAP	(SPNTF	
	014700	062706	000004		ADD	#4,SP	
2052	014704						PRINTF #FLSSEL,LUNIT
	014704	013746	002314		MOV	LUNIT,-(SP)	
	014710	012746	016600		MOV	#FLSSEL,-(SP)	
	014714	012746	000002		MOV	#2,-(SP)	
	014720	010600			MOV	SP,R0	
	014722	104417			TRAP	(SPNTF	
	014724	062706	000006		ADD	#6,SP	
2053	014730						PRINTF #FLS1,LUNIT
	014730	013746	002314		MOV	LUNIT,-(SP)	
	014734	012746	016677		MOV	#FLS1,-(SP)	
	014740	012746	000002		MOV	#2,-(SP)	
	014744	010600			MOV	SP,R0	
	014746	104417			TRAP	(SPNTF	
	014750	062706	000006		ADD	#6,SP	
2054	014754						PRINTF #FLSMS1,LUNIT
	014754	013746	002314		MOV	LUNIT,-(SP)	
	014760	012746	017373		MOV	#FLSMS1,-(SP)	
	014764	012746	000002		MOV	#2,-(SP)	
	014770	010600			MOV	SP,R0	
	014772	104417			TRAP	(SPNTF	
	014774	062706	000006		ADD	#6,SP	
2055	015000						INCR R3 FROM #0 TO #50 BY #4
	015000	005003			CLR	R3	
	015002	000402			BR	50162\$	
	015004			50161\$:			
	015004	062703	000004		ADD	#4,R3	
	015010			50162\$:			
	015010	020327	000050		CMP	R3,#50	
	015014	003402			BLE	50163\$	
	015016	000137	015300		JMP	50164\$	
	015022			50163\$:			
2056	015022						LET T3SET := #FFSET + R3
	015022	012737	017225	016372	MOV	#FFSET,T3SET	
	015030	060337	016372		ADD	R3,T3SET	
2057	015034						PRINTF #FLSMMSG,LUNIT,T3SET
	015034	013746	016372		MOV	T3SET,-(SP)	
	015040	013746	002314		MOV	LUNIT,-(SP)	
	015044	012746	017301		MOV	#FLSMMSG,-(SP)	
	015050	012746	000003		MOV	#3,-(SP)	
	015054	010600			MOV	SP,R0	
	015056	104417			TRAP	(SPNTF	
	015060	062706	000010		ADD	#10,SP	
2058	015064						PRINTF #FLSMS1
	015064	012746	017373		MOV	#FLSMS1,-(SP)	
	015070	012746	000001		MOV	#1,-(SP)	
	015074	010600			MOV	SP,R0	
	015076	104417			TRAP	(SPNTF	
	015100	062706	000004		ADD	#4,SP	
2059	015104						LET FLAG := #0
	015104	005037	002274		CLR	FLAG	
2060	015110						GMANIL READY,FLAG,100000,YES
	015110	104443			TRAP	(\$GMAN	
	015112	000404			BR	10000\$	

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 25-2  
FORMS LENGTH SELECTION

```

015114 002274 .WORD FLAG
015116 000130 .WORD T$CODE
015120 007603 .WORD READY
015122 100000 .WORD 100000
015124 10000$:
2061 015124 OUTPUTI #REFLIN,#62,,,LUNIT ;TEST ID + REF. LINE
2062 015166 OUTPUTI T3SET,#3,,,LUNIT
2063 015230 OUTPUTI #MOVMSG,#62,,,LUNIT
2064 015272 004737 005544 JSR PC,QUIET
2065 015276 000642 50164$: BR 50161$ ENDINC
015300 50164$:
2066 015300 000137 016072 50160$: JMP ELSE 50165$
015304 50160$:
2067 015304 OUTPUTI #REFLIN,#30,,,LUNIT ;TEST ID
2068 015346 004737 005544 JSR PC,QUIET
2069 015352 OUTPUTI #CHNSEC,#13,,,LUNIT ;SECTION ID
2070 015414 012737 000052 003156 MOV #52,WORK1 ;CODE FOR ASTERISK
015414 012737 000200 003160 MOV #200,OUTBUF ;CHANNEL CODE
2071 015422 012737 000200 003160 MOV #200,OUTBUF
2072 015430 012737 000001 003154 MOV #1,WORK
015430 000402 50166$: BR 50167$
015440 50166$:
015440 005237 003154 50167$: INC WORK
015444 023727 003154 000014 50167$: CMP WORK,#12.
015452 003402 BLE 50170$
015454 000137 015572 50170$: JMP 50171$
015460 50170$:
2073 015460 OUTPUTI #OUTBUF,#1,,,LUNIT
2074 015522 OUTPUTI #WORK1,#1,,,LUNIT,WORK
2075 015564 005237 003160 INC OUTBUF LET OUTBUF := OUTBUF + #1 ;NEXT CHANNEL
2076 015570 000723 50171$: BR 50166$ ENDINC
015572 50171$:
2077 015572 012737 000014 003160 MOV #14,OUTBUF LET OUTBUF := #14
2078 015600 OUTPUTI #OUTBUF,#1,,,LUNIT
2079 015642 015704 012737 000052 003156 MOV #52,WORK1 OUTPUTI #LINSEC,#15,,,LUNIT ;SECTION ID
2080 015712 012737 000220 003160 MOV #220,OUTBUF LET WORK1 := #52 ;CODE FOR ASTERISK
2081 015712 005037 003154 50172$: CLR WORK LET OUTBUF := #220 ;CODE FOR VFU
015720 000402 50172$: BR 50173$
015726 50172$:
015726 005237 003154 50173$: INC WORK
015732 50173$:
2082 015732 023727 003154 000017 50173$: CMP WORK,#15.
015740 003402 BLE 50174$
015742 000137 016072 50174$: JMP 50175$
015746 50174$:

```

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FORMS LENGTH SELECTION

```

2083 015746
2084 016010
      016010 005737 003154
      016014 003002
      016016 000137 016064
2085 016022
2086 016064
      016064
2087 016064
      016064 005237 003160
2088 016070
      016070 000716
      016072
2089 016072
      016072
2090
2091 016072
      016072 032762 002000 002512
      016100 001402
      016102 000137 016252
2092 016106
      016106 013746 002314
      016112 012746 017133
      016116 012746 000002
      016122 010600
      016124 104417
      016126 062706 000006
2093 016132
      016132 013746 002314
      016136 012746 017373
      016142 012746 000002
      016146 010600
      016150 104417
      016152 062706 000006
2094 016156
      016156 012737 000014 003160
2095 016164
      016164 005037 002274
2096 016170
      016170 104443
      016172 000404
      016174 002274
      016176 000130
      016200 007603
      016202 100000
      016204
2097 016204
2098 016246
      016246 000137 016322
      016252
2099 016252
      016252 012737 000014 003160
2100 016260
2101 016322
      016322
2102 016322
      016322 012746 016772

```

```

                                OUTPUT #OUTBUF,#1,,LUNIT
                                .F WORK.GT #0 THEN
                                TST WORK
                                BGT +6
                                JMP 50176$
                                OUTPUT #WORK1,#1,,LUNIT,WORK ;PRINT ASTERISK
                                ENDIF
                                LET OUTBUF := OUTBUF + #1
                                INC OUTBUF
                                BR 50172$ ENDINCR
                                50175$:
                                ENDIF
                                50165$:
                                ;SET FORMS LENGTH SELECT SWITCH TO ITS 'REGULAR' SETTING
                                IF #FLAG07 NOTSET IN STATUS(R2) THEN
                                BIT #FLAG07,STATUS(R2)
                                BEQ +6
                                JMP 50177$
                                PRINTF #NMLFSL,LUNIT
                                MOV LUNIT,-(SP)
                                MOV #NMLFSL,-(SP)
                                MOV #2,-(SP)
                                MOV SP,R0
                                TRAP C$PNTF
                                ADD #6,SP
                                PRINTF #FLSMS1,LUNIT
                                MOV LUNIT,-(SP)
                                MOV #FLSMS1,-(SP)
                                MOV #2,-(SP)
                                MOV SP,R0
                                TRAP C$PNTF
                                ADD #6,SP
                                LET OUTBUF := #14
                                MOV #14,OUTBUF
                                LET FLAG := #0 ;CLEAR <CR> FLAG
                                CLR FLAG ;AND WAIT FOR RESPONSE
                                GMANIL READY,FLAG,100000,YES
                                TRAP C$GMAN
                                BR 10001$
                                .WORD FLAG
                                .WORD T$CODE
                                .WORD READY
                                .WORD 100000
                                10001$:
                                OUTPUT #OUTBUF,#1,,LUNIT
                                ELSE
                                JMP 50200$
                                50177$:
                                LET OUTBUF := #14
                                MOV #14,OUTBUF
                                OUTPUT #OUTBUF,#1,,LUNIT
                                ENDIF
                                50200$:
                                PRINTF #PAPCHK ;MAKE SURE MOVEMENT WAS RIGHT
                                MOV #PAPCHK,-(SP)

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 25-4  
FORMS LENGTH SELECTION

```

016326 012746 C00001      MOV      #1,-(SP)
016332 010600      MOV      SP,R0
016334 104417      TRAP    C$PNTF
2103 016336 062706 000004      ADD     #4,SP
016342      LET FLAG :- #0
2104 016342 005037 002274      CLR     FLAG
016346      GMANIL READY,FLA,,100000,YES      :WAIT FOR RESPONSE
016346 104443      TRAP    C$GMAN
016350 000404      BR     10002$
016352 002274      .WORD  FLAG
016354 000130      .WORD  T$CODE
016356 007603      .WORD  READY
016360 100000      .WORD  100000
016362      10002$:
2105 016362      ENDINC
016362 000137 014600      JMP     50154$
016366      50157$:
2106 016366 177777      $RRJMP--i
2107 016366      EXIT TST
016366 104432      TRAP    C$EXIT
016370 001256      .WORD  L10012-.
2108 016372 000000      T3SET: .WORD  0
2109 016374 000000      T3MOV: .WORD  0
2110      .NLIST BEX
2111 016376      103      110      101  CHNSEC: .ASCIZ /CHANNEL 1-12/<12>
2112 016414      114      111      116  LINSEC: .ASCIZ /LINE COUNT 0-15/
2113 016434      045      116      045  LINSWI: .ASCIZ /%N%ASET LINES SWITCH ON UNIT %D2%A TO '6' TO SELECT/
2114 016520      045      116      045  LINSW1: .ASCIZ /%N%A6 LINES PER INCH VERTICAL PRINTING DENSITY./
2115 016600      045      116      045  FLSEL: .ASCIZ /%N2%ASET VFU-FLS SWITCH ON UNIT %D2%A TO THE 'FLS' POSITION.%N/
2116 016677      045      116      045  FLS1: .ASCIZ /%N%ASET FORMS LENGTH SELECT SWITCH ON UNIT %D2%A TO '8'.%N/
2117 016772      045      116      045  PAPCHK: .ASCIZ /%N%AVERIFY PROPER PAPER MOVEMENT./
2118 017034      106      117      122  REFLIN: .ASCIZ /FORMS LENGTH SELECTION TEST #3---REFERENCE LINE...../<14>
2119 017133      045      116      045  NMLFLS: .ASCIZ /%N%ASET FORMS LENGTH SELECT SWITCH ON UNIT %D2%A TO 11.%N/
2120      ;SWITCH SETTINGS FOR FORMS LENGTH MESSAGES
2121 017225      063      040      040  FSET: .ASCIZ /3 /
2122 017231      063      056      065      .ASCIZ /3.5/
2123 017235      064      040      040      .ASCIZ /4 /
2124 017241      065      056      065      .ASCIZ /5.5/
2125 017245      066      040      040      .ASCIZ /6 /
2126 017251      067      040      040      .ASCIZ /7 /
2127 017255      070      040      040      .ASCIZ /8 /
2128 017261      070      056      065      .ASCIZ /8.5/
2129 017265      061      061      040      .ASCIZ /11 /
2130 017271      061      062      040      .ASCIZ /12 /
2131 017275      061      064      040      .ASCIZ /14 /
2132 017301      045      116      045  FLSMSG: .ASCIZ /%N%ASET FORMS LENGTH SELECT SWITCH ON UNIT %D2%A TO %T%A,/
2133 017373      045      116      045  FLSMS1: .ASCIZ /%N%ADEPRESS 'CLEAR','TOF', AND PLACE ON LINE.%N/
2134 017453      045      116      045  FLSMS2: .ASCIZ /%N%ADEPRESS 'CLEAR','TOF', AND PLACE ON LINE, ON LUNIT %D2%A/
2135 017546      040      111      116  MOVMSG: .ASCIZ / INCHES SHOULD OCCUR BETWEEN THIS AND THE REFERENCE LINE...../<12>
2136      .EVEN
2137      .EVEN
2138      .LIST BEX
2139 017646      ENDTST
017646      L10C12:
017646 104401      TRAP    C$ETST
2140 017650      ENDMOD
2141

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26  
 PRINTING SPEED MEASUREMENT

```

2143          .SBTTL PRINTING SPEED MEASUREMENT
2144 017650    BGNMOD
2145          :++
2146          : THE PRINT SPEED TEST WILL REPORT TO THE OPERATOR THE TOTAL NUMBER OF
2147          : LINES PRINTED WITHIN A SPECIFIED TIME PERIOD. THE DATA PATTERN USED
2148          : IS DESIGNED TO CAUSE PRINTING SPEED TO BE MINIMAL AND IS DEPENDENT
2149          : ON PRINTER TYPE AND THE CHARACTER SET (BAND TYPE ) ON EACH PRINTER.
2150          : THE TIME PERIOD CAN BE CONTROLLED THRU MANUAL OPERATION, OR IF THE
2151          : SYSTEM HAS A CLOCK VIA SUPPLYING A COUNT OF SECONDS. ANY TIME INTERVAL OF
2152          : 4 TO 60 SECONDS MAY BE SELECTED. THIS IS ONE OF THE "SW" QUESTIONS .
2153          :--
2154 017650    BGNIST 4
2154 017650    T4::
2155          :
2156 017650    LET R1 : 1$UNIT - #1                ;NUMBER OF UNITS TO TEST
2156 017650    013701 002012          MOV     L$UNIT,R1
2156 017654    005301          DEC     R1
2157 017656    017656 005737 002264    IF MANSPO NE #0 THEN          ; DETERMIN IF MANUAL TESTING SELECTED
2157 017656    005737 002264          TST     MANSPO
2157 017662    001416          BEQ     50201$
2158 017664    017664 104450          MANUAL          ;DTERMINE IF MANUAL INTERVENTION ALLOWED
2158 017664    104450          TRAP    ($MANI
2159 017666    017666 103402          BCOMPLETE 1$
2159 017666    103402          BCS     1$
2160 017670    017670 104432          EXIT TST
2160 017672    005362          TRAP    C$EXIT
2161 017674    017674 005737 002262    1$: IF INHINT EQ #0 THEN          ; EXIT IF INTERVENTION INHIBITED
2161 017674    005737 002262          TST     INHINT
2161 017700    001003          BNE     50202$
2162 017702    017702 104432          EXIT TST
2162 017704    005350          TRAP    C$EXIT
2163 017706    017706 000403          .WORD  L10013-.
2163 017710    017710 000403          ELSE
2163 017710    017710 000403          BR     50203$
2164 017710    017710 013737 002266 003154 50202$:
2164 017710    013737 002266 003154    LET WORK :- PERIOD
2164 017716    017716          MOV     PERIOD,WORK
2165 017716    017716          ENDIF
2166 017716    017716 000403          50203$:
2166 017720    017720 000403          ELSE
2166 017720    017720 000403          BR     50204$
2167 017720    017720 013737 002266 003154 50201$:
2167 017720    013737 002266 003154    LET WORK :- PERIOD          ; CLOCK TEST TIME
2167 017720    013737 002266 003154    MOV     PERIOD,WORK
2168 017726    017726          ENDIF
2169 017726    017726 000403          50204$
2170 017770    017770 013746 002322    OUTPUT #PRISPD,#36.          ;PRINT TEST ID
2170 017770    013746 002322          SELECT CLKTYP OF 4 VERIFY          ;SET UP THE RIGHT CLOCK
2170 017774    002501          MOV     (CLKTYP,-(SP)
2170 017776    023727 002322 000004    BLT     50213$
2170 020004    003075          CMP     CLKTYP,#4
2170 020006    006316          BGT     50213$
2170 020010    062716 020016          ASL     (SP)
2170 020014    013607          ADD     #50205$,(SP)
2170 020016    020016          MOVB  @ (SP)+,PC
2170 020016    020016          50205$:

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 31-DEC-80 09:36 PAGE 26-1  
 PRINTING SPEED MEASUREMENT

020016	020200				.WORD	50212\$	
020020	020030				.WORD	50211\$	
020022	020036				.WORD	50210\$	
020024	020110				.WORD	50207\$	
020026	020176				.WORD	50206\$	
2171							
2172	020030				CASE 1		
	020030				50211\$:		
2173	020030	000137	021554		JMP	END4	;JUST EXIT TEST NO CLOCK AVAILBLE
2174							
2175	020034				CASE 2		;KW11-L LINE CLOCK SELECTED
	020034	000461			BR	50213\$	
	020036				50210\$:		
2176	020036	012737	000100	002334	LET	CLKENA := #100	; INTERRUPT ENABLE/ CLR MONITOR
	020036				MOV	#100,CLKENA	
							; SET PRI7 WHILE CHANGING VECTOR ADDRESS
2177					SETPRI	#PRI07	
2178	020044				MOV	#PRI07,R0	
	020044	012700	000340		TRAP	C\$SPRI	
	020050	104441					
2179	020052				SETVEC	CLKVEC,#CLKTCK,#PRI06	;SET UP INTERRUPT VECTOR
	020052	012746	000300		MOV	#PRI06,-(SP)	
	020056	012746	036620		MOV	#CLKTCK,-(SP)	
	020062	013746	002332		MOV	CLKVEC,-(SP)	
	020066	012746	000003		MOV	#3,-(SP)	
	020072	104437			TRAP	C\$SVEC	
	020074	062706	000010		ADD	#10,SP	
2180	020100				SETPRI	#PRI00	
	020100	012700	000000		MOV	#PRI00,R0	
	020104	104441			TRAP	C\$SPRI	
2181							
2182	020106				CASE 3		;KW11-P REAL TIME CLOCK
	020106	000434			BR	50213\$	
	020110				50207\$:		
2183	020110				LET	CLKSET := CLKCSR + #2	
	020110	013737	002326	002330	MOV	CLKCSR,CLKSET	
	020116	062737	000002	002330	ADD	#2,CLKSET	
2184	020124				LET	CLKENA := #111	;SET UP ENABLE BITS
	020124	012737	000111	002334	MOV	#111,CLKENA	
							; RUN, RATE = 10KHZ, REPEAT INTR, DOWN,INT ENABLE
2185					SETPRI	#PRI07	
2186	020132				MOV	#PRI07,R0	
	020132	012700	000340		TRAP	C\$SPRI	
	020136	104441					
2187	020140				SETVEC	CLKVEC,#CLKTCK,#PRI06	; INTERRUPT VECTOR
	020140	012746	000300		MOV	#PRI06,-(SP)	
	020144	012746	036620		MOV	#CLKTCK,-(SP)	
	020150	013746	002332		MOV	CLKVEC,-(SP)	
	020154	012746	000003		MOV	#3,-(SP)	
	020160	104437			TRAP	C\$SVEC	
	020162	062706	000010		ADD	#10,SP	
2188	020166				SETPRI	#PRI00	
	020166	012700	000000		MOV	#PRI00,R0	
	020172	104441			TRAP	C\$SPRI	
2189							
2190	020174				CASE 4		
	020174	000401			BR	50213\$	
	020176				50206\$:		
2191	020176	000240			NOP		;THIS IS JUST A DUMMY

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26-2  
 PRINTING SPEED MEASUREMENT

```

2192 020200          ENDSELECT
      020200          50212$:
      020200          50213$:
2193 020200          LET OUTBUF :B= #LF
      020200          MOVB   #LF,OUTBUF
2194 020206          LET LUNIT :- R1
      020206          010137 000012 003160 MOV   R1,LUNIT
2195 020212          1$:
2196 020212          LET ERRFLG := #0
      020212          005037 002340 CLR   ERRFLG
2197 020216          LET R2 := LUNIT SHIFT 1
      020216          013702 002314 MOV   LUNIT,R2
      020222          006302 ASL   R2

2198
2199
2200
2201          000001
2202 020224          :
      020224          : DETERMINE WHICH BAND, AND SEND APPROPRIATE PATTERN
      020232          :
      020234          :
2203 020240          $BRJMP=1
      020240          IF #FLAG96 NOTSETIN STATUS(R2) THEN : 64 CHAR BAND
      020246          BIT   #FLAG96,STATUS(R2)
      020250          BEQ   .+6
      020254          JMP   50214$
      020258          IF #FLAG07 NOTSETIN STATUS(R2) THEN
      020262          BIT   #FLAG07,STATUS(R2)
      020266          BEQ   .+6
      020270          JMP   50215$
      020274          LET BNDPAT := #TABA64
      020278          MOV   #TABA64,BNDPAT
2204 020254          ELSE
2205 020262          JMP   50216$
      020266          50215$:
      020270          LET BNDPAT := #TB0764
      020274          MOV   #TB0764,BNDPAT
2206 020266          ENDIF
2207 020274          50216$:
      020278          LET WORK := #133.
      020282          MOV   #133.,WORK
2208 020274          IF #FLAG26 NOTSETIN STATUS(R2) AND #FLAG07 NOTSETIN STATUS(R2) THEN
      020278          BIT   #FLAG26,STATUS(R2)
      020282          BEQ   .+6
      020286          JMP   50217$
      020290          BIT   #FLAG07,STATUS(R2)
      020294          BEQ   .+6
      020298          JMP   50217$
      020302          PRINTF #LPM64           ;SEND SPEED MESSAGE TO CONSOLE
2209 020302          MOV   #LPM64,-(SP)
      020306          MOV   #1,-(SP)
      020310          MOV   SP,R0
      020314          TRAP  C$PNTF
      020318          ADD   #4,SP
      020322          OUTPUT #LPM64+4,#42.,,LUNIT ;SEND SPEED MESSAGE TO PRINTER
      020326          OUTPUT #OUTBUF,#1.,,LUNIT ;LINEFEED
2210 020332          ELSE
2211 020332          JMP   50220$
      020336          000137 020766
      020340          50217$:
      020344          IF #FLAG26 SETIN STATUS(R2) AND #FLAG07 NOTSETIN STATUS(R2) THEN
      020348          BIT   #FLAG26,STATUS(R2)
      020352          BNE   .+6
2212 020414
2213 020456
2214 020462          000137 020766
      020466          032762 001000 002512
      020470          001002

```



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26-3  
 PRINTING SPEED MEASUREMENT

```

020472 000137 020642          JMP      50221$
020476 032762 002000 002512  BIT      #FLAG07,STATUS(R2)
020504 001402          BEQ      .+6
020506 000137 020642          JMP      50221$
2215 020512          PRINTF  #L26M64
020512 012746 023645          MOV      #L26M64,-(SP)
020516 012746 000001          MOV      #1,-(SP)
020522 010600          MOV      SP,R0
020524 104417          TRAP    C$PNTF
020526 062706 000004          ADD     #4,SP
2216 020532          OUTPUT #L26M64+4,#42,,LUNIT
2217 020574          OUTPUT #OUTBUF,#1,,LUNIT
2218 020636          ELSE
020636 000137 020766          JMP      50222$
020642          50221$:
2219 020642          PRINTF  #L07M64
020642 012746 024007          MOV      #L07M64,-(SP)
020646 012746 000001          MOV      #1,-(SP)
020652 010600          MOV      SP,R0
020654 104417          TRAP    C$PNTF
020656 062706 000004          ADD     #4,SP
2220 020662          OUTPUT #L07M64+4,#42,,LUNIT
2221 020724          OUTPUT #OUTBUF,#1,,LUNIT
2222 020766          ENDIF
020766          50222$:
2223 020766          ENDIF
020766          50220$:
2224 020766          ELSE
020766 000137 021520          JMP      50223$
020772          50214$:
2225 020772          IF #FLAG07 NOTSET IN STATUS(R2) THEN
020772 032762 002000 002512  BIT      #FLAG07,STATUS(R2)
021000 001402          BEQ      .+6
021002 000137 021020          JMP      50224$
2226 021006          LET BNDPAT := #TAB96
021006 012737 024432 023040  MOV      #TAB96,BNDPAT
2227 021014          ELSE
021014 000137 021026          JMP      50225$
021020          50224$:
2228 021020          LET BNDPAT := #TB0796
021020 012737 025046 023040  MOV      #TB0796,BNDPAT
2229 021026          ENDIF
021026          50225$:
2230 021026          LET WORK := #133.
021026 012737 000205 003154  MOV      #133.,WORK
2231 021034          IF #FLAG26 NOTSET IN STATUS(R2) AND #FLAG07 NOTSET IN STATUS(R2) THEN
021034 032762 001000 002512  BIT      #FLAG26,STATUS(R2)
021042 001402          BEQ      .+6
021044 000137 021214          JMP      50226$
021050 032762 002000 002512  BIT      #FLAG07,STATUS(R2)
021056 001402          BEQ      .+6
021060 000137 021214          JMP      50226$
2232 021064          PRINTF  #LPM96
021064 012746 023564          MOV      #LPM96,-(SP)
021070 012746 000001          MOV      #1,-(SP)
021074 010600          MOV      SP,R0
021076 104417          TRAP    C$PNTF

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26-4  
 PRINTING SPEED MEASUREMENT

```

2233 021100 062706 000004      ADD      #4,SP
2234 021104                      OUTPUTI #LPM96+4,#42,,LUNIT
2235 021146                      OUTPUTI #OUTBUF,#1,,LUNIT
2235 021210                      ELSE
021210 000137 021520          JMP      50227$
021214                      50226$:
2236 021214                      IF #FLAG26 SET IN STATUS(R2) AND #FLAG07 NOT SET IN STATUS(R2) THEN
021214 032762 001000 002512    BIT      #FLAG26,STATUS(R2)
021222 001002                      BNE     .+5
021224 000137 021374          JMP      50230$
021230 032762 002000 002512    BIT      #FLAG07,STATUS(R2)
021236 001402                      BEQ     .+6
021240 000137 021374          JMP      50230$
2237 021244                      PRINTF #L26M96
021244 012746 023726          MOV      #L26M96,-(SP)
021250 012746 000001          MOV      #1,-(SP)
021254 010600                      MOV     SP,R0
021256 104417                      LAR     C$PNTF
021260 062706 000004          ADD      #4,SP
2238 021264                      OUTPUTI #L26M96+4,#42,,LUNIT
2239 021326                      OUTPUTI #OUTBUF,#1,,LUNIT
2240 021370                      ELSE
021370 000137 021520          JMP      50231$
021374                      50230$:
2241 021374                      PRINTF #L07M96
021374 012746 024070          MOV      #L07M96,-(SP)
021400 012746 000001          MOV      #1,-(SP)
021404 010600                      MOV     SP,R0
021406 104417                      TRAP   C$PNTF
021410 062706 000004          ADD      #4,SP
2242 021414                      OUTPUTI #L07M96+4,#42,,LUNIT
2243 021456                      OUTPUTI #OUTBUF,#1,,LUNIT
2244 021520                      ENDIF
021520                      50231$:
2245 021520                      ENDIF
021520                      50227$:
2246 021520                      ENDIF
021520                      50223$:
2247 021520                      LET @LPCSR(R2) := #0
021520 005072 002356          CLR      @LPCSR(R2) ;DISABLE INTERRUPTS IN CASE OF MANUAL TEST CASE
177777                      $BRJMP=-1
2249 021524                      LET LINCNT := #0 ;CLEAR LINE COUNTER
021524 005037 002276          CLR      LINCNT
2250 021530                      LET TICK := #60. ;SET UP INITIAL CLOCK VALUE
021530 012737 000074 036674    MOV      #60.,TICK
2251 021536 004737 021742          JSR PC,REPLUP ;DO THE OUTPUT
2252 021542                      LET LUNIT := LUNIT - #1
021542 005337 002314          DEC      LUNIT
2253 021546                      IF COND GE THEN
021546 002402                      BLT     50232$
2254 021550 000137 020212          JMP     11$
2255 021554                      ENDIF
021554                      50232$:
2256
2257
2258 021554                      END4: IF CLK TYP EQ #3 THEN
021554 023727 002322 000003    CMP      CLK TYP,#3
    
```

CZLPLDC LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26-5  
PRINTING SPEED MEASUREMENT

2259 021562 001011  
 021564 012700 000340  
 021570 104441  
 2260 021572 013700 002332  
 021576 104436  
 2261 021600 012777 000000 160520  
 021606  
 2262 021606  
 2263 021606 023727 002322 000002  
 021614 001021  
 2264 021616 012700 000340  
 021622 104441  
 2265 021624 012746 000300  
 021630 012746 010000  
 021634 013746 002332  
 021640 012746 000003  
 021644 104437  
 021646 062706 000010  
 2266 021652 012777 000000 160446  
 021660  
 2267 021660  
 2268 021660 012700 000000  
 021664 104441  
 2269 021666 112737 000014 003160  
 021674  
 2270 021736  
 2271 021736 104432  
 021740 003314  
 2272  
 2273  
 2274  
 2275  
 2276  
 2277 021742  
 2278 021742 023727 002322 000004  
 021750 001124  
 2279 021752 012746 023146  
 021756 012746 000001  
 021762 010600  
 021764 104417  
 021766 062706 000004  
 2280 021772 005037 002274  
 021776  
 2281 021776 104443  
 022000 000404

```

BNE 50233$
  SETPRI #PRI07
MOV #PRI07,R0
TRAP C$SPRI
  CLRVEC CLKVEC
MOV CLKVEC,R0
TRAP C$CVEC
LET @CLKCSR := #00
MOV #00,@CLKCSR
ENDIF
50233$:
IF CLKTYP EQ #2 THEN
  CMP CLKTYP,#2
  BNE 50234$
  SETPRI #PRI07
  MOV #PRI07,R0
  TRAP C$SPRI
  SETVEC CLKVEC,#IGNORE,#PRI06
  MOV #PRI06,-(SP)
  MOV #IGNORE,-(SP)
  MOV CLKVEC,-(SP)
  MOV #3,-(SP)
  TRAP C$SVEC
  ADD #10,SP
  LET @CLKCSR := #00
  MOV #00,@CLKCSR
ENDIF
50234$:
  SETPRI #PRI00
  MOV #PRI00,R0
  TRAP C$SPRI
LET OUTBUF :B= #14
  MOVB #14,OUTBUF
OUTPUT #OUTBUF,#1
EXIT TST
  TRAP C$EXIT
  .WORD L10013-.
:
: THIS IS SUBROUTINED TO DECREASE THE SIZE OF THE INITIAL INCREMENT LOOP.
:
:
REPLUP:
IF CLKTYP EQ #4 THEN
  CMP CLKTYP,#4
  BNE 50235$
  PRINTF #OFFLIN
  MOV #OFFLIN,-(SP)
  MOV #1,-(SP)
  MOV SP,R0
  TRAP C$PNTF
  ADD #4,SP
  LET FLAG := #0
  CLR FLAG
  GMANIL READY,FLAG,100000,YES
  TRAP C$GMAN
  BR 10000$

```

:TELL OPERATOR TO PLACE PRINTERS OFFLINE

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26-6  
 PRINTING SPEED MEASUREMENT

```

022002 002274 .WORD FLAG
022004 000130 .WORD T$CODE
022006 007603 .WORD READY
022010 100000 .WORD 100000
100000$:
2282 022012 PRINTF #ONLIN1,LUNIT ;PUT LUNIT TO TEST ON LINE
022012 013746 002314 MOV LUNIT,-(SP)
022016 012746 023206 MOV #ONLIN1,-(SP)
022022 012746 000002 MOV #2,-(SP)
022026 010600 MOV SP,R0
022030 104417 TRAP C$PNTF
022032 062706 000006 ADD #6,SP
2283 022036 PRINTF #ONLIN2,LUNIT ;END OF TEST.
022036 013746 002314 MOV LUNIT,-(SP)
022042 012746 023307 MOV #ONLIN2,-(SP)
022046 012746 000002 MOV #2,-(SP)
022052 010600 MOV SP,R0
022054 104417 TRAP C$PNTF
022056 062706 000006 ADD #6,SP
2284 022062 PRINTF #ONLIN3,LUNIT
022062 013746 002314 MOV LUNIT,-(SP)
022066 012746 023405 MOV #ONLIN3,-(SP)
022072 012746 000002 MOV #2,-(SP)
022076 010600 MOV SP,R0
022100 104417 TRAP C$PNTF
022102 062706 000006 ADD #6,SP
2285 022106 WHILE #BIT15 SETIN @LPCSR(R2) DO ; WAIT FOR LP SET ON-LINE
022106 BIT #BIT15,@LPCSR(R2)
022106 032772 100000 002356 BEQ 50236$
022114 001402 NOP
2286 022116 000240 ENDDO
2287 022120 BR 50236$
022122 50237$:
2288 022122 LET LINCNT := #0
022122 005037 002276 CLR LINCNT
2289 022126 WHILE #BIT15 NOTSETIN @LPCSR(R2) DO ; REPEAT UNTIL LP GOES OFF-LINE
022126 50240$:
022126 032772 100000 002356 BIT #BIT15,@LPCSR(R2)
022134 001031 BNE 50241$
2290 022136 LET R5 := BNDPAT
022136 013705 023040 MOV BNDPAT,R5
2291 022142 LET R3 := WORK
022142 013703 003154 MOV WORK,R3
2292 022146 WHILE R3 GT #0 DO ; PRINT R3 CHARACTERS
022146 50242$:
022146 005703 TST R3
022150 003417 BLE 50243$
2293 022152 WHILE #BIT7 NOTSETIN @LPCSR(R2) DO ; WAIT FOR READY
022152 50244$:
022152 032772 000200 002356 BIT #BIT7,@LPCSR(R2)
022160 001007 BNE 50245$
2294 022162 IF #BIT15 SETIN @LPCSR(R2) THEN
022162 032772 100000 002356 BIT #BIT15,@LPCSR(R2)
022170 001402 BEQ 50246$
2295 022172 000137 022334 JMP 99$ ; EXIT LOOP IF OFF-LINE AGAIN
2296 022176 ENDIF

```

CZLPID0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26-7  
 PRINTING SPEED MEASUREMENT

2297	022176				50246\$:			
	022176	000765				BR	50244\$	ENDDO
2298	022200				50245\$:			
	022200	112572	002452			MOV	(R5)+,@LPBUF(R2)	LET @LPBUF(R2) :B= (R5)+ ; PUT CHAR INTO LP BUFFER
2299	022204					DEC	R3	LET R3 :- R3 - #1 ; DECRIMENT CHAR COUNTER
2300	022206	005303				BR	50242\$	ENDDO
	022206	000757			50243\$:			
2301	022210					TRAP	C\$BRK	BREAK ; ALLOW CTL-C ABORT
2302	022212	104422				INC	LINCNT	LET LINCNT :- LINCNT + #1
2303	022216	005237	002276			BR	50240\$	ENDDO
	022216	000743			50241\$:			
2304	022220					BR	50247\$	ELSE
	022220	000445			50235\$:			
2305	022222					CMP	CLKTYP,#3	IF CLKTYP EQ #3 THEN
	022222	023727	002322	000003		BNE	50250\$	CLKTYP,#3
2306	022232					MOV	#1666.,@CLKSET	LET @CLKSET := #1666. ; 1/60 SEC.
2307	022240	012777	003202	160070				ENDIF
2308	022240				50250\$:			
	022240	013777	002334	160060		MOV	CLKENA,@CLKCSR	LET @CLKCSR := CLKENA ;ENABLE THE CLOCK TO DO ITS THING
2309	022246					CLR	TIME	LET TIME := #0
2310	022252	005037	036672			CLR	LINCNT	LET LINCNT := #0
2311	022256	005037	002276					WHILE TIME LT PERIOD DO ; REPEAT UNTIL TIME EXHAUSTED
	022256	023737	036672	002266	50251\$:			
	022264	002023				BGE	50252\$	CMP TIME,PERIOD
2312	022266					MOV	BNDPAT,R5	LET R5 := BNDPAT
2313	022272	013705	023040			MOV	WORK,R3	LET R3 := WORK
2314	022276	013703	003154					WHILE R3 GT #0 DO ; SEND R3 CHARACTERS
	022276	005703			50253\$:			
2315	022300	003412				BLE	50254\$	TST R3
	022302							WHILE #BIT7 NOTSETIN @LPCSR(R2) DO ; WAIT FOR READY
	022302	032772	000200	002356	50255\$:			
2316	022310	001002				BNE	50256\$	BIT #BIT7,@LPCSR(R2)
2317	022314	000772						NOP
	022316				50256\$:			ENDDO
2318	022316	112572	002452			MOV	(R5)+,@LPBUF(R2)	LET @LPBUF(R2) :B= (R5)+ ; PUT DATA INTO BUFFER
2319	022322							LET R3 := R3 - #1 ; DECRIMENT CHAR COUNTER

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26-8  
 PRINTING SPEED MEASUREMENT

```

2320 022322 005303          DEC      R3
      022324          ENDDO
      022324 000764          BR      50253$
      022326          50254$:
2321 022326          LET LINCNT := LINCNT + #1
      022326 005237 002276  INC      LINCNT
2322 022332          ENDDO
      022332 000751          BR      50251$
      022334          50252$:
2323 022334          ENDIF
      022334          50247$:
2324 022334          99$:
2325          :
2326          :IF MANUAL PRINT SPEED TESTS HAVE BEEN PERFORMED INSURE PRINTERS ARE
2327          :BACK ON LINE WHEN DONE
2328          :
2329 022334          IF CLKTYP EQ #4 THEN
      022334 023727 002322 000004  CMP      CLKTYP,#4
      022342 001020          BNE      50257$
2330 022344          LET FLAG := #0          :CLEAR <CR> FLAG
      022344 005037 002274          CLR      FLAG
2331 022350          PRINTF #RESTOR
      022350 012746 024151          MOV      #RESTOR,-(SP)
      022354 012746 000001          MOV      #1,-(SP)
      022360 010600          MOV      SP,R0
      022362 104417          TRAP     C$PNTF
      022364 062706 000004          ADD      #4,SP
2332 022370          GMANIL READY,FLAG,100000,YES :WAIT FOR OPERATOR
      022370 104443          TRAP     C$GMAN
      022372 000404          BR      10001$
      022374 002274          .WORD   FLAG
      022376 000130          .WORD   T$CODE
      022400 007603          .WORD   READY
      022402 100000          .WORD   100000
2333 022404          10001$:
      022404          ENDIF
      022404          50257$:
2334 022404 012777 000000 157714  MOV      #00,@CLKCSR
2335          :
2336          : REPORT TOTAL NUMBER OF LINES PRINTED
2337          :
2338 022412          PRINTB #LINPER,LINCNT,LUNIT
      022412 013746 002314          MOV      LUNIT,-(SP)
      022416 013746 002276          MOV      LINCNT,-(SP)
      022422 012746 023101          MOV      #LINPER,-(SP)
      022426 012746 000003          MOV      #3,-(SP)
      022432 010600          MOV      SP,R0
      022434 104414          TRAP     C$PNTB
      022436 062706 000010          ADD      #10,SP
2339 022442          PUSH  LINCNT,#OUTBUF+1 : CONVERT LINE COUNT TO ASCII
      022442 013746 002276          MOV      LINCNT,-(SP)
      022446 012746 003161          MOV      #OUTBUF+1,-(SP)
2340 022452 004737 004550          JSR      PC,BIN2DA
2341 022456          WHILE #BIT7 NOTSETIN @LPCSR(R2) DO :WAIT FOR READY
      022456          50260$:
      022456 032772 000200 002356  BIT      #BIT7,@LPCSR(R2)
      022464 001001          BNE      50261$

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26-9  
 PRINTING SPEED MEASUREMENT

2342	022466				ENDDO	
	022466	000773			BR	50260\$
	022470				50261\$:	
2343	022470				OUTPUT	#OUTBUF,#6,,LUNIT ; DISPLAY LINE COUNT ON LP
2344	022532	004737	005544		JSR PC,QUIET	
2345	022536	004737	005544		JSR PC,QUIET	
2346	022542				OUTPUT	#SPED1,#19,,LUNIT ; 'LINES PRINTED'
2347	022604	004737	005544		JSR PC,QUIET	
2348						; IF A CLOCK WAS USED DISPLAY THE TIME USED ALSO
2349	022610					IF CLK TYP EQ #2 OR CLK TYP EQ #3 THEN
	022610	023727	002322	000002	CMP	CLK TYP,#2
	022616	001404			BEQ	50262\$
	022620	023727	002322	000003	CMP	CLK TYP,#3
	022626	001077			BNE	50263\$
	022630				50262\$:	
2350	022630				OUTPUT	#SPED2,#4,,LUNIT ; '' IN ''
2351	022672	004737	005544		JSR PC,QUIET	
2352	022676				PUSH	PERIOD,#OUTBUF+1 ; CONVERT TIME TO ASCII
	022676	013746	002266		MOV	PERIOD,-(SP)
	022702	012746	003161		MOV	#OUTBUF+1,-(SP)
2353	022706	004737	004550		JSR PC,BIN2DA	
2354	022712				OUTPUT	#OUTBUF+3,#3,,LUNIT ; DISPLAY THE TIME IN SECONDS
2355	022754	004737	005544		JSR PC,QUIET	
2356	022760				OUTPUT	#SPED3,#8,,LUNIT ; 'SECONDS'
2357	023022	004737	005544		JSR PC,QUIET	
2358	023026				ENDIF	
	023026				50263\$:	
2359	023026	000207			RTS PC	;GO BACK AND DO IT AGAIN
2360						
2361						;EXPECTED ERROR HANDLER
2362						
2363	023030				LPERR2:	LET ERRFLG :- #1 ;SET ERROR FOUND
	023030	012737	000001	002340	MOV	#1,ERRFLG
2364	023036	000207			RTS	PC ;AND EXIT
2365						
2366						
2367	023040	000000			BNDPAT:	.WORD 0 ; CONTAINS ADDRESS OF PRINT PATTERN
2368						.NLIST BEX
2369						
2370						;ASSOCIATED MESSAGES
2371						
2372	023042	040	114	111	SPED1:	.ASCII / LINES WERE PRINTED/
2373	023065	040	111	116	SPED2:	.ASCII / IN /
2374	023071	040	123	105	SPED3:	.ASCII / SECONDS/
2375	023101	045	116	045	LINPER:	.ASCIZ /%N%D3%A LINES PRINTED ON LUNIT %D2%N/
2376	023146	045	116	045	OFFLIN:	.ASCIZ /%N%AINSURE PRINTER(S) OFF LINE./
2377	023206	045	116	045	ONLIN1:	.ASCIZ /%N%APLACE LUNIT %D2%A ON LINE TO INITIATE TIME PERIOD FOR MANUAL/
2378	023307	045	116	045	ONLIN2:	.ASCIZ /%N%APRINTING SPEED MEASUREMENT AND BACK OFF LINE TO TERMINATE/
2379	023405	045	116	045	ONLIN3:	.ASCIZ /%N%ATHE TIME INTERVAL.%N/
2380	023436	120	122	111	PRTSPD:	.ASCIZ /PRINTING SPEED MEASUREMENT TEST 4/<12><12><12>
2381	023503	045	116	045	LPM64:	.ASCIZ /%N%A64 CHARACTER BAND SHOULD PRINT AT 285 LPM.%N/
2382	023564	045	116	045	LPM96:	.ASCIZ /%N%A96 CHARACTER BAND SHOULD PRINT AT 204 LPM.%N/
2383	023645	045	116	045	L26M64:	.ASCIZ /%N%A64 CHARACTER BAND SHOULD PRINT AT 600 LPM.%N/
2384	023726	045	116	045	L26M96:	.ASCIZ /%N%A96 CHARACTER BAND SHOULD PRINT AT 450 LPM.%N/
2385	024007	045	116	045	L07M64:	.ASCIZ /%N%A64 CHARACTER BAND SHOULD PRINT AT 1220 LPM.%N/
2386	024070	045	116	045	L07M96:	.ASCIZ /%N%A96 CHARACTER BAND SHOULD PRINT AT 888 LPM.%N/
2387	024151	045	116	045	RESTOR:	.ASCIZ /%N%ACLEAR PRINTER(S) AND PLACE ON LINE.%N/

CZLPLDO LP25, LP26, LP07 TEST PRINTING SPEED MEASUREMENT MACRO M1113 30-DEC-80 09:36 PAGE 26-10

2388  
 2389  
 2390  
 2391  
 2392  
 2393  
 2394 024224 105 061 104  
 2395 024237 042 062 134  
 2396 024252 041 105 061  
 2397 024265 076 042 073  
 2398 024300 135 054 105  
 2399 024313 051 074 046  
 2400 024326 057 070 054  
 2401 024341 130 051 127  
 2402 024354 137 123 137  
 2403 024367 120 130 117  
 2404 024402 125 062 065  
 2405 024415 111 120 110  
 2406  
 2407  
 2408  
 2409  
 2410 024432 061 055 144  
 2411 024445 075 140 174  
 2412 024460 176 134 173  
 2413 024473 077 041 074  
 2414 024506 041 053 054  
 2415 024521 050 135 051  
 2416 024534 122 067 064  
 2417 024547 066 057 130  
 2418 024562 046 124 046  
 2419 024575 121 132 120  
 2420 024610 127 115 126  
 2421 024623 111 122 110  
 2422  
 2423  
 2424  
 2425 024640 137 136 135  
 2426 024653 124 123 122  
 2427 024666 111 110 107  
 2428 024701 076 075 074  
 2429 024714 063 062 061  
 2430 024727 050 047 046  
 2431 024742 134 133 132  
 2432 024755 121 120 117  
 2433 024770 106 105 104  
 2434 025003 073 072 071  
 2435 025016 060 057 056  
 2436 025031 045 044 043  
 2437  
 2438  
 2439  
 2440 025046 177 176 175  
 2441 025061 164 163 162  
 2442 025074 151 150 147  
 2443 025107 136 135 134  
 2444 025122 123 122 121

```
.LIST BEX
.EVEN
:64 CHARACTER BAND PATTERN 285 LPM / 600 LPM.
:
.SBTTL PRINT SPEED TEST PATTERNS
.NLIST BEX
TABA64: .BYTE 105,061,104,075,064,041,103,136,102,060,163
         .BYTE 042,062,134,054,124,101,133,101,133,043,135
         .BYTE 041,105,061,100,075,077,041,056,136,074,060
         .BYTE 076,042,073,042,073,134,055,124,044,133,057
         .BYTE 135,054,105,072,100,050,077,052,056,051,056
         .BYTE 051,074,046,076,071,073,045,055,053,044,137
         .BYTE 057,070,054,132,072,131,072,131,050,067,052
         .BYTE 130,051,127,046,066,071,126,045,125,053,065
         .BYTE 137,123,137,123,070,122,132,121,131,064,067
         .BYTE 120,130,117,124,063,066,116,126,115,126,115
         .BYTE 125,062,065,114,123,113,122,061,121,112,064
         .BYTE 111,120,110,117,060,117,060,063,107,116,106,012,015
```

```
:96 CHARACTER BAND TABLE 204 LPM. / 450 LPM.
:MINIMUM PRINT SPEED PATTERN 96 CHARACTER BAND
TABA96: .BYTE 061,055,144,047,143,043,142,041,060,052,100
         .BYTE 075,140,174,176,041,056,054,056,054,136,042
         .BYTE 176,134,173,133,175,135,055,164,047,100,043
         .BYTE 077,041,074,041,074,052,062,075,076,174,073
         .BYTE 041,053,054,071,042,057,134,072,133,050,133
         .BYTE 050,135,051,164,070,100,046,124,045,123,044
         .BYTE 122,067,064,137,073,132,073,132,053,131,071
         .BYTE 066,057,130,072,127,050,120,151,125,070,065
         .BYTE 046,124,046,124,045,123,044,122,067,064,137
         .BYTE 121,132,120,131,117,066,063,130,116,130,116
         .BYTE 127,115,126,114,125,113,065,062,124,112,123
         .BYTE 111,122,110,064,061,064,061,121,107,102,106,012,015
```

```
:64 CHARACTER BAND PATTERN FOR LP07, 1220 LPM
TB0764: .BYTE 137,136,135,134,133,132,131,130,127,126,125
         .BYTE 124,123,122,121,120,117,116,115,114,113,112
         .BYTE 111,110,107,106,105,104,103,102,101,100,077
         .BYTE 076,075,074,073,072,071,070,067,066,065,064
         .BYTE 063,062,061,060,057,056,055,054,053,052,051
         .BYTE 050,047,046,045,044,043,042,041,137,136,135
         .BYTE 134,133,132,131,130,127,126,125,124,123,122
         .BYTE 121,120,117,116,115,114,113,112,111,110,107
         .BYTE 106,105,104,103,102,101,100,077,076,075,074
         .BYTE 073,072,071,070,067,066,065,064,063,062,061
         .BYTE 060,057,056,055,054,053,052,051,050,047,046
         .BYTE 045,044,043,042,041,137,136,135,134,132,131,012,015
```

```
:96 CHARACTER BAND PATTERN FOR LP07 888 LPM
TB0796: .BYTE 177,176,175,174,173,172,171,170,167,166,165
         .BYTE 164,163,162,161,160,157,156,155,154,153,152
         .BYTE 151,150,147,146,145,144,143,142,141,140,137
         .BYTE 136,135,134,133,132,131,130,127,126,125,124
         .BYTE 123,122,121,120,117,116,115,114,113,112,111
```



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26-11  
PRINT SPEED TEST PATTERNS

2445	025135	110	107	106	.BYTE	110,107,106,105,104,103,102,101,100,077,076
2446	025150	075	074	073	.BYTE	075,074,073,072,071,070,067,066,065,064,063
2447	025163	062	061	060	.BYTE	062,061,060,057,056,055,054,053,052,051,050
2448	025176	047	046	045	.BYTE	047,046,045,044,043,042,041,177,176,175,174
2449	025211	173	172	171	.BYTE	173,172,171,170,167,166,165,164,163,162,161
2450	025224	160	157	156	.BYTE	160,157,156,155,154,153,152,151,150,147,146
2451	025237	145	144	143	.BYTE	145,144,143,142,141,140,137,136,135,134,133,012,015
2452					.EVEN	
2453					.LIST BEX	
2454	025254				ENDTST	
	025254				L10013:	
	025254	104401			TRAP	CSETST
2455	025256				ENDMOD	

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 30  
DATA TRANSFER PATHS

```

2460          .SBTTL DATA TRANSFER PATHS
2461
2462 025256    BGNMOD
2463          :++
2464          :THIS TEST CHECKS THE DATA TRANSFER
2465          :PATHS FROM THE PROCESSOR INTERFACE
2466          :TO THE PPINTER OUTPUT. AN ALTERNATING
2467          :PATTERN OF ONES AND ZEROS CORRESPONDING
2468          :TO AN ALTERNATING STRING OF '*' AND
2469          :'U' CHARACTERS ARE TRANSMITTED ON THE
2470          :FULL 132 COLUMNS. AFTER 16 LINES OF
2471          :THIS PATTERN, THE OUTPUT PATTERN IS
2472          :SWITCHED TO AN ALTERNATING PATTERN
2473          :OF '?' AND '@' CHARACTERS FOR ANOTHER
2474          :16 LINES.
2475          :--
2476
2477 025256    3GNTST 5
          025256    15::
2478          .PRINT TEST IDENTIFICATION
2479 025256    OUTPUT #DATPTH,#29.
2480          .PRINT ALTERNATING STRINGS OF CHARACTERS
2481 025320    INCR PATTERN FROM #1 TO #2 BY #1
          025320    012737 000001 025676    MOV #1,PATTERN
          025326    000402                    BR 50264$
          025330    50265$:
          025330    005237 025676            INC PATTERN
          025334    50264$:
          025334    023727 025676 000002    CMP PATTERN,#2
          025342    003107                    BGT 50266$
          2482 025344    IF PATTERN EQ #1 THEN
          025344    023727 025676 000001    CMP PATTERN,#1
          025352    001004                    BNE 50267$
          2483 025354    LET CHAR :B= #'U
          025354    112737 000125 025636    MOVB #'U,CHAR
          2484 025362    ELSE
          025362    000403                    BR 50270$
          025364    50267$:
          2485 025364    LET CHAR :B= #'?
          025364    112737 000077 025636    MOVB #'?,CHAR
          2486 025372    ENDIF
          025372    50270$:
          2487 025372    LET R4 := #OUTBUF
          025372    012704 003160            MOV #OUTBUF,R4
          2488 025376    INCR CCNT FROM #1 TO #66. BY #1
          025376    012737 000001 002304    MOV #1,CCNT
          025404    000402                    BR 50271$
          025406    50272$:
          025406    005237 002304            INC CCNT
          025412    50271$:
          025412    023727 002304 000102    CMP CCNT,#66.
          025420    003017                    BGT 50273$
          2489 025422    LET (R4)+ :B= CHAR
          025422    113724 025636            MOVB CHAR,(R4)+
          2490 025426    COMB CHAR
          025426    105137 025636
          2491 025432    LET CHAR :B= CHAR CLR.BY #200
          025432    142737 000200 025636    BICB #200,CHAR

```

7Z.LP00 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 30-1  
DATA TRANSFER PATHS

```

2492 025440          LET (R4)+ :B= CHAR
      025440 113724 025636  MOVB CHAR,(R4)+
2493 025444 105137 025636  COMB CHAR
2494 025450          LET CHAR :B= CHAR CLR.BY #200
      025450 142737 000200 025636  BICB #200,CHAR
2495 025456          ENDINC
      025456 000753          BR 50272$
      025460          50273$:
2496 025460          LET (R4)+ :B= #15
      025460 112724 000015  MOVB #15,(R4)+
2497 025464          LET (R4) :B= #12
      025464 112714 000012  MOVB #12,(R4)
2498 025470          INCR LINCNT FROM #1 TO #16. BY #1
      025470 012737 000001 002276  MOV #1,LINCNT
      025476 000402          BR 50274$
      025500          50275$:
      025500 005237 002276  INC LINCNT
      025504          50274$:
      025504 023727 002276 000020  CMP LINCNT,#16.
      025512 003022          BGT 50276$
2499 025514          OUTPUT #OUTBUF, #134.
2500 025556          ENDINC
      025556 000750          BR 50275$
      025560          50276$:
2501 025560          ENDINC
      025560 000663          BR 50265$
      025562          50266$:
2502 025562          LET OUTBUF :B= #14
      025562 112737 000014 003160  MOVB #14,OUTBUF
2503 025570          OUTPUT #OUTBUF, #1
2504 025632          EXIT TST
      025632 104432          TRAP C$EXIT
      025634 000044          .WORD L10014-.
2505          .NLIST BEX
2506 025636 000000          CHAR: .WORD 0
2507 025640 104 101 124  DATPTH: .ASCIZ /DATA TRANSFER PATHS TEST 5/ <12><12><12>
2508
2509          .EVEN
2510 025676 000000          PATTERN: .WORD 0
2511          .EVEN
2512          .EVEN
2513          .LIST BEX
2514
2515 025700          ENDTST
      025700          L10014:
      025700 104401          TRAP C$ETST
2516
2517 025702          ENDMOD

```

C2LPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 31  
PRINTABLE CHARACTERS

```

2519
2520 025702
2521
2522
2523
2524
2525
2526
2527
2528 025702
      025702
2529 025702
2530
2531
2532
2533 025744
      025744 012737 000040 003154
      025752 000402
      025754
      025754 005237 003154
      025760
      025760 023727 003154 000137
      025766 003045
2534 025770
      025770 012704 003160
2535 025774
      025774 012737 000001 002302
      026002 000402
      026004
      026004 005237 002302
      026010
      026010 023727 002302 000204
      026016 003003
2536 026020
      026020 113724 003154
2537 026024
      026024 000767
      026026
2538 026026
      026026 112724 000012
2539 026032
2540 026074 004737 005544
2541 026100
      026100 000725
      026102
2542
2543
2544
2545
2546
2547
2548
2549 026102
      026102 005037 003154
2550 026106
      026106 013737 002012 003156
      026114 005337 003156

```

```

.SBTTL PRINTABLE CHARACTERS
BGNMOD
:++
: THIS TEST WILL PRINT A FULL LINE OF EACH PRINTABLE CHARACTER.
: BAND TYPE IS CHECKED ON A UNIT BY UNIT BASIS.
: UNITS WITH 96 CHAR BAND WILL BE SENT THE CHARACTER CODES :
: 140(8) THRU 176(8).
:--
BGNST 6
T6::
OUTPUT #PRTCHR, #30. ; PRINT TEST ID
:
: PRINT ALL UPPER CASE CHARACTERS ON ALL UNITS
:
      INCR WORK FROM #40 TO #137 BY #1
MOV #40,WORK
BR 50277$
50300$: INC WORK
50277$: CMP WORK,#137
      BGT 50301$
      LET R4 := #OUTBUF
MOV #OUTBUF,R4
      INCR COUNT FROM #1 TO #132. BY #1
MOV #1,COUNT
BR 50302$
50303$: INC COUNT
50302$: CMP COUNT,#132.
      BGT 50304$
      LET (R4)+ :B= WORK
MOVB WORK,(R4)+
      ENDINC
BR 50303$
50304$: LET (R4)+ :B= #LF
MOVB #LF,(R4)+
      OUTPUT #OUTBUF,#133.
      JSR PC,QUIET
      ENDINC
BR 50300$
50301$:
:
: NOW DO ALL THE LOWER CASE CHARACTERS ON THOSE UNITS
: EQUIPPED WITH 96 CHARACTER BANDS.
:
: FIRST DETERMINE IF ANY UNITS HAVE 96 CHAR BANDS
:
LET WORK := #0 ; COUNTER FOR 96 CHAR UNITS
      CLR WORK
LET WORK1 := L$UNIT - #1 ; GET UNIT COUNT
MOV L$UNIT,WORK1
DEC WORK1

```

CZLPLDC LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 31-1  
 PRINTABLE CHARACTERS

```

2551 026120          INCR LUNIT FROM #0 TO WORK1 BY #1
      026120 005037 002314      CLR      LUNIT
      026124 000402          BR      50305$
      026126          50306$: INC      LUNIT
      026126 005237 002314      50305$: CMP      LUNIT,WORK1
      026132          BGT      50307$
      026132 023737 002314 003156  LET R2 := LUNIT SHIFT 1
      026140 003012          MOV      LUNIT,R2
2552 026142          ASL      R2
      026142 013702 002314      IF #FLAG96 SETIN STATUS(R2) THEN ; IS THIS UNIT 96 CHAR ?
      026146 006302          BIT      #FLAG96,STATUS(R2)
2553 026150          BEQ      50310$
      026150 032762 010000 002512  LET WORK := WORK + #1 ; YES ADD 1 TO COUNT
      026156 001402          INC      WORK
2554 026160          ENDIF
      026160 005237 003154      50310$: ENDINC
2555 026164          BR      50306$
      026164          50307$: IF WORK EQ #0 THEN ; ANY 96 CHAR UNITS ?
2556 026164          TST      WORK
      026164 000760          BNE      50311$
      026166          LET OUTBUF :B= #14
2557 026166          MOV      #14,OUTBUF
      026166 005737 003154      OUTPUT #OUTBUF,#1
      026172 001026          EXIT TST ; ALL UNITS 64 CHAR...EXIT
2558 026174          TRAP   C$EXIT
      026174 112737 000014 003160  .WORD  L10015-.
2559 026202          ENDIF
2560 026244          50311$: ; SETUP FOR LOWER CASE CHARACTERS DISPLAY
      026244 104432          INCR WORK FROM #140 TO #176 BY #1
      026246 000330          MOV      #140,WORK
2561 026250          BR      50312$
      026250          50313$: INC      WORK
2562 026250          50312$: CMP      WORK,#176
2563 026250          BGT      50314$
2564 026250          LET R4 := #OUTBUF
      026250 012737 000140 003154  MOV      #OUTBUF,R4
      026256 000402          INCR COUNT FROM #1 TO #132. BY #1
      026260          MOV      #1,COUNT
      026260 005237 003154      50316$: BR      50315$
      026264          50315$: INC      COUNT
      026264 023727 003154 000176  50317$: CMP      COUNT,#132.
      026272 003073          BGT      50317$
2565 026274          LET (R4)+ :B= WORK
      026274 012704 003160      MOV      WORK,(R4)+
2566 026300          ENDINC
      026300 012737 000001 002302  BR      50316$
      026306 000402          50316$: INC      COUNT
      026310          50315$: CMP      COUNT,#132.
      026310 005237 002302          BGT      50317$
      026314          LET (R4)+ :B= WORK
      026314 023727 002302 000204  MOV      WORK,(R4)+
      026322 003003          ENDINC
2567 026324          BR      50316$
      026324 113724 003154      50317$: BR      50316$
2568 026330          50317$:
      026330 000767          BR      50316$
      026332

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 31-2  
 PRINTABLE CHARACTERS

2569	026332					LET (R4)+ :B= #LF
	026332	112724	000012			MOV#B #LF,(R4)+
2570	026336					LET WORK1 :- L\$UNIT - #1
	026336	013737	002012	003156		MOV L\$UNIT,WORK1
	026344	005337	003156			DEC WORK1
2571	026350					INCR LUNIT FROM #0 TO WORK1 BY #1
	026350	005037	002314			CLR LUNIT
	026354	000402				BR 50320\$
	026356				50321\$:	
	026356	005237	002314			INC LUNIT
	026362				50322\$:	
	026362	023737	002314	003156		CMP LUNIT,WORK1
	026370	003031				BGT 50322\$
2572	026372					LET R2 := LUNIT SHIFT 1
	026372	013702	002314			MOV LUNIT,R2
	026376	006302				ASL R2
2573	026400					IF #FLAG96 SET IN STATUS(R2) THEN
	026400	032762	010000	002512		#FLAG96,STATUS(R2)
	026406	001421				50323\$
2574	026410					OUTPUT #OUTBUF,#133,,LUNIT
2575	026452					ENDIF
	026452				50323\$:	
2576	026452					ENDINC
	026452	000741				BR 50321\$
	026454				50322\$:	
2577	026454	004737	005544			JSR PC,QUIET ; WAIT FOR ALL DONE
2578	026460					ENDINC
	026460	000677				BR 50313\$
	026462				50314\$:	
2579	026462					LET OUTBUF :B= #14
	026462	112737	000014	003160		MOV#B #14,OUTBUF
2580	026470					OUTPUT #OUTBUF,#1 ; EXECUTE TOP
2581	026532					EXIT TST
	026532	104432				TRAP C\$EXIT
	026534	000042				.WORD L10015-
2582						.NLIST BEX
2583	026536	120	122	111		PRICHR: .ASCIZ /PRINTABLE CHARACTERS TEST 6/ <12><12><12>
2584						.EVEN
2585						
2586	026576					ENDTST
	026576				L10015:	
	026576	104401				TRAP C\$TST
2587						.LIST BEX
2588	026600					ENDMOD
2589						

CZLMLDO LP25, LP26, LP07 TEST MACRO M113 30-DEC-80 09:36 PAGE 32  
NON-PRINTABLE CHARACTERS

```

2591
2592
2593 026600
2594
2595
2596
2597
2598
2599
2600
2601
2602
2603 026600
      026600
2604
2605
2606 026600
2607 026642
      026642 012704 027721
2608 026646
      026646 012737 000033 003156
2609
2610
2611
2612 026654
      026654 005037 002276
      026660 000402
      026662
      026662 005237 002276
      026666
      026666 023737 002276 003156
      026674 003061
2613 026676
      026676 012703 003160
2614
2615
2616
2617 026702
      026702 012737 000001 003154
      026710 000402
      026712
      026712 005237 003154
      026716
      026716 023727 003154 000010
      026724 003002
2618 026726
      026726 112423
2619 026730
      026730 000770
      026732
2620
2621
2622
2623
2624 026732
      026732 012737 000001 003154
      026740 000402

```

```

.SBTTL NON-PRINTABLE CHARACTERS
BGNMOD
:++
:THIS TEST CHECKS FOR DETECTION OF ALL NON-PRINTABLE CHARACTERS.
:EACH CHARACTER WILL APPEAR ON THE PRINTER OUTPUT IN THE FORM OF ITS OCTAL
:CODE ACCOMPANIED WITH ITS MNEMONIC.
:123 OF THE TESTED CODE ARE THEN SENT.
:ALSO, ON PRINTERS WITH 64 CHARACTER BANDS, IT CHECKS TO
:MAKE SURE THAT CODES 140 THRU 177 ARE CONVERTED TO CODES 100 THRU 137.
:--
BGNIST 7
T7::
:INDICATE TEST CURRENTLY BEING DONE

      OUTPUT #NONCHR,#71.
      LET R4 := #NONBUF
      MOV #NONBUF,R4
      LET WORK1 := #27.
      MOV #27.,WORK1

: DO ONE LINE FOR EACH TABLE ENTRY
:
      INCR LINCNT FROM #0 TO WORK1 BY #1
      CLR LINCNT
      BR 50325$
50325$: INC LINCNT
50324$: CMP LINCNT,WORK1
      BGT 50326$
      LET R3 := #OUTBUF
      MOV #OUTBUF,R3

: MOVE CODE AND MNEMONIC TO PRINT BUFFER
:
      INCR WORK FROM #1 TO #8. BY #1
      MOV #1,WORK
      BR 50327$
50330$: INC WORK
50327$: CMP WORK,#8.
      BGT 50331$
      LET (R3)+ :B (R4)+
      MOVB (R4)+,(R3)+
      ENDINC
      BR 50330$
50331$:

: PUT 120 BYTES OF CODE INTO PRINT BUFFER
:
      INCR WORK FROM #1 TO #123. BY #1
      MOV #1,WORK
      BR 50332$

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 32-1  
NON-PRINTABLE CHARACTERS

026742  
 026742 005237 003154  
 026746  
 026746 023727 003154 000173  
 026754 003002  
 2625 026756  
 026756 111423  
 2626 026760  
 026760 000770  
 026762  
 2627  
 2628  
 2629  
 2630  
 2631 026762  
 026762 112723 000015  
 2632 026766  
 026766 112723 000012  
 2633  
 2634  
 2635  
 2636 026772  
 2637 027034  
 027034 005204  
 2638 027036  
 027036 000711  
 027040  
 2639  
 2640  
 2641  
 2642  
 2643  
 2644  
 2645 027040  
 027040 012703 003160  
 2646 027044  
 027044 012704 000140  
 027050 000401  
 027052  
 027052 005204  
 027054  
 027054 020427 000177  
 027060 003002  
 2647 027062  
 027062 110423  
 2648 027064  
 027064 000772  
 027066  
 2649 027066  
 027066 112723 000012  
 2650 027072  
 027072 013737 002012 003154  
 027100 005337 003154  
 2651 027104  
 027104 005037 002314  
 027110 000402  
 027112

50333\$: INC WORK  
 50332\$: CMP WORK,#123.  
 BGT 50334\$  
 LET (R3)+ :B- (R4)  
 MOVB (R4),(R3)+  
 ENDINC  
 BR 50333\$  
 50334\$:  
 :  
 : FOLLOWED BY CRLF  
 :  
 LET (R3)+ :B= #15  
 MOVB #15,(R3)+  
 LET (R3)+ :B= #12  
 MOVB #12,(R3)+  
 :  
 : PRINT LINE OF OCTAL CODE, MNEMONIC, AND 120 BYTES (NONPRINTABLE CODE)  
 :  
 OUTPUT #OUTBUF,#133.  
 LET R4 := R4 + #1  
 INC R4  
 ENDINC  
 BR 50325\$  
 50326\$:  
 :  
 : UNITS WITH 64 CHAR BAND SHOULD STRIP BIT 6 OF DATA  
 : AND PRINT THE DATA FOR CODES 140(8) THRU 177(8)  
 : AS IF CODES 100(8) THRU 137(8) WERE RECEIVED.  
 : \*\*NOTE\*\* DELETE IS PRINTED AS UNDERSCORE '\_'  
 :  
 LET R3 := #OUTBUF  
 MOV #OUTBUF,R3  
 INCR R4 FROM #140 TO #177 BY #1  
 MOV #140,R4  
 BR 50335\$  
 50336\$: INC R4  
 50335\$: CMP R4,#177  
 BGT 50337\$  
 LET (R3)+ :B= R4 ; FILL BUFFER WITH CODES & LF  
 MOVB R4,(R3)+  
 ENDINCR  
 BR 50336\$  
 50337\$: LET (R3)+ :B= #LF  
 MOVB #LF,(R3)+  
 LET WORK := L\$UNIT - #1 ; SEND MSG AND BUFFER TO ALL  
 MOV L\$UNIT,WORK  
 DEC WORK  
 INCR LUNIT FROM #0 TO WORK BY #1 ; UNITS WITH 64 CHAR BAND  
 CLR LUNIT  
 BR 50340\$  
 50341\$:



CZLPLD0 LP25, P26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 32-2  
NON-PRINTABLE CHARACTERS

2652	027112	005237	002314	
	027116			003154
	027116	023737	002314	
	027124	003073		
2653	027126			
	027126	013702	002314	
	027132	006302		
2654	027134			
	027134	032762	010000	002512
	027142	001063		
2655	027144			
2656	027206			
2657	027250			
	027312			
2658	027312			
	027312	000677		
	027314			
2659	027314			
	027314	112737	000014	003160
2660	027322			
2661	027364			
	027364	104432		
	027366	000730		
2662				
2663				
2664				
2665				
2666	027370	116	117	116
2667	027431	101	040	106
2668	027500	124	110	111
2669	027616	103	117	104
2670	027714	015	012	012
2671				
2672	027721	040	060	060
2673	027732	040	060	060
2674	027743	040	060	060
2675	027754	040	060	060
2676	027765	040	060	060
2677	027776	040	060	060
2678	030007	040	060	060
2679	030020	040	060	060
2680	030031	040	060	061
2681	030042	040	060	061
2682	030053	040	060	061
2683	030064	040	060	061
2684	030075	040	060	062
2685	030106	040	060	062
2686	030117	040	060	062
2687	030130	040	060	062
2688	030141	040	060	062
2689	030152	040	060	062
2690	030163	040	060	062
2691	030174	040	060	062
2692	030205	040	060	063
2693	030216	040	060	063
2694	030227	040	060	063

```

50340$: INC LUNIT
        CMP LUNIT,WORK
        BGT 50342$
        LET R2 := LUNIT SHIFT 1
        MOV LUNIT,R2
        ASL R2
        IF #FLAG96 NOTSET IN STATUS(R2) THEN
50341$: BIT #FLAG96,STATUS(R2)
        BNE 50343$
        OUTPUT #AUTSEC,#77,..,LUNIT
        OUTPUT #AUTCON,#61,..,LUNIT
        OUTPUT #OUTBUF,#33,..,LUNIT
        ENDIF
50343$: ENDINCR
        BR 50341$
50342$: LET OUTBUF :B= #14
        MOVB #14,OUTBUF
        OUTPUT #OUTBUF,#1
        EXIT TST ;AND EXIT TEST
        TRAP C$EXIT
        .WORD L10016-.

```

```

: CHARACTER BUFFER AND TEST HEADER MESSAGE
:
: NLIST BEX
NONCHP: .ASCII /NON-PRINTABLE CHARACTERS TEST 07/<12>
        .ASCIZ /A FULL LINE OF EACH CODE WILL BE SENT/<12>
AUTSEC: .ASCIZ /THIS SECTION CHECKS AUTOMATIC CONVERSION ON PRINTERS WITH 64 CHARACTER BAND
AUTCON: .ASCIZ /CODES 140(8) ..177(8) SHOULD BE CONVERTED TO 100(8)..137(8)/<12><12>
SKIP3: .ASCIZ <15><12><12><12>

NONBUF: .ASCII / 000 NUL/<0>
        .ASCII / 001 SOH/<1>
        .ASCII / 002 STX/<2>
        .ASCII / 003 ETX/<3>
        .ASCII / 004 EOT/<4>
        .ASCII / 005 ENQ/<5>
        .ASCII / 006 ACK/<6>
        .ASCII / 007 BEL/<7>
        .ASCII / 010 BS /<10>
        .ASCII / 011 HT /<11>
        .ASCII / 016 SO /<16>
        .ASCII / 017 SI /<17>
        .ASCII / 020 DLE/<20>
        .ASCII / 021 XON/<21>
        .ASCII / 022 DC2/<22>
        .ASCII / 023 XOF/<23>
        .ASCII / 024 DC4/<24>
        .ASCII / 025 NAK/<25>
        .ASCII / 026 SYN/<26>
        .ASCII / 027 ETB/<27>
        .ASCII / 030 CAN/<30>
        .ASCII / 031 EM /<31>
        .ASCII / 032 SUB/<32>

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 32-3  
NON-PRINTABLE CHARACTERS

2695	030240	040	060	063	.ASCII / 033	ESC / <33>
2696	030251	040	060	063	.ASCII / 034	FS / <34>
2697	030262	040	060	063	.ASCII / 035	GS / <35>
2698	030273	040	060	063	.ASCII / 036	RS / <36>
2699	030304	040	060	063	.ASCII / 037	US / <37>

2700

2701

2702

2703

030316  
030316  
030316 104401

.LIST BEX  
ENDTST  
L10016: TRAP C\$ETST

2704

2705

2706

030320

ENDMOD

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 33  
BAND PATTERN

```

2708
2709 030320
2710
2711
2712
2713
2714
2715
2716
2717
2718
2719
2720
2721
2722
2723
2724
2725
2726
2727
2728
2729
2730
2731
2732
2733 030320
      030320
2734      000014
2735
2736
2737
2738 030320
      030320 012746 031652
      030324 012746 000001
      030330 010600
      030332 104417
      030334 062706 000004
2739
2740
2741
2742 030340
      030340 005737 002270
      030344 001432
2743 030346
      030346 105037 032166
2744 030352
      030352 112737 000043 032172
2745 030360
      030360 105037 032304
2746 030364
      030364 113737 000043 032311
2747 030372
      030372 105037 032422
2748 030376
      030376 112737 000043 032426
2749 030404
      030404 105037 032544

```

```

.SBTTL BAND PATTERN
BGNMOD
:++
:BAND PATTERN TEST
:THIS TEST ONLY EXECUTES ON LP25 OR LP26. IT DOES NOTHING ON LP07.
:THIS TEST PRODUCES AN IMAGE OF THE ENTIRE BAND PATTERN. THE PRINT-OUT
:IS ORGANIZED TO LOCATE THE FOUR QUADRANTS OF THE BAND IN THE FOLLOWING
:FORMAT:
      QUADRANT NO.1          QUADRANT NO. 2
      QUADRANT NO.3          QUADRANT NO.4
      QUADRANT NO.1          ETC.
:THE REASON FOR THIS ARRANGEMENT IS TO FACILITATE VISUAL INSPECTION
:OF THE PRINTOUT AS WELL AS TO ACCOMODATE THE 208 CHARACTERS OF THE BAND
:IN 132 COLUMNS.
      STATUS(R2) FLAG96      =1 FOR 96 CHAR BAND
                              =0 FOR 64 CHAR BAND
      SOFTWARE SWITCH USA    =1 FOR AMERICAN PRINT SET
                              =0 FOR BRITISH PRINT SET
:--
BGNTST 8.
T8::
TOF = 014
:PRINT TEST IDENTIFICATION ON ALL UNITS
:
PRINTF #N007
MOV #N007,-(SP)
MOV #1,-(SP)
MOV SP,R0
TRAP C$PNTF
ADD #4,SP
:
:SETUP PATTERNS FOR EUROPEAN OR AMERICAN PRINTERS
:
IF USA NE #0 THEN          : AMERICAN, PRINT SHARP SIGN '#'
TST USA
BEQ 50344$
LET BP64Q2+18. :B= #0
CLRB BP64Q2+18.
LET BP64Q2+22. :B= #43
MOVB #43,BP64Q2+22.
LET BP64Q3+35. :B= #0
CLRB BP64Q3+35.
LET BP64Q3+40. :B= 43
MOVB 43,BP64Q3+40.
LET BP64Q4+53. :B= #0
CLRB BP64Q4+53.
LET BP64Q +57. :B #43
MOVB #43,BP64Q4+57.
LET BP96Q2+13. :B= #0
CLRB BP96Q2+13.

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 33-1  
 BAND PATTERN

2750	030410				LET BP96Q2+18. :B= #43
	030410	112737	000043	032551	MOVB #43, BP96Q2+18.
2751	030416				LET BP96Q4+13. :B= #0
	030416	105037	032735		CLRB BP96Q4+13.
2752	030422				LET BP96Q4+18. :B= #43
	030422	112737	000043	032742	MOVB #43, BP96Q4+18.
2753	030430				ELSE ; EUROPEAN, PRINT POUND STERLING SIGN
	030430	000431			BR 50345\$
	030432			50344\$:	
2754	030432				LET BP64Q2+18. :B= #43
	030432	112737	000043	032166	MOVB #43, BP64Q2+18.
2755	030440				LET BP64Q2+22. :B= #0
	030440	105037	032172		CLRB BP64Q2+22.
2756	030444				LET BP64Q3+35. :B= #43
	030444	112737	000043	032304	MOVB #43, BP64Q3+35.
2757	030452				LET BP64Q3+40. :B= #0
	030452	105037	032311		CLRB BP64Q3+40.
2758	030456				LET BP64Q4+53. :B= #43
	030456	112737	000043	032422	MOVB #43, BP64Q4+53.
2759	030464				LET BP64Q4+57. :B= #0
	030464	105037	032426		CLRB BP64Q4+57.
2760	030470				LET BP96Q2+13. :B= #43
	030470	112737	000043	032544	MOVB #43, BP96Q2+13.
2761	030476				LET BP96Q2+18. :B= #0
	030476	105037	032551		CLRB BP96Q2+18.
2762	030502				LET BP96Q4+13. :B= #43
	030502	112737	000043	032735	MOVB #43, BP96Q4+13.
2763	03050				LET BP96Q4+18. :B= #0
	030510	105037	032742		CLRB BP96Q4+18.
2764	030514				ENDIF
	030514			50345\$:	
2765					...
2766					PRINT PROPER BAND IDENTIFICATION MSG. ON EACH PRINTER
2767					...
2768	030514				LET R1 := L\$UNIT - #1
	030514	013701	002012		MOV L\$UNIT, R1
	030520	005301			DEC R1
2769	030522				INCR LUNIT FROM #0 TO R1 BY #1
	030522	005037	002314		CLR LUNIT
	030526	000402			BR 50346\$
	030530			50347\$:	
	030530	005237	002314		INC LUNIT
	030534			50346\$:	
	030534	023701	002314		CMP LUNIT, R1
	030540	003162			BGT 50350\$
2770	030542				LET R2 := LUNIT SHIFT 1
	030542	013702	002314		MOV LUNIT, R2
	030546	006302			ASL R2
2771	030550				IF #FLAG07 NOTSET IN STATUS(R2) THEN
	030550	032762	002000	002512	BIT #FLAG07, STATUS(R2)
	030556	001152			BNE 50351\$
2772	030560				OUTPUT #BNDTST, #23, LUNIT
2773	030622				IF #FLAG26 NOTSET IN STATUS(R2) AND #FLAG07 NOTSET IN STATUS(R2) THEN
	030622	032762	001000	002512	BIT #FLAG26, STATUS(R2)
	030630	001025			BNE 50352\$
	030632	032762	002000	002512	BIT #FLAG07, STATUS(R2)
	030640	001021			BNE 50352\$

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 33-2  
 BAND PATTERN

```

2774 030642                                OUTPUTI #BPID25,#6,,LUNIT      ; PRINTER IS LP25
2775 030704                                ENDIF
      030704                                50352$:
2776 030704                                IF #FLAG26 SETIN STATUS(R2) AND #FLAG07 NOTSETIN STATUS(R2) THEN
      030704 032762 001000 002512          BIT #FLAG26,STATUS(R2)
      030712 001425                                50353$
      030714 032762 002000 002512          BIT #FLAG07,STATUS(R2)
      030722 001021                                50353$
2777 030724                                OUTPUTI #BPID26,#6,,LUNIT      ; PRINTER IS LP26
2778 030766                                ENDIF
      030766                                50353$:
2779 030766                                IF #FLAG96 SETIN STATUS(R2) THEN
      030766 032762 010000 002512          BIT #FLAG96,STATUS(R2)
      030774 001422                                50354$
2780 030776                                OUTPUTI #BP96ID,#22,,LUNIT     ; 96 CHAR BAND
2781 031040                                ELSE
      031040 000421                                BR 50355$
      031042                                50354$:
2782 031042                                OUTPUTI #BP64ID,#22,,LUNIT     ; 64 CHAR BAND
2783 031104                                ENDIF
      031104                                50355$:
2784 031104                                ENDIF
      031104                                50351$:
2785 031104                                ENDINC
      031104 000611                                BR 50347$
      031106                                50350$:
2786 :
2787 : NOW PRINT 2_LINE PATTERN 15. TIMES, WITH BLANK LINE BETWEEN PATTERNS
2788 :
2789 031106                                LET LINCNT := #14.
      031106 012737 000016 002276          MOV #14,,LINCNT
2790 2$:
2791 031114                                INCR LUNIT FROM #0 TO R1 BY #1 ; PRINT QUADRANTS 1 & 2
      031114 005037 002314          CLR LUNIT
      031120 000402                                BR 50356$
      031122                                50357$:
      031122 005237 002314          INC LUNIT
      031126                                50356$:
      031126 023701 002314          CMP LUNIT,R1
      031132 003105                                BGT 50360$
2792 031134                                LET R2 := LUNIT SHIFT 1 ; INDEX INTO STATUS TABLES
      031134 013702 002314          MOV LUNIT,R2
      031140 006302                                ASL R2
2793 031142                                IF #FLAG07 NOTSETIN STATUS(R2) THEN
      031142 032762 002000 002512          BIT #FLAG07,STATUS(R2)
      031150 001075                                BNE 50361$
2794 031152                                IF #FLAG96 NOTSETIN STATUS(R2) THEN
      031152 032762 010000 002512          BIT #FLAG96,STATUS(R2)
      031160 001022                                BNE 50362$
2795 031162                                OUTPUTI #BP64Q1,#121,,LUNIT   ; 64 CHAR PATTERN
2796 031224                                ELSE
      031224 000447                                BR 50363$
      031226                                50362$:
2797 031226                                IF #FLAG26!FLAG07 NOTSETIN STATUS(R2) THEN
      031226 032762 003000 002512          BIT #FLAG26!FLAG07,STATUS(R2)
      031234 001022                                BNE 50364$
2798 031236                                OUTPUTI #BP96Q3,#121,,LUNIT   ; LP25 96 CHAR PATTERN
    
```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 33-3

BAND PATTERN

```

2799 031300                                ELSE
      031300 000421                        BR      50365$
      031302                                50364$:
2800 031302                                OUTPUTI #BP96Q1,#121,,,LUNIT ; LP26 96 CHAR PATTERN
2801 031344                                ENDIF
      031344                                50365$:
2802 031344                                ENDIF
      031344                                50363$:
2803 031344                                ENDIF
      031344                                50361$:
2804 031344                                ENDINC
      031344 000666                        BR      50357$
      031346                                50360$:
2805                                ; NOW DO QUADRANTS 3 & 4
2806 031346                                INCR LUNIT FROM #0 TO R1 BY #1 ; REPEAT FOR ALL UNITS
      031346 005037 002314                CLR     LUNIT
      031352 000402                        BR      50366$
      031354                                50367$:
      031354 005237 002314                INC     LUNIT
      031360                                50366$:
      031360 023701 002314                CMP     LUNIT,R1
      031364 003057                        BGT     50370$
2807 031366                                LET R2 := LUNIT SHIFT 1 ; INDEX INTO STATUS TABLES
      031366 013702 002314                MOV     LUNIT,R2
      031372 006302                        ASL     R2
2808 031374                                IF #FLAG07 NOTSET IN STATUS(R2) THEN
      031374 032762 002000 002512        BIT     #FLAG07,STATUS(R2)
      031402 001047                        BNE     50371$
2809 031404                                IF #FLAG96 NOTSET IN STATUS(R2) THEN
      031404 032762 010000 002512        BIT     #FLAG96,STATUS(R2)
      031412 001022                        BNE     50372$
2810 031414                                OUTPUTI #BP64Q3,#122,,,LUNIT ; 64 CHAR PATTERN
2811 031456                                ELSE
      031456 000421                        BR      50373$
      031460                                50372$:
2812 031460                                OUTPUTI #BP96Q3,#122,,,LUNIT ; 96 CHAR PATTERN
2813 031522                                ENDIF
      031522                                50373$:
2814 031522                                ENDIF
      031522                                50371$:
2815 031522                                ENDINC
      031522 000714                        BR      50367$
      031524                                50370$:
2816 031524                                LET LINCNT := LINCNT - #1
      031524 005337 002276                DEC     LINCNT
2817 031530                                BEQ     3$
      031532 000137 031114                JMP     2$
2818 031536                                3$:
2819                                ;
2820                                ; DO TOP THEN EXIT ON ALL UNITS EXCEPT LP07'S
2821                                LET #OUTBUF := #14
2822 031536                                MOV     #14,#OUTBUF
      031536 112727 000014 003160        INCR LUNIT FROM #0 TO R1 BY #1
2823 031544                                CLR     LUNIT
      031544 005037 002314                BR      50374$
      031550 000402                        50375$:
      031552                                INC     LUNIT
      031552 005237 002314

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 33-4  
BAND PATTERN

```

031556
031556 023701 002314
031562 003031
2824 031564
031564 013702 002314
031570 006302
2825 031572
031572 032762 002000 002512
031600 001021
2826 031602
2827 031644
031644
2828 031644
031644 000742
031646
2829
2830 031646
031646 104432
031650 001146
2831
2832 031652 045 116 045
2833 031731 102 101 116
2834 031760 114 120 062
2835 031766 114 120 062
2836 031774 066 064 040
2837 032022 071 066 040
2838
2839
2840
2841 032050 040 040 040
2842 032060 101 102 105
2843 032112 125 126 066
2844
2845 032144 040 040 040
2846 032154 077 100 105
2847 032206 110 111 066
2848
2849 032241 040 040 040
2850 032251 137 053 105
2851 032303 136 043 066
2852
2853 032335 040 040 040
2854 032345 116 117 105
2855 032377 072 057 066
2856
2857
2858
2859 032433 040 040 040
2860 032443 101 102 103
2861 032475 125 126 127
2862 032522 145
2863 032523 074 077 100
2864 032526 164
2865
2866 032527 040 040 040
2867 032537 135 133 134
2868 032545 174

```

```

50374$:
CMP LUNIT,R1
BGT 50376$
LET R2 := LUNIT SHIFT 1
MOV LUNIT,R2
ASL R2
IF #FLAG07 NOTSET IN STATUS(R2) THEN
BIT #FLAG07,STATUS(R2)
BNE 50377$
OUTPUT #OUIBUF,#1,,LUNIT
ENDIF
50377$:
ENDINC
BR 50375$
50376$:
EXIT TST
TRAP C$EXIT
WORD L10017-.
.NLIST BEX
NO07: .ASCII /%N%ABAND PATTERN TEST DOES NOTHING ON LP07'S%N/
BNDTST: .ASCII /BAND PATTERN TEST 08 /
BPID25: .ASCII /LP25 /
BPID26: .ASCII /LP26 /
BP64ID: .ASCII /64 CHAR BAND PATTERN/<12><12>
BP96ID: .ASCII /96 CHAR BAND PATTERN/<12><12>
: 64 CHAR BAND PATTERN LP25 & LP26
BP64Q1: .ASCII /
.ASCII /ABECDTFGOHIJ1KL2MN3OP4QRS5/
.ASCII /UV6WX7YZ8_+&9&)*(:./<57>/$-;><./
BP64Q2: .ASCII /
.ASCII /?@E][T\^'0^#=1!#2^A3BC4DFG5/
.ASCII /HI6JK7LM8NOP9QR*SU,VW-XYZ./<12>
BP64Q3: .ASCII /
.ASCII /+E%&T)(0:/<57>/$1;>2<?3@]4[\^'5/
.ASCII /^#6=!7#^8ABC9DF*GH,IJ-KLM./
BP64Q4: .ASCII /
.ASCII /NOEPQTRSOJUVW1XY2Z_3+&4&)(5/
.ASCII /_:/6$;7><8?@]9[\^'*,#=-!#'.<12><12>
: 96 CHAR BAND LP25 = 03..04 LP26 = 01..04
BP96Q1: .ASCII /
.ASCII /ABCD0EFG1HIJ2KLMN3OPQ4RST5/
.ASCII /UVWX6YZ_7$&8)(:/<57>/9+;>/
.BYTE 145
.ASCII /<?@/
.BYTE 164
BP96Q2: .ASCII /
.ASCII /][\^',#/
.BYTE 174

```

CZLP:DO LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 33-5  
BAND PATTERN

2869	032546	075	052	041	.ASCII	/=*!#'-/
2870	032554	175	173	176	.BYTE	175,173,176,136,56,177,140,141,60,142,143,144,61
2871	032571	146	147	150	.BYTE	146,147,150,151,62,152,153,154,63,155,156
2872	032604	157	064	160	.BYTE	157,64,160,161,162,163,65,165,166,167,66
2873	032617	170	171	172	.BYTE	170,171,172,67,12
2874						
2875	032624	040	040	040	BP96Q3:	.ASCII / /
2876	032634	101	102	103	.ASCII	/ABCDEFGHIJ/
2877	032650	145			.BYTE	145
2878	032651	113	114	115	.ASCII	/KLMN/
2879	032655	164			.BYTE	164
2880	032656	117	120	121	.ASCII	/OPQ,RST*/
2881	032666	125	126	127	.ASCII	/UVWX-YZ_.\$%&'()*:/<57>/1+,:>2<?@3/
2882						
2883	032720	040	040	040	BP96Q4:	.ASCII / /
2884	032730	135	133	134	.ASCII	/][\`4#/
2885	032736	174			.BYTE	174
2886	032737	075	065	041	.ASCII	/=5!#*6/
2887	032745	175	173	176	.BYTE	175,173,176,136,67,177,140,141,70,142,143,144,71
2888	032762	146	147	150	.BYTE	146,147,150,151,145,152,153,154,164,155,156,157
2889	032776	054	160	161	.BYTE	54,160,161,162,163,52,165,166,167,55,170
2890	033011	171	172	056	.BYTE	171,172,56,12,12
2891					.LIST	BEX
2892					.EVEN	
2893	033016				ENDTST	
	033016				L10017:	
	033016	104401			TRAP	C\$ETST
2894	033020				ENDMOD	



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 34  
SPURIOUS HAMMER FIRING

```

2896          .SBTTL SPURIOUS HAMMER FIRING
2897
2898 033020    BGNMOD
2899
2900          :++
2901          :THE PURPOSE OF THIS TEST IS TO DETECT SPURIOUS HAMMER FIRINGS AND DEFECTIVE
2902          :HAMMER DRIVERS DURING THE OPERATION OF THE LINE PRINTER. THE PROGRAM
2903          :PRODUCES A LEFT WEDGE PATTERN CONSISTING OF 132 LINES OF PRINT WITH EACH
2904          :LINE BEGINNING WITH A '?' CHARACTER. ANY POINT OUTSIDE THE WEDGE
2905          :BOUNDARIES IS CAUSED BY HAMMER MISFIRES OR BY HAMMER BOUNCE.
2906          :--
2907
2908 033020    BGNTST 9.
2909 033020    T9::
2910
2911          :PRINT THE TEST HEADER
2912 033020    OUTPUT #HAMFIR,#33.
2913
2914          :OUTPUT THE ACTUAL WEDGE AT THIS POINT
2915
2916 033062    INCR WORK FROM #1 TO #132. BY #1                ;NUMBER OF LINES TO OUTPUT
2917 033062    012737 000001 003154    MOV      #1,WORK
2918 033070    000402                    BR       50400$
2919 033072    50401$:                    INC      WORK
2920 033076    50400$:                    CMP     WORK,#132.
2921 033076    023727 003154 000204    BGT     50402$
2922 033104    003123                    ;ALSO NUMBER OF PRINTING CHARACTERS
2923
2924          ;OUTPUT BUFFER POINTER
2925 033106    LET R4 :- #OUTBUF
2926 033106    012704 003160    MOV     #OUTBUF,R4
2927 033112    LET SPCCNT :- #132. - WORK                ;NUMBER OF SPACES TO FILL IN
2928 033112    012737 000204 033430    MOV     #132.,SPCCNT
2929 033120    163737 003154 033430    SUB     WORK,SPCCNT
2930
2931          ;FILL THE OUTPUT BUFFER WITH THE REQUIRED NUMBER OF SPACES
2932
2933          WHILE SPCCNT NE #0 DO
2934 50403$:    TST     SPCCNT
2935          BEQ     50404$
2936          LET (R4)+ :-B #40                ;SPACE FILL
2937          MOV     #40,(R4)+
2938          LET SPCCNT :- SPCCNT - #1        ;UPDATE FILLER COUNTER
2939          DEC     SPCCNT
2940          ENDDO
2941          BR     50403$
2942 50404$:    LET CCNT :- #0
2943          CLR     CCNT
2944          LET CHRGEN := #77                ;FIRST CHARACTER A '?'
2945          MOV     #77,CHRGEN
2946          LET STRCNT := #33.              ;# OF CHARACTERS IN GROUP
2947          MOV     #33.,STRCNT
2948          WHILE CCNT LT WORK DO
2949          ;NOW FILL IN REST OF BUFFER

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 34-1  
SPURIOUS HAMMER FIRING

```

033166
033166 023737 002304 003154 50405$: CMP CCNT,WORK
033174 002022 BGE 50406$
2932 033176 IF STRCNT EQ #0 THEN
033176 005737 002306 TST STRCNT
033202 001006 BNE 50407$

2933
2934 ;RESET GROUP POINTERS AND COUNTERS
2935
2936 033204 LET STRCNT :- #33.
033204 012737 000041 002306 MOV #33,STRCNT
2937 033212 LET CHRGEN :- #77
033212 012737 000077 002310 MOV #77,CHRGEN
2938 033220 ENDF
033220
2939 033220 50407$: LET (R4)+ :B- CHRGEN
033220 113724 002310 MOVB CHRGEN,(R4)+
2940 033224 LET CHRGEN := CHRGEN + #1
033224 005237 002310 INC CHRGEN
2941 033230 LET CCNT := CCNT + #1
033230 005237 002304 INC CCNT
2942 033234 LET STRCNT :- STRCNT - #1 ;UPDATE POINTERS AND COUNTERS
033234 005337 002306 DEC STRCNT
2943 033240 ENDDO
033240 000752 BR 50405$
033242

2944
2945
2946
2947 033242 112724 000012 50406$: ;NOW SET UP LINE TERMINATOR AND OUTPUT THE LINE.
033242 LET (R4)+ :B- #12
MOV #12,(R4)+
;OUTPUT THE LINE

2948
2949
2950 033246 OUTPUT #OUTBUF,#132. ; SEND THE DATA, NO LF YET
2951 033310 OUTPUT #OUTBUF+132.,#1 ; THIS MAKES SURE OUTPUT IS SENT
2952 ; BEFORE CHANGING OUTBUF DATA .
2953
2954 033352 ENDINC
033352 000647 BR 50401$
033354
2955 033354 50402$: LET OUTBUF :B- #14
033354 112737 000014 003160 MOVB #14,OUTBUF
2956 033362 OUTPUT #OUTBUF,#1
2957 033424 EXIT TS*
033424 104432 TRAP C$EXIT
033426 000046 .WORD L10020-.

2958
2959 ;COUNTERS, POINTERS, TEXT BUFFER, AND HEADER FOR TEST PRINTOUT
2960
2961 033430 000000 SPCCNT: .WORD 0
2962
2963 ;TEST HEADER MESSAGE
2964 .NLIST BEX
2965 033432 123 120 125 HAMFIR: .ASCIZ /SPURIOUS HAMMER FIRING TEST 09/<12><12><12>
2966
2967
2968 ;.LIST BEX

```

CZLPLDO LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 34-2  
SPURIOUS HAMMER FIRING

2969

2970

2971

2972 033474

033474

033474 104401

2973

2974 033476

.EVEN

ENDTST

L10020:

TRAP

CSETST

ENDMOD

```

2976
2977
2978 033476
2979
2980
2981
2982
2983
2984
2985
2986
2987
2988
2989
2990
2991
2992
2993 033476
      033476
2994 033476
      033476 012746 034503
      033502 012746 000001
      033506 010600
      033510 104417
      033512 062706 000004
2995 033516
      033516 013701 002012
      033522 005301
2996      000001
2997 033524
      033524 005037 002314
      033530 000402
      033532
      033532 005237 002314
      033536
      033536 023701 002314
      033542 003402
      033544 000137 034406
      033550
2998 033550
      033550 013702 002314
      033554 006302
2999 033556
      033556 032762 002000 002512
      033564 001402
      033566 000137 034402
3000 033572
3001 033634
      033634 012737 000015 002302
3002 033642
3003 033642
      033642 012705 034742
3004 033646
      033646
      033646 005715
      033650 001002
      033652 000137 033720

```

```

.SBTTL PRINT CONTROL
BGNMOD
:++
:THIS TEST CHECKS THE PRINT CONTROL BY SENDING MORE THAN 132 CHARACTERS
:BEFORE SENDING A PRINT COMMAND. ALL CHARACTERS IN EXCESS OF 132 CHARACTERS
:SHOULD BE DISREGARDED. THIS TEST DOES NOTHING ON ALL LP07'S.
: THREE LINES ARE PRINTED PER ITERATION, THESE LINES WILL IDENTIFY THE
: COLUMN NUMBERS ACROSS THE PAGE. EXAMPLE :
:
:      0      0      0.....          1
:      1      2      3.....          3
:123456789012345678901234567890..... 012
:
: NOTICE THAT THE PRINTOUT SHOULD IDENTIFY 132 COLUMNS ACROSS THE PAGE.
:
: THIS OUTPUT IS REPEATED 13 TIMES.
:--
BGNST 10.
'10::
PRINTF #NOLP07
      MOV      #NOLP07,-(SP)
      MOV      #1,-(SP)
      MOV      SP,R0
      TRAP     C$PNTF
      ADD      #4,SP
LET R1 := L$UNIT - #1
      MOV      L$UNIT,R1
      DEC      R1
$BR,MP=1
INCR LUNIT FROM #0 TO R1 BY #1
      CLR      LUNIT
      BR       50411$
50410$:
      INC      LUNIT
50411$:
      CMP      LUNIT,R1
      BLE     50412$
      JMP     50413$
50412$:
      LET R2 := LUNIT SHIFT 1
      MOV      LUNIT,R2
      ASL     R2
      IF #FLAG07 NOTSET IN STATUS(R2) THEN
      BIT      #FLAG07,STATUS(R2)
      BEQ     .+6
      JMP     50414$
      OUTPUT #PRTCTL,#56,,,LUNIT
      LET COUNT := #13.
      MOV      #13.,COUNT
1$:
      LET R5 := #TABLE1
      MOV      #TABLE1,R5
      WHILE (R5) NE #0 DO
50415$:
      TST     (R5)
      BNE     .+6
      JMP     50416$

```

CZLPLDG LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 35-1  
 PRINT CONTROL

3005	033656						OUTPUT (R5)+,#10,,LUNIT
3006	033716						ENDDO
	033716	000753				50416\$:	BR 50415\$
	033720						
3007	033720						LET OUTBUF :B= #12
	033720	112737	000012	003160			#12,OUTBUF
3008	033726						OUTPUT #OUTBUF,#1,,LUNIT
3009							
3010	033770						LET R5 := #TABLE2
	033770	012705	034776				#TABLE2,R5
3011	033774						WHILE (R5) NE #0 DO
	033774					50417\$:	
	033774	005715					TST (R5)
	033776	001002					BNE .+6
	034000	000137	034046				JMP 50420\$
3012	034004						OUTPUT (R5)+,#10,,LUNIT
3013	034044						ENDDO
	034044	000753				50420\$:	BR 50417\$
	034046						
3014	034046						OUTPUT #OUTBUF,#1,,LUNIT
3015							
3016	034110						DECR LINCNT FROM #14. TO #1 BY #1
	034110	012737	000016	002276			#14,LINCNT
	034116	000402					50421\$:
	034120						BR 50422\$
	034120	005337	002276				DEC LINCNT
	034124					50422\$:	
	034124	023727	002276	000001			CMP LINCNT,#1
	034132	002002					BGE 50423\$
	034134	000137	034204				JMP 50424\$
	034140					50423\$:	
3017	034140						OUTPUT #X11,#10,,LUNIT
3018	034202						ENDDOCR
	034202	000746					50424\$:
	034204						BR 50421\$
3019	034204						OUTPUT #OUTBUF,#1,,LUNIT
3020	034246						OUTPUT #OUTBUF,#1,,LUNIT
3021	034310						LET COUNT := COUNT - #1
	034310	005337	002302				DEC COUNT
3022	034314						IF COUNT GT #0 THEN
	034314	005737	002302				TST COUNT
	034320	003002					BGT .+6
	034322	000137	034332				JMP 50425\$
3023	034326	000137	033642				JMP 1\$
3024	034332						ENDIF
	034332					50425\$:	
3025	034332						LET OUTBUF :B= #14
	034332	112737	000014	003160			#14,OUTBUF
3026	034340						OUTPUT #OUTBUF,#1,,LUNIT
3027	034402						ENDIF
	034402					50414\$:	
3028	034402						ENDINCR
	034402	000137	033532				JMP 50410\$
	034406					50413\$:	
3029		177777					\$BRJMP=-1
3030	034406						EXIT TST
	034406	104432					TRAP C\$EXIT

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 35-2  
PRINT CONTROL

```

034410 000422
3031
3032 034412 120 122 111 .NLIST BEX L10021-.
3033 034440 123 110 117 PRTCTL: .ASCII /PRINT CONTROL TEST 10/ <12>
3034 034503 045 116 045 NOLP07: .ASCIZ /SHOULD SHOW 132 COLUMNS PRINTED/<12><12><15>
3035
3036 034564 040 040 040 X0: .ASCII / 0/
3037 034576 040 040 040 X1: .ASCII / 1/
3038 034610 040 040 040 X2: .ASCII / 2/
3039 034622 040 040 040 X3: .ASCII / 3/
3040 034634 040 040 040 X4: .ASCII / 4/
3041 034646 040 040 040 X5: .ASCII / 5/
3042 034660 040 040 040 X6: .ASCII / 6/
3043 034672 040 040 040 X7: .ASCII / 7/
3044 034704 040 040 040 X8: .ASCII / 8/
3045 034716 040 040 040 X9: .ASCII / 9/
3046
3047 034730 061 062 063 X11: .ASCII /1234567890/
3048
3049
3050 034742 034564 034564 034564 .EVEN
3051 034776 034576 034610 034622 TABLE1: .WORD X0,X0,X0,X0,X0,X0,X0,X0,X1,X1,X1,X1,0
3052 TABLE2: .WORD X1,X2,X3,X4,X5,X6,X7,X8,X9,X0,X1,X2,X3,0
3053 .EVEN
3054
3055 035032 .LIST BEX
035032 ENDTST
035032 104401 L10021:
3056 035034 TRAP C$ETST
ENDMOD

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 37  
 MULTIPLE LINE ADVANCE

```

3059          .SBTTL MULTIPLE LINE ADVANCE
3060
3061 035034   BGNMOD
3062          :++
3063          :THIS TEST CHECKS THE MULTIPLE LINE ADVANCE OF THE LINE PRINTER. A LINE OF
3064          :NUMBERS IS PRINTED AND THEN THE PAPER IS ADVANCED THAT NUMBER OF LINES. THUS THE
3065          :NUMBER PRINTED WILL INDICATE THE NUMBER OF BLANK LINES FOLLOWING THAT
3066          :LINE. THE NUMBER OF LINES IS VARIED BETWEEN 2 AND 7 AND A LINE OF
3067          :ALL 0'S WILL INDICATE THE END OF THE TEST SEQUENCE.
3068          :--
3069
3070
3071 035034   BGNTST 11.
          035034   T11::
3072
3073          :PRINT TEST IDENTIFICATION
3074
3075 035034   OUTPUT #MULINE,#86.
3076
3077 035076   LET STACHR := #TABSTR          ;OUTPUT CHARACTERS
          035076   MOV      #TABSTR,STACHR
3078
3079 035104   REPEAT
          035104   50426$:
3080 035104   LET LINCNT :=B- @STACHR          ;GET A CHARACTER TO OUTPUT
          035104   MOV      @STACHR,LINCNT
3081 035104   LET LINCNT := LINCNT AND #7 ;MAKE THE ASCII TO OCTAL
          035104   MOV      LINCNT,-(SP)
          035112   BIC      #7,(SP)
          035112   BIC      (SP)+,LINCNT
          035116   013746 002276
          035116   042716 000007
          035122   042637 002276
3082 035126   LET R3 := #OUTBUF          ;SET UP OUTPUT BUFFER
          035126   MOV      #OUTBUF,R3
3083 035132   INCR CCNT FROM #1 TO #132. BY #1
          035132   MOV      #1,CCNT
          035132   012737 000001 002304
          035140   000402
          035142   50430$:
          035142   INC      CCNT
          035146   005237 002304
          035146   023727 002304 000204
          035146   CMP      CCNT,#132.
          035154   003003   BGT      50431$
3084 035156   LET (R3)+ :=B= @STACHR          ;PUT CHARACTER IN OUTPUT BUFFER
          035156   MOV      @STACHR,(R3)+
3085 035162   ENDINC
          035162   BR      50430$
          035164   50431$:
3086 035164   LET R4 := #0
          035164   CLR      R4
          035164   005004
          035166   WHILE R4 NE LINCNT DO
3087 035166   50432$:
          035166   CMP      R4,LINCNT
          035166   020437 002276
          035172   001404   BEQ      50433$
          035174   LET (R3)+ :=B= #12          ;FILL WITH LINE FEEDS
          035174   MOV      #12,(R3)+
          035174   112723 000012
          035200   LET R4 := R4 + #1
          035200   INC      R4
          035200   005204
          035202   ENDDO
          035202   BR      50432$
3090

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 37-1  
 MULTIPLE LINE ADVANCE

3091	035204				50433\$:	
3092					;NOW OUTPUT THE ACTUAL LINE	
3093						
3094	035204	013704	002276		LET R4 : LINCNT + #132.	;NUMBER OF CHARACTERS TO OUTPUT
	035210	062704	000204		MOV LINCNT,R4	
3095	035214				ADD #132.,R4	
	035214	005237	035342		LET STACHR := STACHR + #1	; UPDATE CHARACTER COUNT
3096	035220				INC STACHR	
3097					OUTPUT #OUTBUF,R4	;OUTPUT THE LINE
3098	035260				UNTIL LINCNT EQ #0	
	035260	005737	002276		TST LINCNT	
	035264	001307			BNE 50426\$	
3099	035266				LET OUTBUF :B- #14	
	035266	112737	000014	003160	MOVB #14,OUTBUF	
3100	035274				OUTPUT #OUTBUF,#1	
3101					EXIT TST	
3102	035336				TRAP C\$EXIT	
	035336	104432			.WORD L10022-	
	035340	000150				
3103						
3104						
3105	035342	000000			STACHR: .WORD 0	
3106					.NLIST BEX	
3107	035344	062	067	062	TABSTR: .ASCIZ /272637463540/	
3108	035361	115	125	114	MULINE: .ASCII /MULTIPLE LINE ADVANCE TEST '1/'<12>	
3109	035417	116	125	115	.ASCIZ /NUMBERS PRINTED REPRESENT # LINES TO NEXT LINE PRINTED/<12><12>	
3110						
3111						
3112						
3113					.EVEN	
3114					.LIST BEX	
3115						
3116	035510				ENDTST	
	035510				L10022:	
	035510	104401			TRAP C\$ETST	
3117	035512				ENDMOD	
3118						



CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 38  
 CHARACTER ALIGNMENT

```

3120          .SBTTL CHARACTER ALIGNMENT
3121 035512    BGNMOD
3122          :++
3123          :THIS TEST CHECKS CHARACTER ALIGNMENT BY OVERPRINTING LINES OF ALTERNATING
3124          :H'S AND SPACES WITH SPACES AND H'S.
3125          :--
3126 035512    BGNTST 12.
3127          T12::
3128 035512    ;PRINT TEST IDENTIFICATION
3129          OUTPUT #CHRALN,#30.          ; PRINT TEST NAME ON LP
3130 035554    ;PRINT 24 LINES OF ALTERNATING 'H''S AND 'SPACE''S
3131 035554    012737 000062 002276    1$: LET LINCNT := #50.
3132 035562    005737 002276          MOV #50.,LINCNT
3133 035566    003002          2$: IF LINCNT LE #0 THEN
3134          TST LINCNT
3135          BGT 50434$
3136          ;
3137          ;
3138          ;
3139          ;
3140          ;
3141          ;
3142          ;
3143          ;
3144 035570    000137 036076          ;
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3990          ;
3991          ;
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3993          ;
3994          ;
3995          ;
3996          ;
3997          ;
3998          ;
3999          ;
4000          ;

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 38-1  
 CHARACTER ALIGNMENT

3155	036066				LET LINCNT := LINCNT - #1
	036066	005337	002276		DEC LINCNT
3156	036072				INLINE <JMP 2\$>
	036072	000137	035562		JMP 2\$
3157	036076				3\$:
3158	036076				LET OUTBUF :B= #14
	036076	112737	090014	003160	MOVW #14,OUTBUF
3159	036104				OUTPUT #OUTBUF,#1
3160	036146	004737	005544		JSR PC,QUIET
3161	036152				EXIT TST
	036152	104432			TRAP C\$EXIT
	036154	000042			.WORD L10023-
3162					.NLIST BEX
3163	036156	103	110	101	CHRALN: .ASCIZ /CHARACTER ALIGNMENT TEST 12/<12><12><12>
3164					.EVEN
3165					.LIST BEX
3166	036216				ENDTST
	036216				L10023:
	036216	104401			TRAP C\$ETST
3167	036220				ENDMOD

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 39  
 INTERRUPT SERVICE ROUTINES

3169			.SBTTL INTERRUPT SERVICE ROUTINES
3170	036220		BGNSRV
3171			:
3172			::++
3173			: INTERRUPT VECTORS ARE ESTABLISHED DURING INITIALIZATION
3174			: POINTING TO THE BASIC ROUTINES WHICH
3175			: SET UP THE UNIT NUMBER CAUSING THE INTERRUPTS.
3176			: LINE NUMBER IS RETURNED IN R2
3177			:
3178			::--
3179		000000	X=0
3180	036220	000020	INT00: .REPT 16.
3181			SETPRI #PRI04
3182			PUSH R2
3183			LET R2 := #X
3184			INLINE <JMP IODRV>
3185			X X+2
3186			.ENDR
	036220	012700 000200	MOV #PRI04,R0
	036224	104441	TRAP C\$SPRI
	036226	010246	MOV R2,-(SP)
	036230	012702 000000	MOV #X,R2
	036234	000137 004762	JMP IODRV
	036240	012700 000200	MOV #PRI04,R0
	036244	104441	TRAP C\$SPRI
	036246	010246	MOV R2,-(SP)
	036250	012702 000002	MOV #X,R2
	036254	000137 004762	JMP IODRV
	036260	012700 000200	MOV #PRI04,R0
	036264	104441	TRAP C\$SPRI
	036266	010246	MOV R2,-(SP)
	036270	012702 000004	MOV #X,R2
	036274	000137 004762	JMP IODRV
	036300	012700 000200	MOV #PRI04,R0
	036304	104441	TRAP C\$SPRI
	036306	010246	MOV R2,-(SP)
	036310	012702 000006	MOV #X,R2
	036314	000137 004762	JMP IODRV
	036320	012700 000200	MOV #PRI04,R0
	036324	104441	TRAP C\$SPRI
	036326	010246	MOV R2,-(SP)
	036330	012702 000010	MOV #X,R2
	036334	000137 004762	JMP IODRV
	036340	012700 000200	MOV #PRI04,R0
	036344	104441	TRAP C\$SPRI
	036346	010246	MOV R2,-(SP)
	036350	012702 000012	MOV #X,R2
	036354	000137 004762	JMP IODRV
	036360	012700 000200	MOV #PRI04,R0
	036364	104441	TRAP C\$SPRI
	036366	010246	MOV R2,-(SP)
	036370	012702 000014	MOV #X,R2
	036374	000137 004762	JMP IODRV
	036400	012700 000200	MOV #PRI04,R0
	036404	104441	TRAP C\$SPRI
	036406	010246	MOV R2,-(SP)
	036410	012702 000016	MOV #X,R2

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 39-1  
 INTERRUPT SERVICE ROUTINES

036414	000137	004762	JMP	IODRV
036420	012700	000200	MOV	#PRI04,R0
036424	104441		TRAP	C\$SPRI
036426	010246		MOV	R2,-(SP)
036430	012702	000020	MOV	#X,R2
036434	000137	004762	JMP	IODRV
036440	012700	000200	MOV	#PRI04,R0
036444	104441		TRAP	C\$SPRI
036446	010246		MOV	R2,-(SP)
036450	012702	000022	MOV	#X,R2
036454	000137	004762	JMP	IODRV
036460	012700	000200	MOV	#PRI04,R0
036464	104441		TRAP	C\$SPRI
036466	010246		MOV	R2,-(SP)
036470	012702	000024	MOV	#X,R2
036474	000137	004762	JMP	IODRV
036500	012700	000200	MOV	#PRI04,R0
036504	104441		TRAP	C\$SPRI
036506	010246		MOV	R2,-(SP)
036510	012702	000026	MOV	#X,R2
036514	000137	004762	JMP	IODRV
036520	012700	000200	MOV	#PRI04,R0
036524	104441		TRAP	C\$SPRI
036526	010246		MOV	R2,-(SP)
036530	012702	000030	MOV	#X,R2
036534	000137	004762	JMP	IODRV
036540	012700	000200	MOV	#PRI04,R0
036544	104441		TRAP	C\$SPRI
036546	010246		MOV	R2,-(SP)
036550	012702	000032	MOV	#X,R2
036554	000137	004762	JMP	IODRV
036560	012700	000200	MOV	#PRI04,R0
036564	104441		TRAP	C\$SPRI
036566	010246		MOV	R2,-(SP)
036570	012702	000034	MOV	#X,R2
036574	000137	004762	JMP	IODRV
036600	012700	000200	MOV	#PRI04,R0
036604	104441		TRAP	C\$SPRI
036606	010246		MOV	R2,-(SP)
036610	012702	000036	MOV	#X,R2
036614	000137	004762	JMP	IODRV

3187

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 40  
 CLOCK SERVICE ROUTINE

```

3189
3190
3191
3192
3193
3194
3195 036620
3196 03662 012700 000300
      036620 104441
3197 036626 005737 036674
      036626 001005
3198 036634 012737 000074 036674
      036634 005237 036672
3199 036642
      036642 005237 036672
3200 036646
      036646
3201 036646 005337 036674
      036646 023727 002322 000002
3202 036652 001003
      036652 012777 000100 143436
3203 036662
      036662 012777 000100 143436
3204 036670
      036670
3205
3206 036670
      036670 000002
      036670
3207
3208 036672 000000
3209 036674 000000

```

```

.SBTTL CLOCK SERVICE ROUTINE
:++
:UPDATES THE COUNTER AT A RATE OF 16.67 MILLISECONDS PER TICK
:AND UPDATES A SECOND COUNTER WHEN THE FIRST OVERFLOWS.
:--

BGNSRV
CLKTCK: SETPRI #PRI06
        MOV     #PRI06,R0
        TRAP   C$SPRI
        IF TICK EQ #0 THEN
        TST    TICK
        BNE    50440$
                LET TICK := #60.                ;60 TICKS PER SECOND
        MOV     #60.,TICK
                LET TIME := TIME + #1
        INC    TIME
        ENDIF
50440$: LET TICK := TICK - #1                ;BACK UP SECOND TIMER
        DEC    TICK
        IF CLKTYP EQ #2 THEN
        CMP    CLKTYP,#2
        BNE    50441$
                LET @CLKCSR := #100
        MOV     #100,@CLKCSR
        ENDIF
50441$:
ENDSRV
L10025: RTI
:
TIME:  .WORD  0
TICK:  .WORD  0

```

CZ PLDC LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 41  
 HARDWARE PARAMETER SECTION

3211  
 3212 036676  
 3213  
 3214  
 3215  
 3216  
 3217  
 3218  
 3219  
 3220 036676  
 036676 000020  
 036700

3221  
 3222 036700  
 036700 000031  
 036702 036740  
 036704 160000  
 036706 177516  
 3223 036710  
 036710 001031  
 036712 036755  
 036714 000110  
 036716 000770  
 3224 036720  
 036720 002032  
 036722 036776  
 036724 000003  
 036726 000000  
 036730 000003  
 3225 036732  
 036732 003130  
 036734 037045  
 036736 000001  
 3226 036740

036740  
 3227  
 3228 036740 114 120 061  
 3229 036755 111 116 124  
 3230 036776 105 116 124  
 3231 037045 071 066 040  
 3232  
 3233  
 3234

```

.SBTTL HARDWARE PARAMETER SECTION
BGNMOD
:
:++
:THIS SECTION INCLUDES THE QUESTIONS WHICH REQUEST THE OPERATOR TO
:FURNISH THE HARDWARE INFORMATION NECESSARY TO BUILD THE HARDWARE
:P-TABLES.
:
:--
BGNHRD
.LSHARD: .WORD L10026-LSHARD/2
LSHARD::
GPRMA GETADR,0,0,160000,177516,YES
.WORD T$CODE
.WORD GETADR
.WORD T$LOLIM
.WORD T$HILIM
GPRMA GETVEC,2,0,110,770,YES
.WORD T$CODE
.WORD GETVEC
.WORD T$LOLIM
.WORD T$HILIM
GPRMD GETTYP,4,0,3,0,3,YES
.WORD T$CODE
.WORD GETTYP
.WORD 3
.WORD T$LOLIM
.WORD T$HILIM
GPRML GETBND,6,1,YES
.WORD T$CODE
.WORD GETBND
.WORD 1
ENDHRD
.EVEN
L10026:
.NLIST BEX
GETADR: .ASCIZ /LP11 ADDRESS/
GETVEC: .ASCIZ /INTERRUPT VECTOR/
GETTYP: .ASCIZ /ENTER 0 IF LP25, 1 IF LP26, 2 IF LP07 /
GETBND: .ASCIZ /96 CHARACTER BAND/
: ENTER 3 IF LPYY FOR FUTURE EXPANSION
.LIST BEX
.EVEN
    
```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 42  
SOFTWARE PARAMETER SECTION

```

3236          .SBTTL  SOFTWARE PARAMETER SECTION
3237          :
3238          :
3239          :
3240          :THIS SECTION INCLUDES THE QUESTIONS WHICH REQUEST THE OPERATOR TO FURNISH
3241          :THE SOFTWARE INFORMATION NECESSARY TO BUILD THE SOFTWARE P-TABLES.
3242          :
3243          :
3243 037070     BGNSFT
3243 037070     .WORD  L10027-L$SOFT/2
3243 037072     L$SOFT::
3244 037072     GPRML  MGTINT,0,1,YES
3244 037072     .WORD  T$CODE
3244 037074     .WORD  MGTINT
3244 037076     .WORD  1
3245 037100     GPRML  GETMAN,2,1,YES
3245 037100     .WORD  T$CODE
3245 037102     .WORD  GETMAN
3245 037104     .WORD  1
3246 037106     GPRMD  GETTIM,4,D,377,4,60.,YES
3246 037106     .WORD  T$CODE
3246 037110     .WORD  GETTIM
3246 037112     .WORD  377
3246 037114     .WORD  T$LOLIM
3246 037116     .WORD  T$HILIM
3247 037120     GPRML  GETPLA,6,1,YES
3247 037120     .WORD  T$CODE
3247 037122     .WORD  GETPLA
3247 037124     .WORD  1
3248 037126     GPRMD  GETMAX,10,D,377,1,255.,YES
3248 037126     .WORD  T$CODE
3248 037130     .WORD  GETMAX
3248 037132     .WORD  377
3248 037134     .WORD  T$LOLIM
3248 037136     .WORD  T$HILIM
3249 037140     ENDSFT
3249 037140     .EVEN
3250 037140     L10027:
3251 037140     .NLIST BEX
3251 037140     122 125 116 MGTINT: .ASCIZ /RUN MANUAL INTERVENTION TESTS/
3252 037176     120 105 122 GETMAN: .ASCIZ /PERFORM MANUAL PRINTING SPEED MEASUREMENT/
3253 037250     104 105 123 GETTIM: .ASCIZ /DESIRED TIME INTERVAL FOR PRINTING SPEED CALCULATION/
3254 037335     124 105 123 GETPLA: .ASCIZ /TESTING IN U.S.A./
3255 037356     101 125 124 GETMAX: .ASCIZ /AUTODROP ERROR COUNT/
3256          .LIST BEX
3257          .EVEN
3258          ;
3259          ;
3260 037404     PATCH: .BLKW 20
3261 037444     LASTAD
3261          .EVEN
3261          .WORD  0
3261          .WORD  0
3262 037450     L$LAST::
3262 037450     ENDMOD
3263          .END
3263 037450     000001

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 42-1  
SYMBOL TABLE

ACTIVE=	020000	BYTECO=	000403	(\$MAN)=	000050	FLSSEL	016600	IER	= 020000 G
ADR	= 000020 G	CCNT	002304	(\$MEM	= 000031	FLS1	016677	IGNORE	010000
ASSEMB=	000010	CHAR	025636	(\$MSG	= 000023	FSAU	= 000015	INDEX	002344
AUTCON	027616	CHNSEC	016376	(\$OPEN=	000034	FSAUTO=	000020	INHINT	002262
AUTSEC	027500	CHRALN	036156	(\$PNTB=	000014	F\$BGN	= 000040	INTERR	011214
BANDSW	014046	CHRGEN	002310	(\$PNTF=	000017	F\$CLEA=	000007	INTER1	003626
BGTLCH	014255	CK1	006756	(\$PNTS=	000016	F\$DU	= 000016	INTFAC	011252
BGTSWI	004215	CLEAN	010074	(\$PNTX=	000015	F\$END	= 000041	INTHDL	011244
BIN2DA	004550	CLKCSR	002326	(\$QIO	= 000377	F\$HARD=	000004	INTLK	013360
BIT0	= 000001 G	CLKENA	002334	(\$RDBU=	000007	F\$HW	= 000013	INTOO	036220
BIT00	= 000001 G	CLKSET	002330	(\$REFG=	000047	F\$INIT=	000006	IOCTRL	005160
BIT01	= 000002 G	CLKTCK	036620	(\$RESE=	000033	F\$JMP	= 000050	IODRV	004762
BIT02	= 000004 G	CLKTYP	002322	(\$REVI=	000003	F\$MOD	= 000000	ISR	= 000100 G
BIT03	= 000010 G	CLKVEC	002332	(\$RFLA=	000021	F\$MSG	= 000011	IXE	= 004000 G
BIT04	= 000020 G	CLOCKP	002324	(\$RPT	= 000025	F\$PROT=	000021	ISAU	= 000041
BIT05	= 000040 G	COUNT	002302	(\$SEFG=	000046	F\$PWR	= 000017	ISAUTO=	000041
BIT06	= 000100 G	COUNTD	004756	(\$SPRI=	000041	F\$RPT	= 000012	ISCLN	= 000041
BIT07	= 000200 G	CR	= 000015 G	(\$SVEC=	000037	F\$SEG	= 000003	ISDU	= 000041
BIT08	= 000400 G	CSRERR	003406	(\$TPRI=	000013	F\$SOFT=	000005	ISHRD	= 000041
BIT09	= 001000 G	CTLEND	005536	DATPTH	025640	F\$SRV	= 000010	ISINIT=	000041
BIT1	= 000002 G	CTLLOP	005220	DEL	= 000177 G	F\$SUB	= 000002	ISMOD	= 000041
BIT10	= 002000 G	CURADD	002552	DELCNT	003052	F\$SW	= 000014	ISMSG	= 000041
BIT11	= 004000 G	CURCNT	002752	DFPTBL	002244 G	F\$TEST=	000001	ISPROT=	000040
BIT12	= 010000 G	CSAU	= 000052	DIAGMC=	000000	GETADR	036740	ISPTAB=	000041
BIT13	= 020000 G	CSAUTO=	000061	DIGITS	004760	GETBND	037045	ISPWR	= 000041
BIT14	= 040000 G	CSBRK	= 000022	DROPED=	040000	GETMAN	037176	ISRPT	= 000041
BIT15	= 100000 G	CSBSEG=	000004	DROPT	005612	GETMAX	037356	ISSEG	= 000041
BIT2	= 000004 G	CSBSUB=	000002	EF.CON=	000036 G	GETPLA	037335	ISSETU=	000041
BIT3	= 000010 G	CSCEFG=	000045	EF.NEW=	000035 G	GETTIM	037250	ISSFT	= 000041
BIT4	= 000020 G	CSCLCK=	000062	EF.PWR=	000034 G	GETTYP	036776	ISSRV	= 000041
BIT5	= 000040 G	CSCLEA=	000012	EF.RES=	000037 G	GETVEC	036755	ISSUB	= 000041
BIT6	= 000100 G	CSCLOS=	000035	EF.STA=	000040 G	G\$CNTD=	000200	ISTST	= 000041
BIT7	= 000200 G	CSCLP1=	000006	END2	011026	G\$DELM=	000372	JSJMP	= 000167
BIT8	= 000400 G	CSCVEC=	000036	END4	021554	G\$DISP=	000003	LF	= 000012 G
BIT9	= 001000 G	CSDECLN=	000044	ERFLG	000400	G\$EXCP=	000400	LINCNT	002276
BNDPAT	023040	CSDODU=	000051	ERRCOD	002336	G\$HILI=	000002	LINPER	023101
BNDRDY	014164	CSDRPT=	000024	ERRFLG	002340	G\$LOLI=	000001	LINSEC	016414
BNDSWI	003556	CS\$DU	= 000053	ERROR	= 100000	G\$NO	= 000000	LINSWI	016434
BNDSW1	014134	CS\$EDIT=	000003	ERRSVC	003112	G\$OFFS=	000400	LINSW1	016520
BNDTST	031731	CS\$ERDF=	000055	ERRTBL	003114 G	G\$OFFSI=	000376	LOBYTE=	000377
BNKSWI	003511	CS\$ERHR=	000056	ERR11	011332	G\$PRMA=	000001	LOE	= 040000 G
BOE	= 000400 G	CS\$ERRO=	000060	ERR12	011406	G\$PRMD=	000002	LOT	= 000010 G
BPID25	031760	CS\$ERSF=	000054	ERR13	011471	G\$PRML=	000000	LPBUF	002452
BPID26	031766	CS\$ERSO=	000057	EVL	= 000004 G	G\$RADA=	000140	LPCSR	002356
BP64ID	031774	CS\$ESCA=	000010	E\$END	= 002100	G\$RADB=	000000	LPDROP	004306
BP64Q1	032050	CS\$ESEG=	000005	E\$LOAD=	000035	G\$RADD=	000040	LPERR	004354
BP64Q2	032144	CS\$ESUB=	000003	FAKE	005720	G\$RADL=	000120	LPERR2	023030
BP64Q3	032241	CS\$ETST=	000001	FF	= 000014 G	G\$RADO=	000020	LPINTR	003012
BP64Q4	032335	CS\$EXIT=	000032	FFSET	017225	G\$XFER=	000004	LPM64	023503
BP96ID	032022	CS\$GETB=	000026	FLAG	002274	G\$YES	= 000010	LPM96	023564
BP96Q1	032433	CS\$GETW=	000027	FLAGDA	004754	HAMFIR	033432	LPVEC	002416
BP96Q2	032527	CS\$GMAN=	000043	FLAG07=	002000	HAMRDY	013762	LSTCNT	002300
BP96Q3	032624	CS\$GPHR=	000042	FLAG26=	001000	HAMRSW	013644	LUNIT	002314
BP96Q4	032720	CS\$GPLO=	000030	FLAG96=	010000	H\$MSW1	013721	L\$ACP	002110 G
BUFADD	002350	CS\$GPRI=	000040	FLSMG	017301	HOE	= 100000 G	L\$APT	002036 G
BUFCNT	002352	CS\$INIT=	000011	FLSMS1	017373	IBE	= 010000 G	L\$AUT	002070 G
BUFREP	002354	CS\$INLP	000020	FLSMS2	017453	IDU	= 000040 G	L\$AUTO	002254 G



CZLPLDO LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 42-2  
SYMBOL TABLE

L\$CCP	002106	G	L10C12	017646	PATTER	025676	TIMOUT-	000002	UNIT	002312
L\$CLEA	010064	G	L10013	025254	PERIOD	002266	TOF =	000014	USA	002270
L\$CO	002032	G	L10014	025700	PLOC	007774	TXERR	003661	UUT	002342
L\$DEPO	002011	G	L10015	026576	PNT =	001000	TXNOIN	003733	UUTEQ0	003764
L\$DESC	002162	G	L10016	030316	PRI =	002000	T\$ARGC=	000001	VFUCMD	002346
L\$DESP	002076	G	L10017	033016	PRINTR	002320	T\$CODE=	004052	VFUINF	004257
L\$DEVP	002060	G	L10020	033474	PRI00 =	000000	T\$ERRN=	000012	VFUINT	014355
L\$DISP	002132	G	L10021	035032	PRI01 =	000040	T\$EXCP=	000000	VFURDY	014447
L\$DLY	002116	G	L10022	035510	PRI02 =	000100	T\$FLAG=	000040	VFUSEL	004033
L\$DTP	002040	G	L10023	036216	PRI03 =	000140	T\$GMAN=	000000	VFUSE1	004121
L\$DTP	002034	G	L10025	036670	PRI04 =	000200	T\$HILI=	000377	WORK	003154
L\$DUT	002072	G	L10026	036740	PRI05 =	000240	T\$LAST=	000001	WORK1	003156
L\$DVTY	002222	G	L10027	037140	PRI06 =	000300	T\$LOLI=	000001	X =	000040
L\$EF	002052	G	L26M64	023645	PRI07 =	000340	T\$LSYM=	010000	X\$ALWA=	000000
L\$ENVI	002044	G	L26M96	023726	PRTCHR	026536	T\$LTNO=	000014	X\$FALS=	000040
L\$ETP	002102	G	MANSPD	002264	PRTCTL	034412	T\$NEST=	000000	X\$OFFS=	000400
L\$EXP1	002046	G	MAXERR	002272	PRTSPD	023436	T\$NSO =	000010	X\$TRUE=	000020
L\$EXP4	002064	G	MGTINT	037140	PTABAD	002316	T\$NS1 =	000000	X0	034564
L\$EXP5	002066	G	MCVMSG	017546	QUIET	005544	T\$NS2 =	000005	X1	034576
L\$HARD	036700	G	MRESET	007275	RDYERR	003424	T\$PTNU=	000000	X11	034730
L\$HIME	002120	G	MSGADR	002712	READY	007603	T\$SAVL=	177777	X2	034610
L\$HPCP	002016	G	MSGCNT	002612	REFLIN	017034	T\$SEGL=	177777	X3	034622
L\$HPTP	002022	G	MULINE	035361	REPCNT	002652	T\$SUBN=	000000	X4	034634
L\$HW	002244	G	NMLFLS	017133	REPLUP	021742	T\$TAGL=	177777	X5	034646
L\$ICP	002104	G	NOCLCK	007640	RESET1	007374	T\$TAGN=	010030	X6	034660
L\$INIT	005754	G	NOCLK	004147	RESET2	007467	T\$TEMP=	000000	X7	034672
L\$LADP	002026	G	NOINTR=	000003	RESTOR	024151	T\$TEST=	000014	X8	034704
L\$LAST	037450	G	NOLP07	034503	RESVEC	010002	T\$TSTM=	177777	X9	034716
L\$LOAD	002100	G	NONBUF	027721	SFPTBL	002262	T\$TSTS=	000001	\$BGNLE=	177777
L\$LUN	002074	G	NONCHR	027370	SKIP3	027714	T\$TAUT-	010002	\$BRJMP=	177777
L\$MREV	002050	G	NOTIM	007702	SPCCNT	033430	T\$\$CLE=	010005	\$ERFLG=	000400
L\$NAME	002000	G	NOO7	031652	SPED1	023042	T\$\$FAR=	010026	\$F\$AND=	000310
L\$PRIO	002042	G	NRGT16	007156	SPED2	023065	T\$\$HW =	010001	\$F\$BAD=	000401
L\$PROT	002122	G	NRGT17	007241	SPED3	023071	T\$\$INI=	010004	\$F\$BLA=	000170
L\$PRT	002112	G	OFFLIN	023146	STACHR	035342	T\$\$PRO=	010000	\$F\$CAS=	000150
L\$REPP	002062	G	ONEFIL=	000001	STATER=	000001	T\$\$SOF=	010027	\$F\$DEC=	000220
L\$REV	002010	G	ONLIN1	023206	STATUS	002512	T\$\$SRV=	010025	\$F\$DO =	000340
L\$SOFT	037072	G	ONLIN2	023307	STRCNT	002306	T\$\$SW =	010003	\$F\$FAL=	000405
L\$SPC	002056	G	ONLIN3	023405	SVCGBL=	000000	T\$\$TES=	010023	\$F\$GOO=	000400
L\$SPCP	002020	G	OUTBUF	003160	SVCINS-	000000	T1	010260	\$F\$IF =	000110
L\$SPTP	002024	G	OUTTIM	003706	SVCSUB-	000000	T1A	010274	\$F\$INC=	000210
L\$STA	002030	G	OSAPTS=	000000	SVCTAG=	000000	T1B	011052	\$F\$LOO=	000200
L\$SW	002262	G	OSAU -	000000	SVCTST=	000000	T1C	010300	\$F\$NAM=	000160
L\$TEST	002114	G	OSBGNR-	000000	SYM =	177701	T10	033476	\$F\$NO =	000403
L\$TIML	002014	G	OSBGNS=	000001	SYMD =	000007	T11	035034	\$F\$OR =	000320
L\$UNIT	002012	G	OSDU =	000000	SYMS =	000007	T12	035512	\$F\$RTI=	000350
L07M64	024007		OSERRT=	000000	S\$LSYM=	010000	T2	011550	\$F\$RTN=	000300
L07M96	024070		OSGNSW=	000001	TABA64	024224	T3	014542	\$F\$SEL=	000140
L10001	002254		OSPOIN=	000001	TABA96	024432	T3MOV	016374	\$F\$THE=	000330
L10002	002256		OSSETU=	000000	TABLDA	004742	T3SET	016372	\$F\$TRU=	000404
L10003	002274		PAPCHK	016772	TABLE1	034742	T4	017650	\$F\$UNT=	000130
L10004	007776		PAPRDY	013535	TABLE2	034776	T5	025256	\$F\$WHI=	000120
L10005	010256		PAPRSW	013416	TABSTR	035344	T6	025702	\$F\$YES=	000402
L10006	011546		PAPSWI	003446	TB0764	024640	T7	026600	\$IFLEV=	177777
L10007	011242		PAPSW1	013466	TB0796	025046	T8	030320	\$ISK0 =	000001
L10010	011250		PAPTST	013624	TICK	036674	T9	033020	\$ISK1 =	000001
L10011	014540		PATCH	037404	TIME	036672	JAM -	000200	\$ISK2 =	000001

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 42-3

SYMBOL TABLE

\$ISK3 = 000001	\$NSK3 = 000110	\$TSK0 = 050441	\$\$BYTE = 000403	\$\$REG = 177777
\$ISK4 = 000001	\$NSK4 = 000110	\$TSK1 = 050436	\$\$CASE = 000404	\$\$RETU = 000000
\$LO = 000000	\$NSK5 = 000110	\$TSK2 = 050433	\$\$DST = 000037	\$\$RTN1 = 000000
\$LOCTA = 177777	\$SAVE = 000001	\$TSK3 = 050425	\$\$ELOC = 000402	\$\$RTN2 = 000000
\$LSK0 = 000000	\$SAVLE = 177777	\$TSK4 = 050424	\$\$ERFL = 000000	\$\$SRC = 000027
\$LSTIN = 000000	\$SELLE = 177777	\$TSK5 = 050255	\$\$FLAG = 000001	\$\$TGSV = 050213
\$LSTTA = 000000	\$SSK0 = 050436	\$TSK6 = 050256	\$\$FROM = 000000	\$\$TGS1 = 000001
\$NESTL = 177777	\$SSK1 = 000402	\$TSK7 = 050246	\$\$INH = 000403	\$\$TGS2 = 000000
\$NSK0 = 000110	\$TAGLE = 177777	\$U = 000403	\$\$LOC = 036660	\$\$TO = 000000
\$NSK1 = 000120	\$TAGNU = 050442	\$\$ARGC = 000000	\$\$LOCN = 000000	\$\$TAG = 050000
\$NSK2 = 000110	\$TEMP = 050441			

. ABS. 037450 000  
000006 001

ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 58808 WORDS ( 230 PAGES)

DYNAMIC MEMORY: 21870 WORDS ( 84 PAGES)

ELAPSED TIME: 02:09:22

CZLPLD,CZLPLD/-SP LB1:[1,1]SVC/ML,DB1:[205,121]SPMACJ/ML,DB1:[205,10]CZLPLD.P11