

LP07/25/26

LP25/26/07 DIAG
CZLPLDO

AH-E635D-MC
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IDENTIFICATION

PRODUCT CODE : AC-E634D-MC
PRODUCT NAME: CZLPLD0 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
UAM	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 MEASUREMENT (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>

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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:

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

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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

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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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.ENABL AMA
.SBTTL IDENTIFICATION

; PRODUCT CODE: AC-E634D-MC

; PRODUCT NAME: CZLPLD0 LP25, LP26, LP07 DIAG

; MAINTAINER: SMALL SYSTEMS DIAGNOSTICS

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; DATE 12-JAN-81

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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 ;STRUCTURED MACRO PACKAGE
764 000000 STRUCT ;LIST ASSY CODE LEFT
765 000000 $LSTIN= 0 ;LIST TAGS LEFT
766 000000 $LSTTAG= 0
767 177777 $LOCTAG= -1
768
769 SVCINS= 0 ;LIST INSTRUCTIONS
770 SVCTST= 0 ;LIST TEST TAGS
771 SVCSUB= 0 ;LIST SUBTEST TAGS
772 SVCGBL= 0 ;LIST GLOBAL TAGS
773 SVCTAG= 0 ;LIST OTHER TAGS
774
775 .ENABL AMA
776 000000 .ENABL ABS
777 .ENABL LC
778 002000 . =2000
779
780 002000 BGNMOD
781 002000 POINTER BGNSW,BGNSFT
782
783 002000 HEADER CZLPL,D,0,60,1,340
002000 L$NAME:: ;DIAGNOSTIC NAME
002000 .ASCII /C/
002001 103 .ASCII /Z/
002002 114 .ASCII /L/
002003 120 .ASCII /P/
002004 114 .ASCII /L/
002005 000 .BYTE 0
002006 000 .BYTE 0
002007 000 .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\$DTP::	.WORD L\$DISPATCH	
002040	002132	L\$PRIO::	.WORD	;DIAGNOSTIC RUN PRIORITY
002042		L\$ENV1::	.WORD 340	;FLAGS DESCRIBE HOW IT WAS SETUP
002042	000340	L\$EXP1::	.WORD 0	;EXPANSION WORD
002044		L\$MREV::	.WORD 0	;SVC REV AND EDIT #
002044	000000		.BYTE C\$REVISION	
002046			.BYTE C\$EDIT	
002046	000000	L\$EF::	.WORD 0	;DIAG. EVENT FLAGS
002050			.WORD 0	
002050	003	L\$SPC::	.WORD 0	
002051	003	L\$DEVP::	.WORD 0	; POINTER TO DEVICE TYPE LIST
002052		L\$REPP::	.WORD L\$DVTYP	;PTR. TO REPORT CODE
002052	000000	L\$EXP4::	.WORD 0	
002054	000000	L\$EXP5::	.WORD 0	
002056		L\$AUT::	.WORD 0	;PTR. TO ADD UNIT CODE
002056	000000	L\$DUT::	.WORD 0	;PTR. TO DROP UNIT CODE
002060		L\$LUN::	.WORD 0	;LUN FOR EXERCISERS TO FILL
002060	002222	L\$DESP::	.WORD 0	;POINTER TO DIAG. DESCRIPTION
002062		L\$LOAD::	.WORD L\$DESC	;GENERATE SPECIAL AUTOLOAD EMT
002062	000000	L\$ETP::	EMT E\$LOAD	;POINTER TO ERRTABL
002064		L\$ICP::	.WORD 0	;PTR. TO INIT CODE
002064	000000	L\$CCP::	.WORD L\$INIT	;PTR. TO CLEAN-UP CODE
002066		L\$ACP::	.WORD L\$CLEAN	;PTR. TO AUTO CODE
002066	000000	L\$PRT::	.WORD L\$AUTO	;PTR. TO PROTECT TABLE
002070		L\$TEST::	.WORD L\$PROT	;TEST NUMBER
002070	000000	L\$DLY::	.WORD 0	;DELAY COUNT
002072		L\$HIME::	.WORD 0	;PTR. TO HIGH MEM
002072	000000		.WORD 0	
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			

; THE FOLLOWING IS A LOAD PROTECTION TABLE

784
785
786

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

787		:	
788	002122		BGNPROT
	002122	L\$PROT::	
789	002122		.WORD 0
790	002124		.WORD -1
791	002126		.WORD -1
792	002130		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
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803
804
805
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809

002130	000014		
002132	010260		
002134	011550		
002136	014542		
002140	017650		
002142	025256		
002144	025702		
002146	026600		
002150	030320		
002152	033020		
002154	033476		
002156	035034		
002160	035512		
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	
002222			
002222	114	120	062
002225	065	054	114
002230	120	062	066
002233	054	114	120
002236	060	067	000

.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
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

;; FOR USE ON REVISION C OF THE SUPERVISOR

DESCRIP <CZLPLD0 LINE PRINTER DIAGNOSTIC>
L\$DESC::
.ASCIIZ /CZLPLD0 LINE PRINTER DIAGNOSTIC/

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

.EVEN

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 11
 DEFAULT HARDWARE P-TABLE

```

811      .SBTTL  DEFAULT HARDWARE P-TABLE
812
813      :++
814      : THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
815      : THE TEST-DEVICE PARAMETERS. THE STRUCTURE OF THIS TABLE
816      : IS IDENTICAL TO THE RUN-TIME P-TABLE.
817      :--
818
819      002242      BGNHW      DFPTBL
      002242      .WORD      L10001-L$HW/2
      002244      L$HW::
      002244      DFPTBL::
820      002244      177514      ;LP25 REGISTER ADDRESS
821      002246      000200      ;LP25 INTERRUPT VECTOR
822      002250      000000      : 0 IF LP25
823      : 1 IF LP26
824      : 2 IF LP07
830      002252      000000      : 0 IF 64 CHAR BAND
      : 1 IF 96 CHAR BAND
831
832      : INTERRUPT VECTOR PRIORITY IS 4 AND CANNOT BE CHANGED
833
834
835
836      002254      ENDPHW
      002254      L10001:
837
838
839
840      002254      BGNAUTO
      002254      L$AUTO::
841
842      002254      000240      NOP      ; NOT USED
843
844      002256      ENDAUTO
      002256      L10002:
      002256      104461      TRAP      C$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      002260      BGNSW      SFPTBL
      002260      .WORD      L10003-L$SW/2
      002262      L$SW::
      002262      SFPTBL::
854
855      002262      000000      INHINT: .WORD      0
856
857
858      002264      000000      MANSPD: .WORD      0
859
860
861      002266      000074      PERIOD: .WORD      60.
862
863
864
865      002270      000001      USA:      .WORD      1
866
867
868      002272      000005      MAXERR: .WORD      5
869      : IF ERROR COUNT EXCEEDS MAXERR THE UNIT WILL BE DROPPED FROM TEST
870
871      002274      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

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 13
I/O MACRO DEFINITIONS

```

874 .
875 -
876
877
878
879 -
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883
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914
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,I0CTRL            ;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,I0CTRL            ;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

000012

943

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

000100

PRI03== 140

955

000100

PRI02== 100

956

000040

PRI01== 40

957

000000

PRI00== 0

958

;

959

; GLOBAL ERROR CODES FOR USE BY GENERAL ERROR ROUTINE

960

;

961

000001

STATER= 1

; TRANSMITTER STATUS ERROR IN OUTPUT

962

000002

TIMOUT= 2

; TIMEOUT ERROR IN IO DRIVER MODULE

963

; THIS ERROR INDICATES THE LAST CHARACTER

964

; WAS NOT TRANSMITTED WITHIN A GIVEN TIME

965

; GROSS TIME OUT ERROR. THE SPECIFIED DID NOT

966

000003

NOINTR= 3

; INTERRUPT. THEREFORE IO DRIVER MODULE WAS

967

; NOT CALLED

968

;

969

; SBTTL GENERAL REGISTER USAGE DEFINITIONS

970

;

971

; R0 RESERVED FOR USE BY THE MACRO PACKAGES

972

; R1 MAXIMUM NUMBER OF UNITS TO TEST L\$UNIT-1

973

; R2 UNIT NUMBER BY 2. USED TO CALCULATE OFFSET INTO PROPER

974

; R3 PRINTER TABLE

975

; R4 TEMPORARY STORAGE

976

;

977

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  0
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  LPCSR:  .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

```

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 15-1
GLOBAL DATA SECTION

```

1065
1066 002512 000020      STATUS: .ENDR
1067                      .REPT 16.      ; UNIT STATUS
1068                      .WORD 0
1069 002552 000020      CURADD: .ENDR
1070                      .REPT 16.      ; CURRENT ADDRESS OF OUTPUT DATA BYTE
1071                      .WORD 0
1072 002612 000020      MSGCNT: .ENDR
1073                      .REPT 16.      ; INITIAL BYTE COUNT OF MSG FOR REPEAT RESTORE
1074                      .WORD 0
1075 002652 000020      REPCNT: .ENDR
1076                      .REPT 16.      ; NO. OF TIMES TO REPEAT MESSAGE
1077                      .WORD 0
1078 002712 000020      MSGADR: .ENDR
1079                      .REPT 16.      ; ADDRESS OF DATA TO PRINT START OF DATA
1080                      .WORD 0
1081 002752 000020      CURCNT: .ENDR
1082                      .REPT 16.      ; CURRENT COUNT REMAINING TO OUTPUT
1083                      .WORD -1
1084 003012 000020      LPINTR: .ENDR
1085                      .REPT 16.      ; INTERRUPT ROUTINE ADDRESS
1086                      .WORD 0
1087 003052 000020      DELCNT: .ENDR
1088                      .REPT 16.      ; TIMEOUT DELAY COUNTER
1089                      .WORD 0
1090 003112 000000      ERRSVC: .ENDR
1091 003114 000020      ERRIBL: .WORD 0      ; ERROR ROUTINE DISPATCH ADDRESS
1092                      .REPT 16.      ; ERROR COUNT FOR EACH UNIT
1093                      .WORD 0
1094                      .ENDR
1095 003154 000000      WORK:: .WORD 0      ; WORK AREA
1096 003156 000000      WORK1: .WORD 0
1097
1098
1099      .SBTTL OUTPUT BUFFER
1100      ;
1101      ;150 BYTES IS RESERVED FOR THE OUTPUT BUFFER AREA
1102      ;
1103
1104
1105
1106 003160 000226      OUTBUF: .EVEN
1107                      .REPT 150.
1108                      .BYTE 0
1109                      .ENDR

```

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: .ASCIIZ /PRINTER ERROR/
1120 003424      120      122      111 RDYERR: .ASCIIZ /PRINTER NOT READY/
1121 003446      120      101      120 PAPSWI: .ASCIIZ /PAPER LOW INTERLOCK SWITCH FAILURE/
1122 003511      110      101      115 BNKSWI: .ASCIIZ /HAMMER BANK INTERLOCK SWITCH FAILURE/
1123 003556      103      110      101 BNDSWI: .ASCIIZ /CHARACTER BAND INTERLOCK SWITCH FAILURE/
1124 003626      124      122      101 INTER1: .ASCIIZ /TRANSMIT INTERRUPT TIMEOUT/
1125 003661      120      122      111 TXERR: .ASCIIZ /PRINTER STATUS ERROR/
1126 003706      117      125      124 OUTTIM: .ASCIIZ /OUTPUT TIMEOUT ERROR/
1127 003733      125      116      111 TXNOIN: .ASCIIZ /UNIT FAILED TO INTERRUPT/
1128 003764      101      114      114 UUTEQ0: .ASCIIZ /ALL UNITS HAVE BEEN DROPPED..RESTART../
1129 004033      045      116      045 VFUSEL: .ASCIIZ /%N%AINSURE THAT VFU-FLS SWITCH ON EACH UNIT IS IN THE /
1130 004121      045      116      045 VFUSE1: .ASCIIZ /%N%A'VFU' POSITION.%N/
1131 004147      116      117      040 NOCLK: .ASCIIZ /NO CLOCK AVAILABLE FOR TIMING TESTS/<7><7>
1132 004215      102      101      116 BGTSWI: .ASCIIZ /BAND GATE LATCH INTERLOCK FAILURE/
1133 004257      126      106      125 VFUINF: .ASCIIZ /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: .ASCIIZ /%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$: CASE 1 ;STATUS ERROR
      LET ERRTABL(R2) := ERRTABL(R2) + #1
      INC ERRTABL(R2)
      LET L$LUN : R2 SHIFT -1
      MOV R2,L$LUN
      ASR L$LUN
      ERHRD 14,IXERR
      TRAP C$ERHRD
      .WORD 14
      .WORD IXERR
1186
1187
1188

```

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	005202	003114	
004416			
004416	010237	002074	
004422	006237	002074	
004426			
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 LET ERRTBL(R2) := ERRTBL(R2) + #1
004440 005262 003114 INC ERRTBL(R2)
1192 004444 010237 002074 LET L$LUN := R2 SHIFT -1
004444 006237 002074 MOV R2,L$LUN
004450 006237 002074 ASR L$LUN
1193 004454 ERRHRD 15,OUTTIM ;
004454 104456 TRAP C$ERRHRD
004456 000017 .WORD 15
004460 003706 .WORD OUTTIM
004462 000000 .WORD 0

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

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

1204
1205 004512 IF ERRTBL(R2) GT MAXERR THEN
004512 026237 003114 002272 CMP ERRTBL(R2),MAXERR
004520 003402 BLE 50006$
1206 004522 004737 005612 JSR PC,DROPIT ; MAXIMUM ERROR COUNT EXCEEDED !
1207 004526 ENDIF
004526 50006$:
1208 004526 LET STATUS(R2) := STATUS(R2) CLR.BY #ERROR
004526 042762 100000 002512 BIC #ERROR,STATUS(R2)
1209 004534 LET ERRCOD := #0
004534 005037 002336 CLR ERRCOD
1210 004540 LET @LPCSR(R2) := #100 ; CLEAR THE ERROR BIT AND ENABLE INTERRUPTS
004540 012772 000100 002356 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 MACRO M1113 30-DEC-80 09:36 PAGE 17-2
GLOBAL SUBROUTINES SECTION

```

1219      : CALL BY JSR PC,BIN2DA
1220      :=====
1221
1222 004550 BIN2DA: PUSH R4,R5
      004550      MOV R4,-(SP)
      004552      MOV R5,-(SP)
1223 004554      LET R4 := 6(SP) ; GET ADDRESS FOR ASCII STRING
      004554      MOV 6(SP),R4
1224 004560      LET R5 := #TABLDA ; GET ADDRESS OF DECIMAL TABLE
      004560      MOV #TABLDA,R5
1225 004564      LET FLAGDA := #0 ; LEADING ZERO FLAG
      004564      CLR FLAGDA
1226 004570      LET COUNTD := #0
      004570      CLR COUNTD
1227      ; 8.(SP) HAS NUMBER TO BE CONVERTED
1228 004574      DECR DIGITS FROM #4 TO #0 BY #1 ; DO 5 DIGITS
      004574      MOV #4,DIGITS
      004602      BR 50007$
      004604      50010$: DEC DIGITS
      004604      50007$: TST DIGITS
      004610      BLT 50011$
      004614      WHILE 8.(SP) GE (R5) DO ; CREATE A DIGIT
1229 004616      50012$: CMP 8.(SP),(R5)
      004616      BLT 50013$
      004622      LET 8.(SP) := 8.(SP) - (R5)
1230 004624      SUB (R5),8.(SP)
      004624      161566 000010
1231 004630      LET COUNTD := COUNTD + #1
      004630      INC COUNTD
1232 004634      ENDDO
      004634      BR 50012$
      004636      50013$: ; CONVERT DIGIT TO ASCII OR SUPPLY A SPACE
      IF COUNTD GT #0 OR FLAGDA GT #0 THEN
1233 004636      TST COUNTD
1234 004636      BGT 50014$
      004642      003003
      004644      TST FLAGDA
      004650      BLE 50015$
      004652      50014$: LET COUNTD := COUNTD SET.BY #60
1235 004652      BIS #60,COUNTD
      004652      052737 000060 004756
1236 004660      LET (R4)+ := B= COUNTD
      004660      MOV B COUNTD,(R4)+
1237 004664      LET FLAGDA := FLAGDA + #1
      004664      INC FLAGDA
1238 004670      ELSE
      004670      BR 50016$
      004672      50015$: LET (R4)+ := B= #40
1239 004672      MOV B #40,(R4)+
      004672      112724 000040
1240 004676      ENDDO
      004676      50016$: ; DO THE NEXT DIGIT
1241      LET R5 := R5 + #2
1242 004676      ADD #2,R5
      004676      062705 000002

```

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
1268
1269
1270
1271
1272
1273
1274
1275
1276
1277
1278 004762 032772 100000 002356 IODRV: IF #BIT15 NOTSET IN @LPCSR(R2) THEN
      004762 001061 BIT #BIT15, @LPCSR(R2)
      004770 BNE 50020$
1279
1280
1281
1282 004772 IF CURCNT(R2) GT #0 THEN
      004772 005762 002752 TST CURCNT(R2)
      004776 003416 BLE 50021$
1283 005000 LET @LPBUF(R2) :B= @CURADD(R2)
      005000 117272 002552 002452 MOV @CURADD(R2), @LPBUF(R2)
1284 005006 LET CURADD(R2) := CURADD(R2) + #1
      005006 005262 002552 INC CURADD(R2)
1285
1286
1287
1288 005012
      005012 052762 020000 002512 BIS STATUS(R2) := STATUS(R2) SET BY #ACTIVE
1289 005020 LET CURCNT(R2) := CURCNT(R2) - #1
      005020 005362 002752 DEC CURCNT(R2)
1290 005024 LET @LPCSR(R2) := @LPCSR(R2) SET BY #100
      005024 052772 000100 002356 BIS #100, @LPCSR(R2)
1291 005032
      005032 000437 BR ELSE
      005034 50022$
1292 50021$:
      ; CURRENT MSG DONE, IF PRINT COUNT NOT ZERO SEND AGAIN
      LET REPCNT(R2) := REPCNT(R2) - #1
1293 DEC REPCNT(R2)
1294 005040 IF REPCNT(R2) GT #0 THEN
      005040 005762 002652 TST REPCNT(R2)
      005044 003424 BLE 50023$
1295 005046 LET CURADD(R2) := MSGADR(R2) ; RESTORE THE MSG ADDR
      005046 016262 002712 002552 MOV MSGADR(R2), CURADD(R2)
1296 005054 LET CURCNT(R2) := MSGCNT(R2) ; RESTORE THE BYTE COUNT
      005054 016262 002612 002752 MOV MSGCNT(R2), CURCNT(R2)
1297 005062 LET @LPBUF(R2) :B= @CURADD(R2) ; RESEND THE MESSAGE
      005062 117272 002552 002452 MOV @CURADD(R2), @LPBUF(R2)
1298 005070 LET CURADD(R2) := CURADD(R2) + #1 ; BUMP THE POINTER
      005070 005262 002552 INC CURADD(R2)
1299 005074 LET CURCNT(R2) := CURCNT(R2) - #1 ; DROP BYTE COUNT
      005074 005362 002752 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
1303          50023$:
1304          ; CURRENT MSG DONE, REPEAT COUNT =0
      005116 042762 020000 002512      BIC      #ACTIVE,STATUS(R2)
1305          ; CLEAR ACTIVE AND DISABLE INTERRUPTS.
      005116          LET STATUS(R2) := STATUS(R2) CLR.BY #ACTIVE
1306 005124          LET @LPCSR(R2) := #00
      005124 012772 000000 002356      MOV      #00,@LPCSR(R2)
1307 005132          ENDIF
      005132          50024$:
1308 005132          ENDIF
      005132          50022$:
1309 005132          ELSE
      005132 000410          BR      50025$
      005134
1310          50020$:
1311          ; CLEAR ERROR CONDITION, ENABLE INTERRUPTS
      005134 052762 100000 002512      BIS      #ERROR,STATUS(R2)
1312          ; SET ERROR FLAG
      005134          LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
1313 005142          LET ERRCOD := #STATER ; STATUS ERROR
      005142 012737 000001 002336      MOV      #STATER,ERRCOD
1314 005150          JSR PC,@ERRSVC
      004777 175736          ; ERROR SERVICE SHOULD CLEAR ERROR BIT AND ENABLE INTR
1315          ENDIF
1316 005154          50025$:
      005154          POP R2
1317 005154          MOV      (SP)+,R2
      005154 012602          RTI
1318 005156          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      032762 040000 002512      IF #DROPED NOTSETIN STATUS(R2) THEN
1362      005242      001123      BIT      #DROPED,STATUS(R2)
1363      005250      BNE      50031$
1364      ;
1365      ; TEST FOR DVC ERROR BIT SET
1366      005252      032772 100000 002356      IF #BIT15 SETIN @LPCSR(R2) THEN
1367      005252      001407      BIT      #BIT15,@LPCSR(R2)
1368      005260      BEQ      50032$
1369      005262      LET ERRCOD := #STATER      ; STATUS REG ERROR BIT 15 SET IN CSR
1370      005262      012737 000001 002336      MOV      #STATER,ERRCOD
1371      005270      LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
1372      005270      052762 100000 002512      BIS      #ERROR,STATUS(R2)
1373      005276      000455      ELSE
1374      005276      BR      50033$
1375      005300      50032$:
1376      ; MAKE SURE PREVIOUS MSG IS DONE
1377      ;
1378      005300      005762 002752      IF CURCNT(R2) GT #0 THEN
1379      005304      003452      TST      CURCNT(R2)
1380      005306      BLE      50034$
1381      005306      032762 020000 002512      IF #ACTIVE NOTSETIN STATUS(R2) THEN
1382      005314      001004      BIT      #ACTIVE,STATUS(R2)
1383      005316      BNE      50035$
1384      ;
1385      ; OUTPUT WAS QUEUED BUT I/O DRIVER WAS NEVER INVOKED (VIA INTERRUPT)
1386      005316      012737 000003 002336      LET ERRCOD : #NOINTR      ; NO INTERRUPT
1387      005324      000442      MOV      #NOINTR,ERRCOD
1388      005326      BR      50036$
1389      005326      50035$:
1390      005326      WHILE #ACTIVE SETIN STATUS(R2) DO
1391      005326      032762 020000 002512      50037$: BIT      #ACTIVE,STATUS(R2)
1392      005334      001436      BEQ      50040$
1393      005336      012762 000144 003052      LET DELCNT(R2) := #100.      ; 20 SEC. DELAY MAX
1394      005344      012727 000002      MOV      #100.,DELCNT(R2)
1395      005350      000000      DELAY 2.      ; 200MS LOOPS
1396      005352      013727 002116      MOV      #2.,(PC)+
1397      005356      000000      .WORD 0
1398      005360      005367 177772      MOV      L$DLY,(PC)+
1399      005364      001375      .WORD 0
1400      005366      005367 177756      DEC      -6(PC)
1401      005372      001367      BNE      -4
1402      005374      005362 003052      DEC      -22(PC)
1403      005400      005762 003052      BNE      -20
1404      005404      001011      LET DELCNT(R2) := DELCNT(R2) - #1
1405      005406      IF DELCNT(R2) EQ #0 THEN
1406      TST      DELCNT(R2)
1407      BNE      50041$
1408      LET ERRCOD := #TIMEOUT

```

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)  LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
1387 005422 052762 100000 002512      BIS      #ERROR,STATUS(R2)
005430                                     ENDIF
1388 005430 50041$:
005430                                     ENDDO
1389 005430 000736      BR      50037$
005432 50040$:
1390 005432                                     ENDIF
005432 50036$:
1391 005432                                     ENDIF
005432 50034$:
1392 005432                                     ENDIF
005432 50033$:
1393 005432      IF ERRCOD NE #0 THEN
005432 005737 002336      TST      ERRCOD
005436 001403      BEQ      50042$

1394      ; REPORT THE ERROR
1395      ;
1396      ;
1397 005440 004777 175446      JSR      PC,@ERRSVC
1398 005444      ELSE
005444 000425      BR      50043$
005446 50042$:
1399      ; Q UP THE MESSAGE AND ENABLE INTERRUPTS
1400      ; THE I/O DRIVER WILL PICK UP FROM HERE.
1401      ;
1402      ;
1403 005446      LET CURADD(R2) :- BUFADD      ; BYTE ADDRESS
005446 013762 002350 002552      MOV      BUFADD,CURADD(R2)
1404 005454      LET MSGADR(R2) :- BUFADD      ; MESSAGE ADDRESS
005454 013762 002350 002712      MOV      BUFADD,MSGADR(R2)
1405 005462      LET CURCNT(R2) : BUF CNT      ; OUTPUT COUNT
005462 013762 002352 002752      MOV      BUF CNT,CURCNT(R2)
1406 005470      LET MSGCNT(R2) :- BUF CNT      ; BYTE COUNT
005470 013762 002352 002612      MOV      BUF CNT,MSGCNT(R2)
1407 005476      LET REPCNT(R2) : BUF REP      ; PRINT COUNT
005476 013762 002354 002652      MOV      BUF REP,REPCNT(R2)
1408 005504      IF CURCNT(R2) GT #0 THEN
005504 005762 002752      TST      CURCNT(R2)
005510 003403      BLE      50044$
1409 005512      LET @LPCSR(R2) : #100      ; ENABLE INTERRUPTS
005512 012772 000100 002356      MOV      #100,@LPCSR(R2)
1410 005520      ENDDO
005520 50044$:
1411 005520      ENDDO
005520 50043$:
1412 005520      ENDDO
005520 50031$:
1413      ;
1414      ; CLEAR OUT ANY TIMEOUT COUNT
1415      ;
1416 005520      LET DELCNT(R2) : #0
005520 005062 003052      CLR      DELCNT(R2)
1417      ;

```

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      005303      LET R3 :- R3 - #1
1421      005526      005237      002074      DEC R3
1422      005532      000137      005220      LET L$LUN := L$LUN + #1
1423      005536      012603      INC L$LUN
1424      005536      012602      JMP CTLEND:
1425      005542      000207      CTLEND: POP R3,R2
1426      MOV (SP)+,R3
1427      MOV (SP)+,R2
1428      RTS PC
1429      ;
1430      ; *****
1431      ; SUBROUTINE QUIET
1432      ;
1433      ; THIS SUBROUTINE WILL EFFECTIVLY DELAY UNTIL ALL QUEUED OUTPUT
1434      ; IS FINISHED. THE DELAY IS ACCOMPLISHED BY QUEUEING A NULL
1435      ; MESSAGE TO ALL LINES.
1436      ; -----
1437      QUIET: OUTPUT #0,#0      ; NULL MESSAGE OUTPUT
1438      NOP
1439      RTS PC

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

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1448 005612 052762 040000 002512
1449 005620 012762 177777 002752
1450 005626 005072 002356
1451 005632 013746 002074
1452 005636 012746 004306
1453 005642 012746 000002
1454 005646 010600
1455 005650 104417
1456 005652 062706 000006
1457 005656 005062 003114
1458 005662 005337 002342
1459 005666 005737 002342
1460 005672 001011
1461 005674 012746 003764
1462 005700 012746 000001
1463 005704 010600
1464 005706 104417
1465 005710 062706 000004
1466 005714 104444
1467 005716
1468 005716 000207
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=====
: 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		TRAP	C\$GPHRD
	005742	010003		MOV	R0,R3
1472	005744			LET	L\$LUN :- L\$LUN + #1
	005744	005237	002074	INC	L\$LUN
1473	005750			ENDDG	
	005750	000765		BR	50046\$
	005752		50047\$:		
1474	005752	000207		RTS	PC
1475					
1476					
1477	005754			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 005754 L$INIT::
1490 :RESET EXTERNAL BUS IF START EVENT FLAG IS SET
1491 005754 :OR POWER FAIL RESTART
1492 005754 012700 000040 READEF #EF.START ;TEST START EF INDICATOR
1493 005760 104447 MOV #EF.START,R0
1494 005762 103466 TRAP C$REFG
1495 005764 012700 000037 BCOMPLETE 1$ ;BRANCH IF FROM START UP
1496 005770 104447 BCS 1$ ;NOW THE RESTARTFLAG
1497 005772 103462 READEF #EF.RESTART
1498 005774 004737 005720 MOV #EF.RESTART,R0
1499 006000 012700 000000 TRAP C$REFG
1500 006004 104441 BCOMPLETE 1$ ;IF EITHER START OR POWER FAIL RESTART
1501 006006 112737 000014 003160 BCS 1$ ;DO A BUS RESET
1502 006008 004737 005720 JSR PC,FAKE ; UPDATE PASS COUNT
1503 006010 012700 000000 SETPRI #PRI00 ; PRIORITY ZERO
1504 006012 104441 MOV #PRI00,R0
1505 006014 112737 000014 003160 TRAP C$SPRI
1506 006016 004737 005720 LET OUTBUF :B= #14
1507 006018 012700 000000 MOVB #14,OUTBUF
1508 006020 104441 OUTPUT #OUTBUF,#1
1509 006022 004737 005720 DECR WORK1 FROM #6 TO #1 BY #1
1510 006024 012700 000000 MOV #6,WORK1
1511 006026 104441 BR 50050$
1512 006028 004737 005720 50051$: DEC WORK1
1513 006030 012700 000000 50050$: CMP WORK1,#1
1514 006032 104441 BLT 50052$
1515 006034 004737 005720 DELAY 250
1516 006036 012700 000000 MOV #250,(PC)+
1517 006038 104441 .WORD 0
1518 006040 004737 005720 MOV L$DLY,(PC)+
1519 006042 012700 000000 .WORD 0
1520 006044 104441 DEC -6(PC)
1521 006046 004737 005720 BNE -4
1522 006048 012700 000000 DEC -22(PC)
1523 006050 104441 BNE -20
1524 006052 004737 005720 ENDDEC
1525 006054 012700 000000 BR 50051$
1526 006056 104441 50052$: EXIT INIT ; ELSE EXIT INIT CODE
1527 006058 004737 005720 TRAP C$EXIT
1528 006060 012700 000000 .WORD L10004-.
1529 006062 104441 :POWER UP RESTART OR START COMMAND ISSUED
1530 006064 004737 005720 :
1531 006066 012700 000000 :
1532 006068 104441 :
1533 006070 004737 005720 :
1534 006072 012700 000000 :
1535 006074 104441 :
1536 006076 004737 005720 :
1537 006078 012700 000000 :
1538 006080 104441 :
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1540 006084 012700 000000 :
1541 006086 104441 :
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1543 006090 012700 000000 :
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1547 006098 104441 :
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1552 006108 012700 000000 :
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1604 006212 104441 :
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1606 006216 012700 000000 :
1607 006218 104441 :
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1609 006222 012700 000000 :
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1909 006822 012700 000000 :
1910 006824 104441 :
1911 006826 004737 005720 :
1912 006828 012700 000000 :
1913 006830 104441 :
1914 006832 004737 005720 :
1915 006834 012700 000000 :
1916 006836 104441 :
1917 006838 004737 005720 :
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1957 006918 012700 000000 :
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1962 006928 004737 005720 :
1963 006930 012700 000000 :
1964 006932 104441 :
1965 006934 004737 005720 :
1966 006936 012
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CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 21-1
INITIALIZATION SECTION

1507	006140			1\$:	BRESET		;RESET THE BUS
	006140	104433			TRAP	C\$RESET	
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				ENDIF		
	006212			50053\$:	MANUAL		; CHECK FOR UNATTENDED MODE
1512	006212				TRAP	C\$MANI	
	006212	104450			BNCOMPLETE	2\$	; IF UNATTENDED BYPASS MANUAL INSTRUCTIONS
1513	006214				BCC	2\$	
	006214	103034					
1514					PRINTF	#RESET1	
1515	006216				MOV	#RESET1,-(SP)	
	006216	012746	007374		MOV	#1,-(SP)	
	006222	012746	000001		MOV	SP,R0	
	006226	010600			TRAP	C\$PNTF	
	006230	104417			ADD	#4,SP	
	006232	062706	000004		PRINTF	#RESET2	
1516	006236				MOV	#RESET2,-(SP)	
	006236	012746	007467		MOV	#1,-(SP)	
	006242	012746	000001		MOV	SP,R0	
	006246	010600			TRAP	C\$PNTF	
	006250	104417			ADD	#4,SP	
	006252	062706	000004				
1517							
1518							
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\$:	GMANIL	READY,FLAG,100000,YES	
1524	006272				TRAP	C\$GMAN	
	006272	104443			BR	10000\$	
	006274	000404			.WORD	FLAG	
	006276	002274			.WORD	T\$CODE	
	006300	000130			.WORD	READY	
	006302	007603			.WORD	100000	
	006304	100000					
	006306			10000\$:			
1525							
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			GPHARD L\$LUN,R3	;REQUEST P-TABLE ADDRESS
1530	006334					MOV L\$LUN,R0	
	006334	013700	002074			TRAP C\$GPHRD	
	006340	104442				MOV R0,R3	
	006342	010003				BNCOMPLETE 3\$	;BRANCH IF DEVICE NOT PRESENT
1531	006344					BCC 3\$	
	006344	103124				LET R2 : L\$LUN SHIFT 1	
1532	006346					MOV L\$LUN,R2	
	006346	013702	002074			ASL R2	
	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$: LET STATUS(R2) := STATUS(R2) SET.BY #FLAG96
1553 006452          BIS      #FLAG96,STATUS(R2)
      006452 052762 010000 002512      ENDIF
1554 006460          50064$:
      006460          LET ERR7BL(R2) := #0
1555 006460          CLR      ERR7BL(R2)
      006460 005062 003114          LET CURCNT(R2) := #-1
1556 006464          MOV      #-1,CURCNT(R2)
      006464 012762 177777 002752          LET DELCNT(R2) := #0
1557 006472          CLR      DELCNT(R2)
      006472 005062 003052          LET REPCNT(R2) := #0
1558 006476          CLR      REPCNT(R2)
      006476 005062 002652
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$UN NOT AVAILABLE FOR TESTING
1582
1583 006616      3$: 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 C40000 002512 4$: BIS #DROPE,STATUS(R2) ;GO BACK AND DO IT AGAIN
      006624 000636 50055$: ENDINC
      006626 BR 50055$
1585 50056$:
1586 :.....:
1587 : SETUP TO HANDLE CLOCK INTERRUPTS
1588 : IF AN L-CLOCK IS ON THE SYSTEM THEN SETUP A NOOP INTERRUPT
1589 : HANDLER BECAUSE LSI SYSTEMS MAY HAVE THE CLOCK ENABLED AT ALL TIMES.
      006626 LET CLKTYP := #1 ; DEFAULT FOR NO CLOCK ON SYSTEM
      006626 012737 000001 002322 MOV #1,CLKTYP
1590 006634 012700 000114 CLOCK L,R4 ; TEST FOR L-CLOCK
      006640 104462 MOV #L,R0
      006642 010004 TRAP C$CLK
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 SE^VEC 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 MANSPE
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$CLK
      006764 010004 MOV R0,R4
1608 006766 IFCOND CS THEN ; WE HAVE A P-CLOCK
      006766 103016 BCC 50066$
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)
	007010	016437	000004	002332	MOV 4(R4),CLKVEC
1613					; TRY TO DISABLE THE P-CLOCK
1614	007016				LET @CLKCSR := #00
	007016	012777	000000	173302	MOV #00,@CLKCSR
1615	007024				ENDIF
	007024				50066\$:
1616					; IF NO CLOCKS ON THE SYSTEM NOTIFY THE OPERATOR
1617	007024				IF CLKTYP EQ #1 THEN
	007024	023727	002322	000001	CMP CLKTYP,#1
	007032	001020			BNE 50067\$
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
	007050	062706	000004		ADD #4,SP
1619	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
	007070	062706	000004		ADD #4,SP
1620	007074				ENDIF
	007074				50067\$:
1621	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: .ASCIIZ /%N%ANUMBER OF LINE PRINTERS UNDER TEST EXCEEDS 16./
1628	007241	045	116	045	NRGT17: .ASCIIZ /%N%ONLY 16 WILL BE TESTED./
1629	007275	045	116	045	MRESET: .ASCIIZ /%N%ARESET LINE PRINTER(S), DO FORM FEED, AND PLACE ON LINE.%N/
1630	007374	045	116	045	RESET1: .ASCIIZ /%N%ARESET LINE PRINTER(S),SET FORMS LENGTH TO 11 INCHES.%N/
1631	007467	045	101	123	RESET2: .ASCIIZ /%A%SET VERTICAL DENSITY TO 6 LINES PER INCH,DO FORM FEED AND PLACE ON LINE.%N/
1632					
1633	007603	104	105	120	READY: .ASCIIZ /DEPRESS 'RETURN' WHEN READY./
1634	007640	045	116	045	NOCLCK: .ASCIIZ /%N%AHARDWARE CLOCK NOT AVAILABLE./
1635	007702	045	116	045	NOTIM: .ASCIIZ /%N%AAUTO PRINTING SPEED MEASUREMENT CANNOT 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					

1643		
1644		
1645		
1646		
1647		
1648	010000	
1649	010000	000002
1650		
1651		
1652		
1653		
1654		
1655		
1656		
1657		
1658		
1659		
1660		
1661	010002	
	010002	010346
	010004	010446
1662	010006	
	010006	005004
1663	010010	
	010010	013703
1664	010014	
	010014	
	010014	005703
	010016	003417
1665	010020	
	010020	012746
	010024	016446
	010030	016446
	010034	012746
	010040	104437
	010042	062706
1666	010046	
	010046	062704
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          .SBTTL  CLEANUP CODING SECTION
1674 010064    STARS
1675          ;*****
1676          ;**
1677          ;THE PURPOSE OF THE CLEANUP SECTION IS TO CLEANUP ALL PRINTERS UNDER TEST
1678          ;AND RETEST ANY UNITS WHICH HAVE BEEN DROPPED FROM TESTING TO INSURE THAT
1679          ;THEY HAVE NOT COME BACK ON LINE. IF THE DEVICE HAS COME BACK ON LINE
1680          ;TESTING WILL BE RESTARTED ON THE DEVICE. THIS INSURES THAT
1681          ;IN THE EVENT A PAPER OUT OCCURRED AND THE OPERATOR HAS PUT ADDITIONAL PAPER
1682          ;INTO THE UNIT UNDER TEST, THE INITIALIZATION SEQUENCE DOES NOT
1683          ;HAVE TO BE DONE AGAIN IN ORDER TO GET THE DEVICE ACTIVE.
1684 010064    STARS
1685          ;*****
1685 010064    BGNCLN
1686 010064    L$CLEAN::
1686 010064      SETPRI #PRI07
1686 010064      MOV     #PRI07,R0
1686 010064      TRAP    C$SPRI
1687 010072      BRESET
1687 010072      TRAP    C$RESET
1688
1689 010074    CLEAN: LET R1 := L$UNIT - #1 ;NUMBER OF UNITS-1
1689 010074      MOV     L$UNIT,R1
1689 010100      DEC     R1
1690 010102      INCR L$LUN FROM #0 TO R1 BY #1
1690 010102      CLR     L$LUN
1690 010106      BR      50072$
1690 010110      50073$:
1690 010110        INC     L$LUN
1690 010114      50072$:
1690 010114        CMP     L$LUN,R1
1690 010120        BGT     50074$
1691          ; DISABLE ALL INTERRUPTS, SELECT ALL LINES
1692          ; ZERO ALL ERROR COUNTS
1693 010122      LET R2 := L$LUN SHIFT 1
1693 010122      MOV     L$LUN,R2
1693 010126      ASL     R2
1694          ; CLEAR ALL BITS IN STATUS EXCEPT DEVICE TYPE
1695 010130      LET STATUS(R2) := STATUS(R2) CLR.BY #ERROR!DROPE!ACTIVE.LOBYTE
1695 010130      BIC     #ERROR!DROPE!ACTIVE!LOBYTE,STATUS(R2)
1696 010136      LET CURCNT(R2) := #-1
1696 010136      MOV     #-1,CURCNT(R2)
1697 010144      LET ERRIBL(R2) := #0
1697 010144      CLR     ERRIBL(R2)
1698 010150      LET DELCNT(R2) := #0
1698 010150      CLR     DELCNT(R2)
1699 010154      LET REPCNT(R2) := #0
1699 010154      CLR     REPCNT(R2)
1700 010160      ENDINC
1700 010160      BR      50073$
1700 010162      50074$:
1701 010162      JSR     PC,RESVEC ; RESET THE VECTORS
1702 010166      IF CLKTYP EQ #3 THEN
1702 010166      CMP     CLKTYP,#3
1702 010174      BNE     50075$
1703 010176      CLRVEC @CLKVEC

```

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

	010176	017700	172130		MOV	@CLKVEC,R0
	010202	104436			TRAP	C\$VEC
1704	010204				LET	@CLKCSR :- #00
	010204	012777	000000	172114	MOV	#00,@CLKCSR
1705	010212				ENDIF	
	010212			50075\$:		
1706	010212				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
	010244	062706	000010		ADD	#10,SP
1708	010250				ENDIF	
	010250			50076\$:		
1709	010250				SETPRI	#PRI00
	010250	012700	000000		MOV	#PRI00,R0
	010254	104441			TRAP	C\$SPRI
1710	010256			ENDCLN		
	010256			L10005:		
	010256	104412			TRAP	C\$CLEAN
1711						
1712	010260			ENDMOD		

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

```

1714 .SBTTL INTERFACE LOGIC
1715
1716 010260 BGNMOD
1717 : **
1718 : THIS TEST VERIFIES THE OPERATION OF THE INTERFACE LOGIC. TESTS ARE
1719 : PERFORMED FOR PRINTER ERROR, PRINTER READY, AND CLEARING PRINTER READY
1720 : BY LOADING A CHARACTER INTO THE OUTPUT BUFFER. ALSO IT IS VERIFIED
1721 : THAT THE PRINTER WILL NOT INTERRUPT IF IT IS AT THE SAME PRIORITY LEVEL
1722 : AS THE PROCESSOR, BUT WILL INTERRUPT IF THE PROCESSOR IS AT A LOWER
1723 : PRIORITY LEVEL. THE PRINTER IS AT PRIORITY LEVEL 4.
1724 :
1725 :
1726 : --
1727 010260 BGNTEST 1
      010260 T1::
1728 010260 LET R1 := L$UNIT - #1 ;MAX NUMBER OF UNITS ON SYSTEM
      010260 MOV L$UNIT,R1
      010264 013701 DEC R1
      005301
1729 :
1730 : HARD CODED INCREMEMNT LOOP
1731 : INCR LUNIT FROM #0 TO R1 BY #1 ;START LOOP
1732 :
1733 010266 005037 002314 CLR LUNIT ;UNIT TO 0
1734 010272 000402 BR T1C ;DO COMPARE
1735 010274
1736 010274 005237 002314 T1A: INC LUNIT ;UPDATE UNIT NUMBER
1737 010300 T1C:
1738 010300 023701 002314 CMP LUNIT,R1 ;DO COMPARISON OF UNIT NUMBER
1739 010304 003402 BLE 1$ ;ONTO NEXT UNIT
1740 010306 000137 011052 JMP T1B ;EXIT LOOP
1741 010312
1742 010312 1$:
      010312 013702 002314 LET R2 := LUNIT SHIFT 1
      010316 006302 MOV LUNIT,R2
      ASL R2
1743 010320 IF #BIT15 SET IN @LPCSR(R2) THEN
      010320 032772 100000 002356 BIT #BIT15,@LPCSR(R2)
      010326 001416 BEQ 50077$
1744 010330 LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
      010330 052762 100000 002512 BIS #ERROR,STATUS(R2)
1745 010336 LET ERRBL(R2) := ERRBL(R2) + #1
      010336 005262 003114 INC ERRBL(R2)
1746 010342 LET L$LUN := LUNIT
      010342 013737 002314 002074 MOV LUNIT,L$LUN
1747 010350 ERRHRD 1,CSRERR ;ERROR BIT WAS SET. SAY SO
      010350 104456 TRAP CSRERR
      010352 000001 .WORD 1
      010354 003406 .WORD CSRERR
      010356 000000 .WORD 0
1748 010360 LET @LPCSR(R2) := #0
      010360 005072 002356 CLR @LPCSR(R2)
1749 010364
      010364
1750
1751
1752 010364
      010364 032772 000200 002356
      010372 001027
      50077$:
      ;TIME DELAY
      ; IF NOT READY ALLOW 3 SECONDS TO COME UP
      IF #BIT7 NOTSET IN @LPCSR(R2) THEN
      BIT #BIT7,@LPCSR(R2)
      BNE 50100$

```

CZLPLD0 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$DLY, (PC)+
      010426 013727 002116      .WORD 0
      010432 000000          DEC -6(PC)
      010434 005367 177772      BNE -4
      010440 001375          DEC -22(PC)
      010442 005367 177756      BNE -20
      010446 001367          ENDDC
1755 010450          BR 50102$
      010450 000755          50103$:
      010452          ENDIF
1756 010452          50100$:
      010452          :
1757          : NOW TEST FOR PRINTER READY
1758          :
1759          :
1760 010452          IF #BIT07 NOTSET IN @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 ERR TBL(R2) := ERR TBL(R2) + #1
      010476 005262 003114          INC ERR TBL(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 SET IN @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 ERR TBL(R2) := ERR TBL(R2) + #1
      010536 005262 003114          INC ERR TBL(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

1775	010552	000003			.WORD 3
	010554	011332			.WORD ERR11
	010556	000000			.WORD 0
	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 23-3
INTERFACE LOGIC

010740	104437			TRAP	C\$SVEC	
010742	062706	000010		ADD	#10,SP	
1794 010746				LET @LPCSR(R2) := @LPCSR(R2)	SET.BY #100	; INTERRUPT ENABLE
010746	052772	000100	002355	BIS	#100,@LPCSR(R2)	
1795 010754				DELAY	30	; ALLOW 3 SEC DELAY
010754	012727	000030		MOV	#30,(PC)+	
010760	000000			.WORD	0	
010762	013727	002116		MOV	L\$DLY,(PC)+	
010766	000000			.WORD	0	
010770	005367	177772		DEC	-6(PC)	
010774	001375			BNE	.-4	
010776	005367	177756		DEC	-22(PC)	
011002	001367			BNE	.-20	
1796 011004				LET ERRTBL(R2) := ERRTBL(R2) + #1		
011004	005262	003114		INC	ERRTBL(R2)	
1797 011010				LET L\$LUN := LUNIT		
011010	013737	002314	002074	MOV	LUNIT,L\$LUN	
1798 011016				ERRHRD 4,ERR13		
011016	104456			TRAP	C\$ERHRD	
011020	000004			.WORD	4	
011022	011471			.WORD	ERR13	
011024	000000			.WORD	0	
1799 011026				END2: LET @LPCSR(R2) := #00		; CLEAR THE LPCSR
011026	012772	000000	002356	MOV	#00,@LPCSR(R2)	
1800 011034				LET STATUS(R2) := STATUS(R2) CLR.BY #ERROR!DROPE!ACTIVE		
011034	042762	160000	002512	BIC	#ERROR!DROPE!ACTIVE,STATUS(R2)	
1801 011042				LET DELCNT(R2) := #0		
011042	005062	003052		CLR	DELCNT(R2)	
1802				:		
1803				:END OF HARD CODED INCREMENT LOOP		
1804				:ENDINC		
1805				:		
1806 011046	000137	010274		JMP	T1A	; UPDATE UNIT #
1807 011052	004737	010002		T1B: JSR	PC,RESVEC	; RESET STANDARD VECTORS
1808 011056				SETPRI	#PRI00	
011056	012700	000000		MOV	#PRI00,R0	
011062	104441			TRAP	C\$SPRI	
1809 011064				OUTPUT	#INTFAC,#47.	
1810 011126				LET OUTBUF :B= #14		
011126	112737	000014	003160	MOVB	#14,OUTBUF	
1811 011134				OUTPUT	#OUTBUF,#1	
1812 011176				WHILE #BIT7 NOTSETIN @LPCSR(R2) DO		; WAIT FOR READY
011176				50111\$:		
011176	032772	000200	002356	BIT	#BIT7,@LPCSR(R2)	
011204	001001			BNE	50112\$	
1813 011206				ENDDO		
011206	000773			BR	50111\$	
011210				50112\$:		
1814 011210				EXIT TST		; EXIT THE TEST
011210	104432			TRAP	C\$EXIT	
011212	000334			.WORD	L10006-	
1815				:		
1816				: INTERRUPT HANDLER TO SERVICE FAULTY INTERRUPT FROM LP INTERFACE.		
1817				: THIS ROUTINE IS ENTERED ONLY WHEN THE LP INTERRUPTS AT THE SAME LEVEL AS		
1818				: THE CPU AND IS CONSIDERED AN ERROR.		
1819				:		
1820 011214				BGNSRV		

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	000005			.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 011550 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$MANI
1863 011552 BCOMPLETE 11$
      011552 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
      011604 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
      011624 013702 002314 MOV LUNIT,R2
      011630 006302 ASL R2
1876 011632 IF #BIT15 SET IN @LPCSR(R2) THEN
      011632 032772 100000 002356 BIT #BIT15,@LPCSR(R2)
      011640 001410 BEQ 50117$
1877 011642 LET ERRLBL(R2) := ERRLBL(R2) + #1
      011642 005262 003114 INC ERRLBL(R2)
1878 011646 ERRHRD 6, CSRERR
      011646 104456 TRAP C$ERRHRD

```

CZLPLDO LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 24-1
READY LINE INTERLOCKS TEST 2

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

CZLP LDC LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 24-3
READY LINE INTERLOCKS TEST 2

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	
	012326			10001\$:		
1929	012326			LET R2 := LUNIT SHIFT 1		
	012326	013702	002314	MOV	LUNIT,R2	
	012332	006302		ASL	R2	
1930	012334			LET @LPCSR(R2) := #0		; RESET THE LP CSR
	012334	005072	002356	CLR	@LPCSR(R2)	
1931	012340	000137	012022	JMP	2\$	
1932						
1933						
1934						
1935	012344			5\$:	LET ERRFLG := #1	
	012344	012737	000001 002340	MOV	#1,ERRFLG	
1936	012352			LET ERRCOD := #0		
	012352	005037	002336	CLR	ERRCOD	
1937	012356			LET STATUS(R2) := STATUS(R2) CLR BY #ERROR!ACTIVE		
	012356	042762	120000 002512	BIC	#ERROR!ACTIVE,STATUS(R2)	
1938	012364			LET CURCNT(R2) := #0		; CLEAN UP THE DRIVER PARAMETERS
	012364	005062	002752	CLR	CURCNT(R2)	
1939	012370			LET CURADD(R2) := #0		
	012370	005062	002552	CLR	CURADD(R2)	
1940	012374			LET REPCNT(R2) := #0		
	012374	005062	002652	CLR	REPCNT(R2)	
1941	012400	000207		RTS	PC	; AND RETURN
1942						
1943	012402			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
	012402	005037	002314	CLR	LUNIT	
	012406	000402		BR	50130\$	
	012410			50131\$:		
	012410	005237	002314	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 002074	MOV	LUNIT,L\$LUN	
1946	012436			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\$:	

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 READY LINE INTERLOCKS TEST 2

1957	012640				ELSE	
	012640	000426			BR	50136\$
	012642				50135\$:	
1958	012642					LET ERRIBL(R2) := ERRIBL(R2) + #1
	012642	005262	003114		INC	ERRIBL(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\$
1970	012740					LET R2 := LUNIT SHIFT 1
	012740	013702	002314		MOV	LUNIT, R2
	012744	006302			ASL	R2
1971	012746					LET FLAG := #0
	012746	005037	002274		CLR	FLAG
1972	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\$
1973	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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	013010	104417			TRAP	(\$PNTF
	013012	062706	000006		ADD	#6,SP
1974	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	(\$PNTF
	013040	062706	000006		ADD	#6,SP
1976	013044				PRINTF	#BANDSW1
	013044	012746	014134		MOV	#BANDSW1,-(SP)
	013050	012746	000001		MOV	#1,-(SP)
	013054	010600			MOV	SP,R0
	013056	104417			TRAP	(\$PNTF
	013060	062706	000004		ADD	#4,SP
1977	013064				ENDIF	
	013064			50145\$:		
1978	013064				GMANIL	READY, FLAG, 100000, YES
	013064	104443			TRAP	(\$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	(\$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	(\$PNTF
	013176	062706	000006		ADD	#6,SP
1984	013202				ENDIF	
	013202			50150\$:		
1985	013202				GMANIL	READY, FLAG, 100000, YES
	013202	104443			TRAP	(\$GMAN

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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				ELSE	
	013216	000426			BR	50151\$
	013220				50146\$:	
1987	013220				LET ERRTBL(R2) :- ERRTBL(R2) + #1	
	013220	005262	003114		ERRTBL(R2)	
1988	013224				LET L\$LUN := LUNIT	
	013224	013737	002314	002074	LUNIT, L\$LUN	
1989	013232				IF #FLAG07 SETIN STATUS(R2) AND #FLAG26 NOTSETIN STATUS(R2) THEN	
	013232	032762	002000	002512	#FLAG07, STATUS(R2)	
	013240	001411			50152\$	
	013242	032762	001000	002512	#FLAG26, STATUS(R2)	
	013250	001005			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\$
	013264				50152\$:	
1992	013264				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\$
	013304				50143\$:	
1997	013304				LET OUTBUF := #14	
	013304	012737	000014	003160	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: .ASCIIZ	/READY LINE INTERLOCK TEST 2/<12><12>
2004	013416	045	116	045	PAPRSW: .ASCIIZ	/N%ATEAR OFF PAPER JUST BELOW LUNIT %D2/
2005	013466	045	101	040	PAPSW1: .ASCIIZ	/A TO CHECK PAPER LOW N%AINTERLOCK.%N/
2006	013535	045	116	045	PAPRDY: .ASCIIZ	/N%ARESTORE PAPER, CLEAR, PLACE LUNIT %D2%A ON LINE.%N/
2007	013624	120	101	120	PAPTST: .ASCIIZ	/PAPER LOW TEST/<12>
2008	013644	045	116	045	HAMRSW: .ASCIIZ	/N%ADISENGAGE HAMMER BANK LATCH ON LUNIT %D2/
2009	013721	045	116	045	HAMSW1: .ASCIIZ	/N%A TO CHECK INTERLOCK SWITCH.%N/
2010	013762	045	116	045	HAMRDY: .ASCIIZ	/N%AENGAGE LATCH, CLEAR, PLACE LUNIT %D2%A ON LINE.%N/

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 READY LINE INTERLOCKS TEST 2

2011	014046	045	116	045	BANDSW: .ASCIZ /%N%AOPEN CHARACTER BAND COVER ON LUNIT %D2%A TO CHECK/
2012	014134	045	116	045	BNDWI: .ASCIZ /%N%AINTERLOCK SWITCH.%N/
2013	014164	045	116	045	BNDRDY: .ASCIZ/%N%ACLOSE BAND COVER ON LUNIT %D2%A,CLEAR,PLACE ON LINE./
2014	014255	045	116	045	BGTLC: .ASCIZ /%N%AOPEN BAND GATE LATCH ON LUNIT %D2%A TO CHECK MICROSWITCH.%N/
2015	014355	045	116	045	VFUINT: .ASCIZ /%N%ALIFT VFU COVER ON LUNIT %D2%A TO CHECK MICROSWITCH.%N/
2016	014447	045	116	045	VFURDY: .ASCIZ /%N%ACLOS VFU COVER ON LUNIT %D2%A,CLEAR,PLACE ONLINE.%N/
2017					.FVEN
2018					
2019					.LIST BEX
2020	014540				ENDTST
	014540				L10011:
	014540	104401			TRAP C\$ETST
2021					
2022	014542				ENDMOD
2023					

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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			BGNTEST 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		000001		\$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			BLE 50156\$
	014604	023701	002314	JMP 50157\$
	014610	003402		
	014612	000137	016366	50156\$: LET R2 := LUNIT SHIFT 1
	014616			MOV LUNIT,R2
2048	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
	014660	062706	000006	PRINTF #LINSWI
2051	014664			MOV #LINSWI,-(SP)
	014664	012746	016520	

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	C\$PNTF	
	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	C\$PNTF	
	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	C\$PNTF	
	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	C\$PNTF	
	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 #FLMSG,LUNIT,T3SET	
	015034	013746	016372		MOV	T3SET,-(SP)	
	015040	013746	002314		MOV	LUNIT,-(SP)	
	015044	012746	017301		MOV	#FLMSG,-(SP)	
	015050	012746	000003		MOV	#3,-(SP)	
	015054	010600			MOV	SP,R0	
	015056	104417			TRAP	C\$PNTF	
	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	C\$PNTF	
	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	C\$GMAN	
	015112	000404			BR	10000\$	

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FORMS LENGTH SELECTION

	015114	002274			.WORD	FLAG	
	015116	000130			.WORD	T\$CODE	
	015120	007603			.WORD	READY	
	015122	100000			.WORD	100000	
	015124			100000\$:			
2061	015124					OUTPUT	#REFLIN,#62,,,LUNIT ;TEST ID + REF. LINE
2062	015166					OUTPUT	T3SET,#3,,,LUNIT
2063	015230					OUTPUT	#MOVMSG,#62,,,LUNIT
2064	015272	004737	005544			JSR	PC,QUIET
2065	015276						ENDINC
	015276	000642			BR	50161\$	
	015300			50164\$:			
2066	015300					ELSE	
	015300	000137	016072		JMP	50165\$	
	015304			50160\$:			
2067	015304					OUTPUT	#REFLIN,#30,,,LUNIT ;TEST ID
2068	015346	004737	005544			JSR	PC,QUIET
2069	015352					OUTPUT	#CHNSECT,#13,,,LUNIT ;SECTION ID
2070	015414					LET	WORK1 := #52 ;CODE FOR ASTERISK
	015414	012737	000052	003156	MOV	#52,WORK1	
2071	015422					LET	OUTBUF := #200 ;CHANNEL CODE
	015422	012737	000200	003160	MOV	#200,OUTBUF	
2072	015430					INCR	WORK FROM #1 TO #12. BY #1 ;REPEAT FOR ALL 12 CHANNELS
	015430	012737	000001	003154	MOV	#1,WORK	
	015436	000402			BR	50167\$	
	015440					50166\$:	
	015440	005237	003154		INC	WORK	
	015444					50167\$:	
	015444	023727	003154	000014	CMP	WORK,#12.	
	015452	003402			BLE	50170\$	
	015454	000137	015572		JMP	50171\$	
	015460			50170\$:			
2073	015460					OUTPUT	#OUTBUF,#1,,,LUNIT
2074	015522					OUTPUT	#WORK1,#1,,,LUNIT,WORK
2075	015564					LET	OUTBUF := OUTBUF + #1 ;NEXT CHANNEL
	015564	005237	003160		INC	OUTBUF	
2076	015570					ENDINC	
	015570	000723			BR	50166\$	
	015572			50171\$:			
2077	015572					LET	OUTBUF := #14
	015572	012737	000014	003160	MOV	#14,OUTBUF	
2078	015600					OUTPUT	#OUTBUF,#1,,,LUNIT
2079	015642					OUTPUT	#LINSECT,#15,,,LUNIT ;SECTION ID
2080	015704					LET	WORK1 := #52 ;CODE FOR ASTERISK
	015704	012737	000052	003156	MOV	#52,WORK1	
2081	015712					LET	OUTBUF := #220 ;CODE FOR VFU
	015712	012737	000220	003160	MOV	#220,OUTBUF	
2082	015720					INCR	WORK FROM #0 TO #15. BY #1
	015720	005037	003154		CLR	WORK	
	015724	000402			BR	50173\$	
	015726			50172\$:			
	015726	005237	003154		INC	WORK	
	015732			50173\$:			
	015732	023727	003154	000017	CMP	WORK,#15.	
	015740	003402			BLE	50174\$	
	015742	000137	016072		JMP	50175\$	
	015746			50174\$:			

CZLPLD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 25-3
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

      TST WORK
      BGT +6
      JMP 50176$

      OUTPUT #OUTBUF,#1,,LUNIT
      IF WORK GT #0 THEN

      OUTPUT #WORK1,#1,,LUNIT,WORK ;PRINT ASTERISK
      ENDIF

      LET OUTBUF := OUTBUF + #1

      INC OUTBUF
      BR 50172$
      ENDINCR

50175$:
      ENDIF

50165$:
      ;SET FORMS LENGTH SELECT SWITCH TO ITS 'REGULAR' SETTING
      IF #FLAG07 NOTSET IN STATUS(R2) THEN
      #FLAG07,STATUS(R2)
      BEQ +6
      JMP 50177$

      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
      GMANIL READY,FLAG,100000,YES ;AND WAIT FOR RESPONSE

      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
016336	062706	000004	ADD	#4, SP
2103 016342				LET FLAG :- #0
016342	005037	002274	CLR	FLAG
2104 016346				G\$MANIL READY, FLAG, 100000, YES ;WAIT FOR RESPONSE
016346	104443		TRAP	C\$G\$MAN
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	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	LINSWI: .ASCIZ /%N%A6 LINES PER INCH VERTICAL PRINTING DENSITY./
2115 016600	045	116	045	FLSSEL: .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	FFSET: .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	FLSMMSG: .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 UNIT %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				L10012:
017646	104401			TRAP C\$ETST
2140 017650				ENDMOD
2141				

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PRINTING SPEED MEASUREMENT

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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
      017650 T4::
2155 :
2156 017650 LET R1 : 1$UNIT - #1 ;NUMBER OF UNITS TO TEST
      017650 013701 002012 MOV L$UNIT,R1
      017654 005301 DEC R1
2157 017656 IF MANSPO NE #0 THEN ; DETERMIN IF MANUAL TESTING SELECTED
      017656 005737 002264 TST MANSPO
      017662 001416 BEQ 50201$
2158 017664 MANUAL ;DTERMINE IF MANUAL INTERVENTION ALLOWED
      017664 104450 TRAP ($MANI
2159 017666 BCOMPLETE 1$
      017666 103402 BCS 1$
2160 017670 EXIT TST
      017670 104432 TRAP ($EXIT
      017672 005362 .WORD L10013-.
2161 017674 1$: IF INHINT EQ #0 THEN ; EXIT IF INTERVENTION INHIBITED
      017674 005737 002262 TST INHINT
      017700 001003 BNE 50202$
2162 017702 EXIT TST
      017702 104432 TRAP ($EXIT
      017704 005350 .WORD L10013-.
2163 017706 ELSE
      017706 000403 BR 50203$
2164 017710 50202$:
      017710 013737 002266 003154 LET WORK :- PERIOD
      017716 000403 MOV PERIOD,WORK
      017720 000403 ENDIF
2165 017716 50203$:
      017716 000403 ELSE
2166 017720 50204$:
      017720 013737 002266 003154 LET WORK :- PERIOD ; CLOCK TEST TIME
      017720 000403 MOV PERIOD,WORK
2167 017726 ENDIF
      017726 50204$
2168 017726 OUTPUT #PRISPD,#36. ;PRINT TEST ID
2169 017726 SELECT CLKTYP OF 4 VERIFY ;SET UP THE RIGHT CLOCK
2170 017770 MOV CLKTYP,-(SP)
      017774 002501 BLT 50213$
      017776 023727 002322 000004 CMP CLKTYP,#4
      020004 003075 BGT 50213$
      020006 006316 ASL (SP)
      020010 062716 020016 ADD #50205$,(SP)
      020014 013607 MOV @ (SP)+,PC
      020016 50205$:

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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 AVAILABLE
2174							
2175	020034				CASE 2		;KW11-L LINE CLOCK SELECTED
	020034	000461			BR	50213\$	
	020036				50210\$:		
2176	020036				LET CLKENA := #100		;INTERRUPT ENABLE/ CLR MONITOR
	020036	012737	000100	002334	MOV	#100,CLKENA	
2177							; SET PRI7 WHILE CHANGING VECTOR ADDRESS
2178	020044				SETPRI	#PRI07	
	020044	012700	000340		MOV	#PRI07,R0	
	020050	104441			TRAP	C\$SPRI	
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	
2185							; RUN, RATE = 10KHZ, REPEAT INTR, DOWN, INT ENABLE
2186	020132				SETPRI	#PRI07	
	020132	012700	000340		MOV	#PRI07,R0	
	020136	104441			TRAP	C\$SPRI	
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      112737 000012 003160 LET LUNIT := R1
      020206      010137 002314 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      ; DETERMINE WHICH BAND, AND SEND APPROPRIATE PATTERN
2200      ;
2201      SBRJMP=1
2202 020224      IF #FLAG96 NOTSETIN STATUS(R2) THEN ; 64 CHAR BAND
      020224      032762 010000 002512 BIT #FLAG96,STATUS(R2)
      020232      001402 BEQ .+6
      020234      000137 020772 JMP 50214$
2203 020240      IF #FLAG07 NOTSETIN STATUS(R2) THEN
      020240      032762 002000 002512 BIT #FLAG07,STATUS(R2)
      020246      001402 BEQ .+6
      020250      000137 020266 JMP 50215$
2204 020254      LET BNDPAT := #TAB64
      020254      012737 024224 023040 MOV #TAB64,BNDPAT
2205 020262      ELSE
      020262      000137 020274 JMP 50216$
      020266      50215$:
2206 020266      LET BNDPAT := #TB0764
      020266      012737 024640 023040 MOV #TB0764,BNDPAT
2207 020274      ENDIF
      020274      50216$:
2208 020274      LET WORK := #133.
      020274      012737 000205 003154 MOV #133.,WORK
2209 020302      IF #FLAG26 NOTSETIN STATUS(R2) AND #FLAG07 NOTSETIN STATUS(R2) THEN
      020302      032762 001000 002512 BIT #FLAG26,STATUS(R2)
      020310      001402 BEQ .+6
      020312      000137 020462 JMP 50217$
      020316      032762 002000 002512 BIT #FLAG07,STATUS(R2)
      020324      001402 BEQ .+6
      020326      000137 020462 JMP 50217$
2210 020332      PRINTF #LPM64 ;SEND SPEED MESSAGE TO CONSOLE
      020332      012746 023503 MOV #LPM64,-(SP)
      020336      012746 000001 MOV #1,-(SP)
      020342      010600 MOV SP,R0
      020344      104417 TRAP C$PNTF
      020346      062706 000004 ADD #4,SP
2211 020352      OUTPUT #LPM64+4,#42.,LUNIT ;SEND SPEED MESSAGE TO PRINTER
2212 020414      OUTPUT #OUTBUF,#1.,LUNIT ;LINEFEED
2213 020456      ELSE
      020456      000137 020766 JMP 50220$
      020462      50217$:
2214 020462      IF #FLAG26 SETIN STATUS(R2) AND #FLAG07 NOTSETIN STATUS(R2) THEN
      020462      032762 001000 002512 BIT #FLAG26,STATUS(R2)
      020470      001002 BNE .+6

```

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PRINTING SPEED MEASUREMENT

2215	020472	000137	020642	JMP	50221\$	
	020476	032762	002000	BIT	#FLAG07,STATUS(R2)	
	020504	001402		BEQ	+.6	
	020506	000137	020642	JMP	50221\$	
	020512				PRINTF #L26M64	
	020512	012746	023645	MOV	#L26M64,-(SP)	
	020516	012746	000001	MOV	#1,-(SP)	
	020522	010600		MOV	SP,R0	
	020524	104417		TRAP	(\$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	(\$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 NOTSETIN STATUS(R2) THEN		
	020772	032762	002000	BIT	#FLAG07,STATUS(R2)	
	021000	001402	002512	BEQ	+.6	
	021002	000137	021020	JMP	50224\$	
2226	021006			LET BNDPAT := #TABA96		
	021006	012737	024432	MOV	#TABA96,BNDPAT	
2227	021014		023040	ELSE		
	021014	000137	021026	JMP	50225\$	
	021020			50224\$:		
2228	021020			LET BNDPAT := #TB0796		
	021020	012737	025046	MOV	#TB0796,BNDPAT	
2229	021026			ENDIF		
	021026			50225\$:		
2230	021026			LET WORK := #133.		
	021026	012737	000205	MOV	#133,WORK	
2231	021034		003154	IF #FLAG26 NOTSETIN STATUS(R2) AND #FLAG07 NOTSETIN STATUS(R2) THEN		
	021034	032762	001000	BIT	#FLAG26,STATUS(R2)	
	021042	001402	002512	BEQ	+.6	
	021044	000137	021214	JMP	50226\$	
	021050	032762	002000	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	(\$PNTF	

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PRINTING SPEED MEASUREMENT

2233	021100	062706	000004	ADD	#4,SP	
2234	021104			OUTPUT	#LPM96+4,#42...LUNIT	
2235	021146			OUTPUT	#OUTBUF,#1...LUNIT	
2236	021210	000137	021520	ELSE		
	021214			JMP	50227\$	
	021214			50226\$:		
	021214	032762	001000	IF	#FLAG26 SETIN STATUS(R2) AND #FLAG07 NOTSETIN STATUS(R2) THEN	
	021222	001002	002512	BIT	#FLAG26,STATUS(R2)	
	021224	000137	021374	BNE	+.5	
	021230	032762	002000	JMP	50230\$	
	021236	001402		BIT	#FLAG07,STATUS(R2)	
	021240	000137	021374	BEQ	+.6	
	021244			JMP	50230\$	
2237	021244	012746	023726	PRINTF	#L26M96	
	021250	012746	000001	MOV	#L26M96,-(SP)	
	021254	010600		MOV	#1,-(SP)	
	021256	104417		MOV	SP,R0	
	021260	062706	000004	TRAP	C\$PNTF	
2238	021264			ADD	#4,SP	
2239	021326			OUTPUT	#L26M96+4,#42...LUNIT	
2240	021370			OUTPUT	#OUTBUF,#1...LUNIT	
	021370	000137	021520	ELSE		
	021374			JMP	50231\$	
2241	021374			50230\$:		
	021374	012746	024070	PRINTF	#L07M96	
	021400	012746	000001	MOV	#L07M96,-(SP)	
	021404	010600		MOV	#1,-(SP)	
	021406	104417		MOV	SP,R0	
	021410	062706	000004	TRAP	C\$PNTF	
2242	021414			ADD	#4,SP	
2243	021456			OUTPUT	#L07M96+4,#42...LUNIT	
2244	021520			OUTPUT	#OUTBUF,#1...LUNIT	
	021520			ENDIF		
2245	021520			50231\$:		
	021520			ENDIF		
2246	021520			50227\$:		
	021520			ENDIF		
2247	021520			50223\$:		
	021520	005072	002356	LET	@LPCSR(R2) := #0	:DISABLE INTERRUPTS IN CASE OF MANUAL TEST CASE
2248	021524	177777		CLR	@LPCSR(R2)	
2249	021524	005037	002276	\$BRJMP=-1		
	021530			LET	LINCNT := #0	:CLEAR LINE COUNTER
2250	021530	012737	000074	CLR	LINCNT	
	021536	004737	021742	LET	TICK := #60.	:SET UP INITIAL CLOCK VALUE
2251	021542			MOV	#60.,TICK	
2252	021542	005337	002314	JSR	PC,REPLUP	:DO THE OUTPUT
2253	021546	002402		LET	LUNIT := LUNIT - #1	
	021550	000137	020212	DEC	LUNIT	
2254	021554			IFCOND	GE THEN	
	021554			BLT	50232\$	
2255	021554			JMP	11\$	
2256	021554			ENDIF		
2257	021554			50232\$:		
2258	021554	023727	002322	END4:	IF CLK TYP EQ #3 THEN	
	021554		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			BNE	50233\$	
	021564				SETPRI	#PRI07	
	021564	012700	000340		MOV	#PRI07,R0	
	021570	104441			TRAP	C\$SPRI	
2260	021572				CLRVEC	CLKVEC	
	021572	013700	002332		MOV	CLKVEC,R0	
	021576	104436			TRAP	C\$CVEC	
2261	021600				LET	@CLKCSR := #00	
	021600	012777	000000	160520	MOV	#00,@CLKCSR	
2262	021606				ENDIF		
	021606				50233\$:		
2263	021606				IF	CLKTYP EQ #2 THEN	
	021606	023727	002322	000002	CMP	CLKTYP,#2	
	021614	001021			BNE	50234\$	
2264	021616				SETPRI	#PRI07	
	021616	012700	000340		MOV	#PRI07,R0	
	021622	104441			TRAP	C\$SPRI	
2265	021624				SETVEC	CLKVEC,#IGNORE,#PRI06	
	021624	012746	000300		MOV	#PRI06,-(SP)	
	021630	012746	010000		MOV	#IGNORE,-(SP)	
	021634	013746	002332		MOV	CLKVEC,-(SP)	
	021640	012746	000003		MOV	#3,-(SP)	
	021644	104437			TRAP	C\$SVEC	
	021646	062706	000010		ADD	#10,SP	
2266	021652				LET	@CLKCSR := #00	
	021652	012777	000000	160446	MOV	#00,@CLKCSR	
2267	021660				ENDIF		
	021660				50234\$:		
2268	021660				SETPRI	#PRI00	
	021660	012700	000000		MOV	#PRI00,R0	
	021664	104441			TRAP	C\$SPRI	
2269	021666				LET	OUTBUF :B= #14	
	021666	112737	000014	003160	MOVB	#14,OUTBUF	
2270	021674				OUTPUT	#OUTBUF,#1	
2271	021736				EXIT	TST	
	021736	104432			TRAP	C\$EXIT	
	021740	003314			.WORD	L10013-	
2272					:		
2273					:		
2274					:	THIS IS SUBROUTINED TO DECREASE THE SIZE OF THE INITIAL INCREMENT LOOP.	
2275					:		
2276					:		
2277	021742				REPLUP:		
2278	021742				IF	CLKTYP EQ #4 THEN	
	021742	023727	002322	000004	CMP	CLKTYP,#4	
	021750	001124			BNE	50235\$	
2279	021752				PRINTF	#OFFLIN	
	021752	012746	023146		MOV	#OFFLIN,-(SP)	
	021756	012746	000001		MOV	#1,-(SP)	
	021762	010600			MOV	SP,R0	
	021764	104417			TRAP	C\$PNTF	
	021766	062706	000004		ADD	#4,SP	
2280	021772				LET	FLAG := #0	
	021772	005037	002274		CLR	FLAG	
2281	021776				GMANIL	READY,FLAG,100000,YES	
	021776	104443			TRAP	C\$GMAN	
	022000	000404			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	
	022012		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					
	022106	032772	100000 002356	50236\$:	BIT	#BIT15,@LPCSR(R2)
	022114	001402		BEQ	50237\$	
2286	022116	000240			NOP	
2287	022120			ENDDO		
	022120	000772		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					
	022126	032772	100000 002356	50240\$:	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					
	022146	005703		50242\$:	TST	R3
	022150	003417		BLE	50243\$	
2293	022152			WHILE	#BIT7 NOTSETIN @LPCSR(R2) DO	; WAIT FOR READY
	022152					
	022152	032772	000200 002356	50244\$:	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\$:	ENDDO	
	022176	000765		BR	50244\$	
2298	022200			50245\$:	LET @LPBUF(R2) :B= (R5)+ ; PUT CHAR INTO LP BUFFER	
	022200	112572	002452	MOVB	(R5)+, @LPBUF(R2)	
2299	022204				LET R3 :- R3 - #1 ; DECREMENT CHAR COUNTER	
	022204	005303		DEC	R3	
2300	022206				ENDDO	
	022206	000757		BR	50242\$	
	022210			50243\$:		
2301	022210				BREAK ; ALLOW CTL-C ABORT	
	022210	104422		TRAP	C\$BRK	
2302	022212				LET LINCNT :- LINCNT + #1	
	022212	005237	002276	INC	LINCNT	
2303	022216				ENDDO	
	022216	000743		BR	50240\$	
	022220			50241\$:		
2304	022220			ELSE		
	022220	000445		BR	50247\$	
	022222			50235\$:		
2305	022222				IF CLKTYP EQ #3 THEN	
	022222	023727	002322 000003	CMP	CLKTYP, #3	
	022230	001003		BNE	50250\$	
2306	022232				LET @CLKSET := #1666. ; 1/60 SEC.	
	022232	012777	003202 160070	MOV	#1666., @CLKSET	
2307	022240				ENDIF	
	022240			50250\$:		
2308	022240				LET @CLKCSR := CLKENA ; ENABLE THE CLOCK TO DO ITS THING	
	022240	013777	002334 160060	MOV	CLKENA, @CLKCSR	
2309	022246				LET TIME := #0	
	022246	005037	036672	CLR	TIME	
2310	022252				LET LINCNT := #0	
	022252	005037	002276	CLR	LINCNT	
2311	022256				WHILE TIME LT PERIOD DO ; REPEAT UNTIL TIME EXHAUSTED	
	022256			50251\$:		
	022256	023737	036672 002266	CMP	TIME, PERIOD	
	022264	002023		BGE	50252\$	
2312	022266				LET R5 := BNDPAT	
	022266	013705	023040	MOV	BNDPAT, R5	
2313	022272				LET R3 := WORK	
	022272	013703	003154	MOV	WORK, R3	
2314	022276				WHILE R3 GT #0 DO ; SEND R3 CHARACTERS	
	022276			50253\$:		
	022276	005703		TST	R3	
	022300	003412		BLE	50254\$	
2315	022302				WHILE #BIT7 NOTSETIN @LPCSR(R2) DO ; WAIT FOR READY	
	022302			50255\$:		
	022302	032772	000200 002356	BIT	#BIT7, @LPCSR(R2)	
	022310	001002		BNE	50256\$	
2316	022312				NOP	
2317	022314				ENDDO	
	022314	000772		BR	50255\$	
	022316			50256\$:		
2318	022316				LET @LPBUF(R2) :B= (R5)+ ; PUT DATA INTO BUFFER	
	022316	112572	002452	MOVB	(R5)+, @LPBUF(R2)	
2319	022322				LET R3 := R3 - #1 ; DECREMENT 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				BR	ENDDO	
	022324	000764				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							
2327							
2328							
2329	022334						
	022334	023727	002322	000004	IF CLKTYP EQ #4 THEN		
	022342	001020			CMP	CLKTYP, #4	
2330	022344				BNE	50257\$	
	022344	005037	002274		LET FLAG := #0		:CLEAR <CR> FLAG
2331	022350				CLR	FLAG	
	022350	012746	024151		PRINTF #RESTOR		
	022354	012746	000001		MOV	#RESTOR, -(SP)	
	022360	010600			MOV	#1, -(SP)	
	022362	104417			MOV	SP, R0	
	022364	062706	000004		TRAP	C\$PNTF	
2332	022370				ADD	#4, SP	
	022370	104443			GMANIL READY, FLAG, 100000, YES		:WAIT FOR OPERATOR
	022372	000404			TRAP	C\$GMAN	
	022374	002274			BR	10001\$	
	022376	000130			.WORD	FLAG	
	022400	007603			.WORD	T\$CODE	
	022402	100000			.WORD	READY	
	022404				.WORD	100000	
2333	022404				10001\$:		
	022404				ENDIF		
2334	022404	012777	000000	157714	50257\$:		
2335					MOV	#00, @CLKCSR	
2336							
2337							
2338	022412						
	022412	013746	002314		PRINTB	#LINPER, LINCNT, LUNIT	
	022416	013746	002276		MOV	LUNIT, -(SP)	
	022422	012746	023101		MOV	LINCNT, -(SP)	
	022426	012746	000003		MOV	#LINPER, -(SP)	
	022432	010600			MOV	#3, -(SP)	
	022434	104414			MOV	SP, R0	
	022436	062706	000010		TRAP	C\$PNTB	
2339	022442				ADD	#10, SP	
	022442	013746	002276		PUSH	LINCNT, #OUTBUF+1	: CONVERT LINE COUNT TO ASCII
	022446	012746	003161		MOV	LINCNT, -(SP)	
2340	022452	004737	004550		MOV	#OUTBUF+1, -(SP)	
2341	022456				JSR	PC, BIN2DA	
	022456				WHILE #BIT7 NOTSETIN @LPCSR(R2) DO		:WAIT FOR READY
	022456	032772	000200	002356	50260\$:		
	022464	001001			BIT	#BIT7, @LPCSR(R2)	
					BNE	50261\$	

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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	
2359	023026	000207			50263\$:	
2360					RTS PC	;GO BACK AND DO IT AGAIN
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:	.ASCIIZ /%N%D3%A LINES PRINTED ON LUNIT %D2%N/
2376	023146	045	116	045	OFFLIN:	.ASCIIZ /%N%AINSURE PRINTER(S) OFF LINE./
2377	023206	045	116	045	ONLIN1:	.ASCIIZ /%N%APLACE LUNIT %D2%A ON LINE TO INITIATE TIME PERIOD FOR MANUAL/
2378	023307	045	116	045	ONLIN2:	.ASCIIZ /%N%APRINTING SPEED MEASUREMENT AND BACK OFF LINE TO TERMINATE/
2379	023405	045	116	045	ONLIN3:	.ASCIIZ /%N%ATHE TIME INTERVAL.%N/
2380	023436	120	122	111	PRTSPD:	.ASCIIZ /PRINTING SPEED MEASUREMENT TEST 4/<12><12><12>
2381	023503	045	116	045	LPM64:	.ASCIIZ /%N%A64 CHARACTER BAND SHOULD PRINT AT 285 LPM.%N/
2382	023564	045	116	045	LPM96:	.ASCIIZ /%N%A96 CHARACTER BAND SHOULD PRINT AT 204 LPM.%N/
2383	023645	045	116	045	L26M64:	.ASCIIZ /%N%A64 CHARACTER BAND SHOULD PRINT AT 600 LPM.%N/
2384	023726	045	116	045	L26M96:	.ASCIIZ /%N%A96 CHARACTER BAND SHOULD PRINT AT 450 LPM.%N/
2385	024007	045	116	045	L07M64:	.ASCIIZ /%N%A64 CHARACTER BAND SHOULD PRINT AT 1220 LPM.%N/
2386	024070	045	116	045	L07M96:	.ASCIIZ /%N%A96 CHARACTER BAND SHOULD PRINT AT 888 LPM.%N/
2387	024151	045	116	045	RESTOR:	.ASCIIZ /%N%ACLEAR PRINTER(S) AND PLACE ON LINE.%N/

CZLPD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 26-10
PRINTING SPEED MEASUREMENT

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2388 .LIST BEX
2389 .EVEN
2390 :64 CHARACTER BAND PATTERN 285 LPM / 600 LPM.
2391 :
2392 .SBTTL PRINT SPEED TEST PATTERNS
2393 .NLIST BEX
2394 TABA64: .BYTE 105,061,104,075,064,041,103,136,102,060,163
2395 .BYTE 042,062,134,054,124,101,133,101,133,043,135
2396 .BYTE 041,105,061,100,075,077,041,056,136,074,060
2397 .BYTE 076,042,073,042,073,134,055,124,044,133,057
2398 .BYTE 135,054,105,072,100,050,077,052,056,051,056
2399 .BYTE 051,074,046,076,071,073,045,055,053,044,137
2400 .BYTE 057,070,054,132,072,131,072,131,050,067,052
2401 .BYTE 130,051,127,046,066,071,126,045,125,053,065
2402 .BYTE 137,123,137,123,070,122,132,121,131,064,067
2403 .BYTE 120,130,117,124,063,066,116,126,115,126,115
2404 .BYTE 125,062,065,114,123,113,122,061,121,112,064
2405 .BYTE 111,120,110,117,060,117,060,063,107,116,106,012,015
2406
2407 :
2408 :96 CHARACTER BAND TABLE 204 LPM. / 450 LPM.
2409 :MINIMUM PRINT SPEED PATTERN 96 CHARACTER BAND
2410 TABA96: .BYTE 061,055,144,047,143,043,142,041,060,052,100
2411 .BYTE 075,140,174,176,041,056,054,056,054,136,042
2412 .BYTE 176,134,173,133,175,135,055,164,047,100,043
2413 .BYTE 077,041,074,041,074,052,062,075,076,174,073
2414 .BYTE 041,053,054,071,042,057,134,072,133,050,133
2415 .BYTE 050,135,051,164,070,100,046,124,045,123,044
2416 .BYTE 122,067,064,137,073,132,073,132,053,131,071
2417 .BYTE 066,057,130,072,127,050,120,151,125,070,065
2418 .BYTE 046,124,046,124,045,123,044,122,067,064,137
2419 .BYTE 121,132,120,131,117,066,063,130,116,130,116
2420 .BYTE 127,115,126,114,125,113,065,062,124,112,123
2421 .BYTE 111,122,110,064,061,064,061,121,107,102,106,012,015
2422
2423 :
2424 : 64 CHARACTER BAND PATTERN FOR LP07, 1220 LPM
2425 TB0764: .BYTE 137,136,135,134,133,132,131,130,127,126,125
2426 .BYTE 124,123,122,121,120,117,116,115,114,113,112
2427 .BYTE 111,110,107,106,105,104,103,102,101,100,077
2428 .BYTE 076,075,074,073,072,071,070,067,066,065,064
2429 .BYTE 063,062,061,060,057,056,055,054,053,052,051
2430 .BYTE 050,047,046,045,044,043,042,041,137,136,135
2431 .BYTE 134,133,132,131,130,127,126,125,124,123,122
2432 .BYTE 121,120,117,116,115,114,113,112,111,110,107
2433 .BYTE 106,105,104,103,102,101,100,077,076,075,074
2434 .BYTE 073,072,071,070,067,066,065,064,063,062,061
2435 .BYTE 060,057,056,055,054,053,052,051,050,047,046
2436 .BYTE 045,044,043,042,041,137,136,135,134,132,131,012,015
2437
2438 :
2439 : 96 CHARACTER BAND PATTERN FOR LP07 888 LPM
2440 TB0796: .BYTE 177,176,175,174,173,172,171,170,167,166,165
2441 .BYTE 164,163,162,161,160,157,156,155,154,153,152
2442 .BYTE 151,150,147,146,145,144,143,142,141,140,137
2443 .BYTE 136,135,134,133,132,131,130,127,126,125,124
2444 .BYTE 123,122,121,120,117,116,115,114,113,112,111

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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					BGNMOD
2462	025256				++
2463					:THIS TEST CHECKS THE DATA TRANSFER
2464					:PATHS FROM THE PROCESSOR INTERFACE
2465					:TO THE PPINTER OUTPUT. AN ALTERNATING
2466					:PATTERN OF ONES AND ZEROES CORRESPONDING
2467					:TO AN ALTERNATING STRING OF '*' AND
2468					: 'U' CHARACTERS ARE TRANSMITTED ON THE
2469					: FULL 132 COLUMNS. AFTER 16 LINES OF
2470					: THIS PATTERN, THE OUTPUT PATTERN IS
2471					: SWITCHED TO AN ALTERNATING PATTERN
2472					: OF '?' AND 'a' CHARACTERS FOR ANOTHER
2473					: 16 LINES.
2474					:--
2475					
2476					
2477	025256				3GNTST 5
	025256				IS::
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	105137	025636		COMB CHAR
2491	025432				LET CHAR :B= CHAR CLR.BY #200
	025432	142737	000200	025636	BICB #200,CHAR

72LPD0 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		MOV8 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		MOV8 #15, (R4)+
2497	025464				LET (R4) :B= #12
	025464	112714	000012		MOV8 #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	MOV8 #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          .SBTTL PRINTABLE CHARACTERS
2520 025702    BGNMOD
2521          :++
2522          : THIS TEST WILL PRINT A FULL LINE OF EACH PRINTABLE CHARACTER.
2523          : BAND TYPE IS CHECKED ON A UNIT BY UNIT BASIS.
2524          : UNITS WITH 96 CHAR BAND WILL BE SENT THE CHARACTER CODES :
2525          : 140(8) THRU 176(8).
2526          :--
2527
2528 025702    BGNIST 6
2529 025702    T6::
2530 025702    OUTPUT #PRTCHR, #30.          ; PRINT TEST ID
2531          :
2532          : PRINT ALL UPPER CASE CHARACTERS ON ALL UNITS
2533          :
2534 025744      INCR WORK FROM #40 TO #137 BY #1
2535 025744      MOV      #40,WORK
2536 025752      BR      50277$
2537 025754      50300$: INC      WORK
2538 025754      50277$: CMP      WORK,#137
2539 025760      BGT      50301$
2540 025766      LET R4 := #OUTBUF
2541 025770      MOV      #OUTBUF,R4
2542 025770      INCR COUNT FROM #1 TO #132. BY #1
2543 025774      MOV      #1,COUNT
2544 025774      BR      50302$
2545 026002      50303$: INC      COUNT
2546 026004      50302$: CMP      COUNT,#132.
2547 026010      BGT      50304$
2548 026010      LET (R4)+ :B= WORK
2549 026016      MOV      WORK,(R4)+
2550 026020      ENDDINC
2551 026020      BR      50303$
2552 026024      50304$: LET (R4)+ :B= #LF
2553 026026      MOV      #LF,(R4)+
2554 026032      OUTPUT #OUTBUF,#133.
2555 026032      JSR PC,QUIET
2556 026074      ENDDINC
2557 026100      BR      50300$
2558 026100      50301$:
2559 026102      :
2560 026102      : NOW DO ALL THE LOWER CASE CHARACTERS ON THOSE UNITS
2561 026102      : EQUIPPED WITH 96 CHARACTER BANDS.
2562 026102      :
2563 026102      : FIRST DETERMINE IF ANY UNITS HAVE 96 CHAR BANDS
2564 026102      :
2565 026102      LET WORK := #0          ; COUNTER FOR 96 CHAR UNITS
2566 026102      CLR      WORK
2567 026106      LET WORK1 := L$UNIT - #1 ; GET UNIT COUNT
2568 026106      MOV      L$UNIT,WORK1
2569 026114      DEC      WORK1
2570 026114      005037 003154
2571 026106      013737 002012 003156
2572 026114      005337 003156

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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 SET IN 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 ?
	026166				TST WORK
	026166	005737	003154		BNE 50311\$
	026172	001026			LET OUTBUF := #14
2558	026174				MOVB #14, OUTBUF
	026174	112737	000014	003160	OUTPUT #OUTBUF, #1
2559	026202				EXIT TST ; ALL UNITS 64 CHAR...EXIT
2560	026244				TRAP C\$EXIT
	026244	104432			.WORD L10015-
	026246	000330			ENDIF
2561	026250				50311\$: ; SETUP FOR LOWER CASE CHARACTERS DISPLAY
2562	026250				;
2563					INCR WORK FROM #140 TO #176 BY #1
2564	026250	012737	000140	003154	MOV #140, WORK
	026256	000402			BR 50312\$
	026260				50313\$: INC WORK
	026260	005237	003154		50312\$: CMP WORK, #176
	026264				BGT 50314\$
	026264	023727	003154	000176	LET R4 := #OUTBUF
	026272	003073			MOV #OUTBUF, R4
2565	026274				INCR COUNT FROM #1 TO #132. BY #1
	026274	012704	003160		MOV #1, COUNT
2566	026300				BR 50315\$
	026300	012737	000001	002302	50316\$: INC COUNT
	026306	000402			50315\$: CMP COUNT, #132.
	026310				BGT 50317\$
	026310	005237	002302		LET (R4)+ := #WORK
	026314				MOVB WORK, (R4)+
	026314	023727	002302	000204	ENDIF
	026322	003003			BR 50316\$
2567	026324				50317\$:
	026324	113724	003154		
2568	026330				
	026330	000767			
	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			50320\$:	
	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					

CZLMLD0 LP25, LP26, LP07 TEST MACRO M113 30-DEC-80 09:36 PAGE 32
NON-PRINTABLE CHARACTERS

2591					.SBTTL NON-PRINTABLE CHARACTERS
2592					BGNMOD
2593	026600				***
2594					: THIS TEST CHECKS FOR DETECTION OF ALL NON-PRINTABLE CHARACTERS.
2595					: EACH CHARACTER WILL APPEAR ON THE PRINTER OUTPUT IN THE FORM OF ITS OCTAL
2596					: CODE ACCOMPANIED WITH ITS MNEMONIC.
2597					: 123 OF THE TESTED CODE ARE THEN SENT.
2598					: ALSO, ON PRINTERS WITH 64 CHARACTER BANDS, IT CHECKS TO
2599					: MAKE SURE THAT CODES 140 THRU 177 ARE CONVERTED TO CODES 100 THRU 137.
2600					: --
2601					
2602					
2603	026600				BGNIST 7
	026600				T7::
2604					: INDICATE TEST CURRENTLY BEING DONE
2605					
2606	026600				OUTPUT #NONCHR, #71.
2607	026642				LET R4 := #NONBUF
	026642	012704	027721		MOV #NONBUF, R4
2608	026646				LET WORK1 := #27.
	026646	012737	000033	003156	MOV #27., WORK1
2609					:
2610					: DO ONE LINE FOR EACH TABLE ENTRY
2611					:
2612	026654				INCR LINCNT FROM #0 TO WORK1 BY #1
	026654	005037	002276		CLR LINCNT
	026660	000402			BR 50324\$
	026662				50325\$:
	026662	005237	002276		INC LINCNT
	026666				50324\$:
	026666	023737	002276	003156	CMP LINCNT, WORK1
	026674	003061			BGT 50326\$
2613	026676				LET R3 := #OUTBUF
	026676	012703	003160		MOV #OUTBUF, R3
2614					:
2615					: MOVE CODE AND MNEMONIC TO PRINT BUFFER
2616					:
2617	026702				INCR WORK FROM #1 TO #8. BY #1
	026702	012737	000001	003154	MOV #1, WORK
	026710	000402			BR 50327\$
	026712				50330\$:
	026712	005237	003154		INC WORK
	026716				50327\$:
	026716	023727	003154	000010	CMP WORK, #8.
	026724	003002			BGT 50331\$
2618	026726				LET (R3)+ :=B (R4)+
	026726	112423			MOVB (R4)+, (R3)+
2619	026730				ENDINC
	026730	000770			BR 50330\$
	026732				50331\$:
2620					:
2621					: PUT 120 BYTES OF CODE INTO PRINT BUFFER
2622					:
2623					:
2624	026732				INCR WORK FROM #1 TO #123. BY #1
	026732	012737	000001	003154	MOV #1, WORK
	026740	000402			BR 50332\$

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

2625	026742	005237	003154	50333\$:	INC	WORK	
	026742			50332\$:	CMP	WORK, #123.	
	026746	023727	003154		BGT	50334\$	
	026754	003002	000173		LET	(R3)+ :B- (R4)	
	026756	111423			MOVB	(R4), (R3)+	
2626	026760				ENDINC		
	026760	000770			BR	50333\$	
	026762			50334\$:			
2627				:			
2628				:	FOLLOWED BY CRLF		
2629				:			
2630				:			
2631	026762				LET	(R3)+ :B= #15	
	026762	112723	000015		MOVB	#15, (R3)+	
2632	026766				LET	(R3)+ :B= #12	
	026766	112723	000012		MOVB	#12, (R3)+	
2633				:	PRINT LINE OF OCTAL CODE, MNEMONIC, AND 120 BYTES (NONPRINTABLE CODE)		
2634				:			
2635				:			
2636	026772				OUTPUT	#OUTBUF, #133.	
2637	027034				LET	R4 := R4 + #1	
	027034	005204			INC	R4	
2638	027036				ENDINC		
	027036	000711			BR	50325\$	
	027040			50326\$:			
2639				:			
2640				:	UNITS WITH 64 CHAR BAND SHOULD STRIP BIT 6 OF DATA		
2641				:	AND PRINT THE DATA FOR CODES 140(8) THRU 177(8)		
2642				:	AS IF CODES 100(8) THRU 137(8) WERE RECEIVED.		
2643				:	**NOTE** DELETE IS PRINTED AS UNDERSCORE '_'		
2644				:			
2645	027040				LET	R3 := #OUTBUF	
	027040	012703	003160		MOV	#OUTBUF, R3	
2646	027044				INCR	R4 FROM #140 TO #177 BY #1	
	027044	012704	000140		MOV	#140, R4	
	027050	000401			BR	50335\$	
	027052			50336\$:			
	027052	005204			INC	R4	
	027054			50335\$:			
	027054	020427	000177		CMP	R4, #177	
	027060	003002			BGT	50337\$	
2647	027062				LET	(R3)+ :B= R4 ; FILL BUFFER WITH CODES & LF	
	027062	110423			MOVB	R4, (R3)+	
2648	027064				ENDINCR		
	027064	000772			BR	50336\$	
	027066			50337\$:			
2649	027066				LET	(R3)+ :B= #LF	
	027066	112723	000012		MOVB	#LF, (R3)+	
2650	027072				LET	WORK := L\$UNIT - #1 ; SEND MSG AND BUFFER TO ALL	
	027072	013737	002012	003154	MOV	L\$UNIT, WORK	
	027100	005337	003154		DEC	WORK	
2651	027104				INCR	LUNIT FROM #0 TO WORK BY #1 ; UNITS WITH 64 CHAR BAND	
	027104	005037	002314		CLR	LUNIT	
	027110	000402			BR	50340\$	
	027112			50341\$:			

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

2652	027112	005237	002314		50340\$:	INC	LUNIT	
	027116			003154		CMP	LUNIT,WORK	
	027116	023737	002314			BGT	50342\$	
	027124	003073				LET	R2 := LUNIT SHIFT 1	
	027126					MOV	LUNIT,R2	
	027126	013702	002314			ASL	R2	
	027132	006302				IF	#FLAG96 NOTSETIN STATUS(R2) THEN	
2653	027134					BIT	#FLAG96,STATUS(R2)	
	027134	032762	010000	002512		BNE	50343\$	
	027142	001063				OUTPUT	#AUTSEC,#77...LUNIT	
2654	027144					OUTPUT	#AUTCON,#61...LUNIT	
2655	027206					OUTPUT	#OUTBUF,#33...LUNIT	
2656	027250					ENDIF		
2657	027312				50343\$:			
	027312					ENDINCR		
2658	027312					BR	50341\$	
	027312	000677			50342\$:			
	027314					LET	OUTBUF :B= #14	
2659	027314					MOVB	#14,OUTBUF	
	027314	112737	000014	003160		OUTPUT	#OUTBUF,#1	
2660	027322					EXIT	TST	:AND EXIT TEST
2661	027364					TRAP	C\$EXIT	
	027364	104432				.WORD	L10016-	
	027366	000730						

: CHARACTER BUFFER AND TEST HEADER MESSAGE

: NLIST BEX

2666	027370	116	117	116	NONCHP:	.ASCII	/NON-PRINTABLE CHARACTERS TEST 07/<12>
2667	027431	101	040	106		.ASCII	/A FULL LINE OF EACH CODE WILL BE SENT/<12>
2668	027500	124	110	111	AUTSEC:	.ASCII	/THIS SECTION CHECKS AUTOMATIC CONVERSION ON PRINTERS WITH 64 CHARACTER BAND
2669	027616	103	117	104	AUTCON:	.ASCII	/CODES 140(8) ..177(8) SHOULD BE CONVERTED TO 100(8)..137(8)/<12><12>
2670	027714	015	012	012	SKIP3:	.ASCII	<15><12><12><12>
2671							
2672	027721	040	060	060	NONBUF:	.ASCII	/ 000 NUL/<0>
2673	027732	040	060	060		.ASCII	/ 001 SOH/<1>
2674	027743	040	060	060		.ASCII	/ 002 STX/<2>
2675	027754	040	060	060		.ASCII	/ 003 ETX/<3>
2676	027765	040	060	060		.ASCII	/ 004 EOT/<4>
2677	027776	040	060	060		.ASCII	/ 005 ENQ/<5>
2678	030007	040	060	060		.ASCII	/ 006 ACK/<6>
2679	030020	040	060	060		.ASCII	/ 007 BEL/<7>
2680	030031	040	060	061		.ASCII	/ 010 BS /<10>
2681	030042	040	060	061		.ASCII	/ 011 HT /<11>
2682	030053	040	060	061		.ASCII	/ 016 SO /<16>
2683	030064	040	060	061		.ASCII	/ 017 SI /<17>
2684	030075	040	060	062		.ASCII	/ 020 DLE/<20>
2685	030106	040	060	062		.ASCII	/ 021 XON/<21>
2686	030117	040	060	062		.ASCII	/ 022 DC2/<22>
2687	030130	040	060	062		.ASCII	/ 023 XOF/<23>
2688	030141	040	060	062		.ASCII	/ 024 DC4/<24>
2689	030152	040	060	062		.ASCII	/ 025 NAK/<25>
2690	030163	040	060	062		.ASCII	/ 026 SYN/<26>
2691	030174	040	060	062		.ASCII	/ 027 ETB/<27>
2692	030205	040	060	063		.ASCII	/ 030 CAN/<30>
2693	030216	040	060	063		.ASCII	/ 031 EM /<31>
2694	030227	040	060	063		.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					.EVEN			
2701								
2702					.LIST BEX			
2703	030316				ENDTST			
	030316				L10016:			
	030316	104401			TRAP		CSETST	
2704								
2705	030320				ENDMOD			
2706								

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

2708
2709 030320
2710
2711
2712
2713
2714
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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	030510				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 NOTSETIN 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 NOTSETIN STATUS(R2) AND #FLAG07 NOTSETIN 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
2776 030704                                50352$:
030704                                IF #FLAG26 SETIN STATUS(R2) AND #FLAG07 NOTSETIN STATUS(R2) THEN
030712 032762 001000 002512                BIT    #FLAG26,STATUS(R2)
030714 001425                                BEQ    50353$
030722 032762 002000 002512                BIT    #FLAG07,STATUS(R2)
030722 001021                                BNE    50353$
2777 030724                                OUTPUTI #BPID26,#6,,LUNIT      ; PRINTER IS LP26
2778 030766                                ENDIF
2779 030766                                50353$:
030766                                IF #FLAG96 SETIN STATUS(R2) THEN
030774 032762 010000 002512                BIT    #FLAG96,STATUS(R2)
030774 001422                                BEQ    50354$
2780 030776                                OUTPUTI #BP96ID,#22,,,LUNIT      ; 96 CHAR BAND
2781 031040                                ELSE
031040 000421                                BR      50355$
2782 031042                                50354$:
031042                                OUTPUTI #BP64ID,#22,,,LUNIT      ; 64 CHAR BAND
2783 031104                                ENDIF
2784 031104                                50355$:
031104                                50351$:
2785 031104                                ENDINC
031104 000611                                BR      50347$
031106                                50350$:
2786                                ;
2787                                ; NOW PRINT 2_LINE PATTERN 15. TIMES, WITH BLANK LINE BETWEEN PATTERNS
2788                                ;
2789 031106                                LET LINCNT := #14.
031106 012737 000016 002276                MOV    #14,,LINCNT
2790 031114                                2$:
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

```

CZLP1D0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 33-3
BAND PATTERN

```

2799 031300
      031300 000421
      031302
2800 031302
2801 031344
      031344
2802 031344
      031344
2803 031344
      031344
2804 031344
      031344 000666
      031346
2805 031346
2806 031346 005037 002314
      031352 000402
      031354
      031354 005237 002314
      031360
      031360 023701 002314
      031364 003057
2807 031366
      031366 013702 002314
      031372 006302
2808 031374
      031374 032762 002000 002512
      031402 001047
2809 031404
      031404 032762 010000 002512
      031412 001022
2810 031414
2811 031456
      031456 000421
      031460
2812 031460
2813 031522
      031522
2814 031522
      031522
2815 031522
      031522 000714
      031524
2816 031524
      031524 005337 002276
2817 031530 001402
2818 031532 000137 031114
2819 031536
2820
2821
2822 031536
      031536 112727 000014 003160
2823 031544
      031544 005037 002314
      031550 000402
      031552
      031552 005237 002314

```

```

ELSE
50364$: BR 50365$
      OUTPUT #BP96Q1, #121..., LUNIT ; LP26 96 CHAR PATTERN
ENDIF
50365$:
      ENDIF
50363$:
      ENDIF
50361$:
      ENDIF
50360$: BR ENDINC 50357$
      ; NOW DO QUADRANTS 3 & 4
      INCR LUNIT FROM #0 TO R1 BY #1 ; REPEAT FOR ALL UNITS
      CLR LUNIT
      BR 50366$
50367$: INC LUNIT
50366$: CMP LUNIT, R1
      BGT 50370$
      LET R2 := LUNIT SHIFT 1 ; INDEX INTO STATUS TABLES
      MOV LUNIT, R2
      ASL R2
      IF #FLAG07 NOTSET IN STATUS(R2) THEN
      BIT #FLAG07, STATUS(R2)
      BNE 50371$
      IF #FLAG96 NOTSET IN STATUS(R2) THEN
      BIT #FLAG96, STATUS(R2)
      BNE 50372$
      OUTPUT #BP64Q3, #122..., LUNIT ; 64 CHAR PATTERN
      ELSE
      OUTPUT #BP96Q3, #122..., LUNIT ; 96 CHAR PATTERN
      ENDIF
50372$: BR 50373$
50373$:
      ENDIF
50371$:
      ENDINC
      BR 50367$
50370$: LET LINCNT := LINCNT - #1
      DEC LINCNT
      BEQ 3$
      JMP 2$
3$:
      ; DO TOP THEN EXIT ON ALL UNITS EXCEPT LP07'S
      LET #OUTBUF :B= #14
      MOVB #14, #OUTBUF
      INCR LUNIT FROM #0 TO R1 BY #1
      CLR LUNIT
      BR 50374$
50375$: INC LUNIT

```

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

031556				50374\$:	
031556	023701	002314		CMP	LUNIT,R1
031562	003031			BGT	50376\$
2824 031564					LET R2 := LUNIT SHIFT 1
031564	013702	002314		MOV	LUNIT,R2
031570	006302			ASL	R2
2825 031572					IF #FLAG07 NOTSET IN STATUS(R2) THEN
031572	032762	002000	002512	BIT	#FLAG07,STATUS(R2)
031600	001021			BNE	50377\$
2826 031602					OUTPUT #OUIBUF,#1,,LUNIT
2827 031644					ENDIF
031644				50377\$:	
2828 031644				ENDINC	
031644	000742			BR	50375\$
031646				50376\$:	
2829				EXIT TST	
2830 031646				TRAP	C\$EXIT
031646	104432			WORD	L10017-
031650	001146				
2831				.NLIST BEX	
2832 031652	045	116	045	NO07:	.ASCII /%N%ABAND PATTERN TEST DOES NOTHING ON LP07'S%N/
2833 031731	102	101	116	BNDTST:	.ASCII /BAND PATTERN TEST 08 /
2834 031760	114	120	062	BPID25:	.ASCII /LP25 /
2835 031766	114	120	062	BPID26:	.ASCII /LP26 /
2836 031774	066	064	040	BP64ID:	.ASCII /64 CHAR BAND PATTERN/<12><12>
2837 032022	071	066	040	BP96ID:	.ASCII /96 CHAR BAND PATTERN/<12><12>
2838					
2839				: 64 CHAR BAND PATTERN LP25 & LP26	
2840					
2841 032050	040	040	040	BP64Q1:	.ASCII /
2842 032060	101	102	105		.ASCII /ABECDTFG0HIJ1KL2MN3OP4QRS5/
2843 032112	125	126	066		.ASCII /UV6WX7YZ8_+&9&)*(:./<57>/&-;><./
2844					
2845 032144	040	040	040	BP64Q2:	.ASCII /
2846 032154	077	100	105		.ASCII /?@E][T\ '0^# = 1!#2'A3BC4DFG5/
2847 032206	110	111	066		.ASCII /HI6JK7LM8NOP9QR*SU,VW-XYZ./<12>
2848					
2849 032241	040	040	040	BP64Q3:	.ASCII /
2850 032251	137	053	105		.ASCII / +E&8T)(0:/<57>/&1;>2<?3@]4[\ '5/
2851 032303	136	043	066		.ASCII /*#6=!7#*8ABC9DF*GH,IJ-KLM./
2852					
2853 032335	040	040	040	BP64Q4:	.ASCII /
2854 032345	116	117	105		.ASCII /NOEPQTRSOJUVW1XY2Z_3+&4&)(5/
2855 032377	072	057	066		.ASCII _:/6&7><8?@]9[\ '*^,#=-!#'. _<12><12>
2856					
2857				: 96 CHAR BAND	LP25 = Q3..Q4 LP26 = Q1..Q4
2858					
2859 032433	040	040	040	BP96Q1:	.ASCII /
2860 032443	101	102	103		.ASCII /ABCD0EFG1HIJ2KLMN3OPQ4RST5/
2861 032475	125	126	127		.ASCII /UVWX6YZ_7&8&8)(:/<57>/9+;>/
2862 032522	145				.BYTE 145
2863 032523	074	077	100		.ASCII /<?@/
2864 032526	164				.BYTE 164
2865					
2866 032527	040	040	040	BP96Q2:	.ASCII /
2867 032537	135	133	134		.ASCII /][\ '*^,#/
2868 032545	174				.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	/ABCD8EFG9HIJ/
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	/J[\''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							
2892							
2893	033016						
	033016						
	033016	104401					
2894	033020						

.LIST BEX
.EVEN
ENDTST
L10017:
TRAP C\$ETST
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    MOV      #1,WORK
2918 033070    BR       50400$
2919 033072    50401$: INC      WORK
2920 033076    50400$: CMP     WORK,#132.
2921 033076    BGT      50402$
2922 033104    000001 003154
2923
2924          ;ALSO NUMBER OF PRINTING CHARACTERS
2925 033106    LET R4 :- #OUTBUF
2926 033106    MOV     #OUTBUF,R4
2927 033112    LET SPCCNT : #132. - WORK
2928 033112    MOV     #132.,SPCCNT
2929 033120    SUB     WORK,SPCCNT
2930
2931          ;OUTPUT BUFFER POINTER
2932
2933          ;NUMBER OF SPACES TO FILL IN
2934
2935          :FILL THE OUTPUT BUFFER WITH THE REQUIRED NUMBER OF SPACES
2936
2937          WHILE SPCCNT NE #0 DO
2938 50403$:    TST      SPCCNT
2939          BEQ      50404$
2940          LET (R4)+ :B #40
2941          MOV      #40,(R4)+
2942          LET SPCCNT :- SPCCNT - #1
2943          DEC      SPCCNT
2944          ;SPACE FILL
2945          ;UPDATE FILLER COUNTER
2946          ENDDO
2947          BR       50403$
2948 50404$:    LET CCNT :- #0
2949          CLR      CCNT
2950          LET CHRGEN := #77
2951          MOV      #77,CHRGEN
2952          LET STRCNT := #33.
2953          MOV      #33.,STRCNT
2954          ;FIRST CHARACTER A '?'
2955          ;# OF CHARACTERS IN GROUP
2956          WHILE CCNT LT WORK DO
2957          ;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 ENDIF
033220 50407$: LET (R4)+ :=B- CHRGEN
2939 033220 MOVB CHRGEN,(R4)+
033220 113724 002310 LET CHRGEN := CHRGEN + #1
2940 033224 INC CHRGEN
033224 005237 002310 LET CCNT := CCNT + #1
2941 033230 INC CCNT
033230 005237 002304 LET STRCNT := STRCNT - #1 ;UPDATE POINTERS AND COUNTERS
2942 033234 DEC STRCNT
033234 005337 002306 ENDDO
2943 033240 BR 50405$
033240 000752 50406$:
033242 ;NOW SET UP LINE TERMINATOR AND OUTPUT THE LINE.

2944
2945
2946
2947 033242 LET (R4)+ :=B- #12
033242 112724 000012 MOVB #12,(R4)+
2948 ;OUTPUT THE LINE
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 50402$:
2955 033354 LET OUTBUF :=B- #14
033354 112737 000014 003160 MOVB #14,OUTBUF
2956 033362 OUTPUT #OUTBUF,#1
2957 033424 EXIT TS*
033424 104432 TRAP C$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: .ASCIIZ /SPURIOUS HAMMER FIRING TEST 09/<12><12><12>
2966
2967
2968 .LIST BEX

```

CZLPLD0 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

CZLPLD0 LP25, LP26, LP07 TEST MACRO M113 30-DEC-80 09:36 PAGE 35
PRINT CONTROL

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.

..--

BGNTST 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				50422\$
	034120				50421\$:	BR
	034120	005337	002276			DEC LINCNT
	034124				50422\$:	
	034124	023727	002276	000001		CMP LINCNT, #1
	034132	002002				50423\$
	034134	000137	034204			BGE 50424\$
	034140				50423\$:	JMP
3017	034140					OUTPUT #X11, #10, LUNIT
3018	034202					ENDDECR
	034202	000746			50424\$:	BR 50421\$
	034204					
3019	034204					OUTPUT #OUTBUF, #1, LUNIT
3020	034246					OUTPUT #OUTBUF, #1, LUNIT
3021	034310					LET COUNT := COUNT - #1
	034310	005337	002302			COUNT
3022	034314					IF COUNT GT #0 THEN
	034314	005737	002302			COUNT
	034320	003002				.+6
	034322	000137	034332			BGT 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 .WORD L10021-.
3031 .NLIST BEX
3032 034412 120 122 111 PRTCTL: .ASCII /PRINT CONTROL TEST 10/ <12>
3033 034440 123 110 117 .ASCIIZ /SHOULD SHOW 132 COLUMNS PRINTED/<12><12><15>
3034 034503 045 116 045 NOLP07: .ASCIIZ /%N%APRINT CONTROL TEST DOES NOTHING ON LP07'S.%N/
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 .EVEN
3050 034742 034564 034564 034564 TABLE1: .WORD X0,X0,X0,X0,X0,X0,X0,X0,X1,X1,X1,X1,0
3051 034776 034576 034610 034622 TABLE2: .WORD X1,X2,X3,X4,X5,X6,X7,X8,X9,X0,X1,X2,X3,0
3052 .EVEN
3053
3054 .LIST BEX
3055 035032 104401 ENDTST
035032 L10021:
035032 TRAP C$ETST
3056 035034 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 012737 035344 035342 LET STACHR := #TABSTR ;OUTPUT CHARACTERS
      035076 MOV #TABSTR,STACHR
3078
3079 035104 REPEAT
      035104 50426$:
3080 035104 LET LINCNT := B- @STACHR ;GET A CHARACTER TO OUTPUT
      035104 117737 000232 002276 MOVB @STACHR,LINCNT
3081 035112 LET LINCNT := LINCNT AND #7 ;MAKE THE ASCII TO OCTAL
      035112 013746 002276 MOV LINCNT,-(SP)
      035116 042716 000007 BIC #7,(SP)
      035122 042637 002276 BIC (SP)+,LINCNT
3082 035126 LET R3 := #OUTBUF ;SET UP OUTPUT BUFFER
      035126 012703 003160 MOV #OUTBUF,R3
3083 035132 INCR CCNT FROM #1 TO #132. BY #1
      035132 012737 000001 002304 MOV #1,CCNT
      035140 000402 BR 50427$
      035142 50430$:
      035142 005237 002304 INC CCNT
      035146 50427$:
      035146 023727 002304 000204 CMP CCNT,#132.
      035154 003003 BGT 50431$
3084 035156 LET (R3)+ := B- @STACHR ;PUT CHARACTER IN OUTPUT BUFFER
      035156 117723 000160 MOVB @STACHR,(R3)+
3085 035162 ENDINC
      035162 000767 BR 50430$
      035164 50431$:
3086 035164 LET R4 := #0
      035164 005004 CLR R4
3087 035166 WHILE R4 NE LINCNT DO
      035166 50432$:
      035166 020437 002276 CMP R4,LINCNT
      035172 001404 BEQ 50433$
3088 035174 LET (R3)+ := B- #12 ;FILL WITH LINE FEEDS
      035174 112723 000012 MOVB #12,(R3)+
3089 035200 LET R4 := R4 + #1
      035200 005204 INC R4
3090 035202 ENDDO
      035202 000771 BR 50432$

```

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				LET R4 : LINCNT + #132.	;NUMBER OF CHARACTERS TO OUTPUT
	035204	013704	002276		MOV LINCNT,R4	
	035210	062704	000204		ADD #132.,R4	
3095	035214				LET STACHR := STACHR + #1	; UPDATE CHARACTER COUNT
	035214	005237	035342		INC STACHR	
3096	035220				OUTPUT #OUTBUF,R4	;OUTPUT THE LINE
3097						
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	MOV8 #14,OUTBUF	
3100	035274				OUTPUT #OUTBUF,#1	
3101						
3102	035336				EXIT TST	
	035336	104432			TRAP C\$EXIT	
	035340	000150			.WORD L10022-	
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.
	035512				T12::
3127					:PRINT TEST IDENTIFICATION
3128	035512				OUTPUT #CHRALN,#30. ; PRINT TEST NAME ON LP
3129					:PRINT 24 LINES OF ALTERNATING 'H'S AND 'SPACE'S
3130	035554				1\$: LET LINCNT := #50.
	035554	012737	000062	002276	MOV #50.,LINCNT
3131	035562				2\$: IF LINCNT LE #0 THEN
	035562	005737	002276		TST LINCNT
	035566	003002			BGT 50434\$
3132	035570				INLINE <JMP 3\$>
	035570	000137	036076		JMP 3\$
3133	035574				ENDIF
	035574				50434\$:
3134					:LOAD BUFFER WITH ALTERNATING STRING OF 'H'S AND 'SPACE'S
3135	035574				LET R4 := #OUTBUF
	035574	012704	003160		MOV #OUTBUF,R4
3136	035600				INCR WORK FROM #1 TO #66. BY #1 ; 132 CHARACTERS
	035600	012737	000001	003154	MOV #1,WORK
	035606	000402			BR 50435\$
	035610				50436\$:
	035610	005237	003154		INC WORK
	035614				50435\$:
	035614	023727	003154	000102	CMP WORK,#66.
	035622	003005			BGT 50437\$
3137	035624				LET (R4)+ :B= #110 ; PUT PATTERN INTO BUFFER
	035624	112724	000110		MOVB #110,(R4)+
3138	035630				LET (R4)+ :B= #40
	035630	112724	000040		MOVB #40,(R4)+
3139	035634				ENDINCR
	035634	000765			BR 50436\$
	035636				50437\$:
3140	035636				LET (R4)+ :B= #CR ; FOLLOWED BY CR
	035636	112724	000015		MOVB #CR,(R4)+
3141					:
3142					: SEND BASIC PATTERN
3143					:
3144	035642				OUTPUT #OUTBUF,#132.
3145	035704				OUTPUT #OUTBUF+132.,#1
3146					:
3147					: OVERPRINT WITH LINE OF ALTERNATING SPACE AND 'H'
3148					:
3149	035746				LET R4 := #OUTBUF+132. ; FILL BUFFER WITH REVERSE PATTERN
	035746	012704	003364		MOV #OUTBUF+132.,R4
3150	035752				LET (R4)+ :B= #110 ; H
	035752	112724	000110		MOVB #110,(R4)+
3151	035756				LET (R4)+ :B= #LF ; FOLLOWED BY A LINEFEED
	035756	112724	000012		MOVB #LF,(R4)+
3152					:
3153	035762				OUTPUT #OUTBUF+1,#132. ; OVERPRINT
3154	036024				OUTPUT #OUTBUF+133.,#1

CZLPD0 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	000014	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			..++
3174			..INTERRUPT VECTORS ARE ESTABLISHED DURING INITIALIZATION
3175			..POINTING TO THE BASIC ROUTINES WHICH
3176			..SET UP THE UNIT NUMBER CAUSING THE INTERRUPTS.
3177			..LINE NUMBER IS RETURNED IN R2
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

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

```

3189 .SBTTL CLOCK SERVICE ROUTINE
3190 :++
3191 :UPDATES THE COUNTER AT A RATE OF 16.67 MILLISECONDS PER TICK
3192 :AND UPDATES A SECOND COUNTER WHEN THE FIRST OVERFLOWS.
3193 :--
3194
3195 036620 BGNSRV
3196 03662 012700 000300 CLKICK: SETPRI #PRI06
      036620 104441      MOV #PRI06,R0
      036624      TRAP C$SPRI
3197 036626      IF TICK EQ #0 THEN
      036626 005737 036674      TST TICK
      036632 001005      BNE 50440$
3198 036634      LET TICK := #60. ;60 TICKS PER SECOND
      036634 012737 000074 036674      MOV #60.,TICK
3199 036642      LET TIME := TIME + #1
      036642 005237 036672      INC TIME
3200 036646      ENDIF
      036646 50440$:
3201 036646      LET TICK := TICK - #1 ;BACK UP SECOND TIMER
      036646 005337 036674      DEC TICK
3202 036652      IF CLKTYP EQ #2 THEN
      036652 023727 002322 000002      CMP CLKTYP,#2
      036660 001003      BNE 50441$
3203 036662      LET @CLKCSR := #100
      036662 012777 000100 143436      MOV #100,@CLKCSR
3204 036670      ENDIF
      036670 50441$:
3205
3206 036670      ENDSRV ;AND EXIT
      036670 L10025:
      036670 000002      RTI
3207
3208 036672 000000      :
3209 036674 000000      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 .SBTTL HARDWARE PARAMETER SECTION
3212 036676 BGNMOD
3213
3214 :++
3215 :THIS SECTION INCLUDES THE QUESTIONS WHICH REQUEST THE OPERATOR TO
3216 :FURNISH THE HARDWARE INFORMATION NECESSARY TO BUILD THE HARDWARE
3217 :P-TABLES.
3218 :
3219 :--
3220 036676 BGNHRD
      036676 000020 .WORD L10026-L$HARD/2
      036700 L$HARD::
3221
3222 036700 GPRMA GETADR,0,0,160000,177516,YES
      036700 000031 .WORD T$CODE
      036702 036740 .WORD GETADR
      036704 160000 .WORD T$LOLIM
      036706 177516 .WORD T$HILIM
3223 036710 GPRMA GETVEC,2,0,110,770,YES
      036710 001031 .WORD T$CODE
      036712 036755 .WORD GETVEC
      036714 000110 .WORD T$LOLIM
      036716 000770 .WORD T$HILIM
3224 036720 GPRMD GETTYP,4,0,3,0,3,YES
      036720 002032 .WORD T$CODE
      036722 036776 .WORD GETTYP
      036724 000003 .WORD 3
      036726 000000 .WORD T$LOLIM
      036730 000003 .WORD T$HILIM
3225 036732 GPRML GETBND,6,1,YES
      036732 003130 .WORD T$CODE
      036734 037045 .WORD GETBND
      036736 000001 .WORD 1
3226 036740 ENDRD
      036740 .EVEN
3227 L10026:
      .NLIST BEX
3228 036740 114 120 061 GETADR: .ASCIZ /LP11 ADDRESS/
3229 036755 111 116 124 GETVEC: .ASCIZ /INTERRUPT VECTOR/
3230 036776 105 116 124 GETTYP: .ASCIZ /ENTER 0 IF LP25, 1 IF LP26, 2 IF LP07 /
3231 037045 071 066 040 GETBND: .ASCIZ /96 CHARACTER BAND/
3232 : ENTER 3 IF LPYY FOR FUTURE EXPANSION
3233 .LIST BEX
3234 .EVEN

```

CZLPD0 LP25, LP26, LP07 TEST MACRO M1113 30-DEC-80 09:36 PAGE 42
SOFTWARE PARAMETER SECTION

```

3236      .SBTTL  SOFTWARE PARAMETER SECTION
3237      :
3238      :++
3239      :THIS SECTION INCLUDES THE QUESTIONS WHICH REQUEST THE OPERATOR TO FURNISH
3240      :THE SOFTWARE INFORMATION NECESSARY TO BUILD THE SOFTWARE P-TABLES.
3241      :--
3242      :
3243      BGNSFT
3244      L$SOFT:: .WORD L10027-L$SOFT/2
3245      GPRML   MGTINT,0,1,YES
3246      .WORD   T$CODE
3247      .WORD   MGTINT
3248      .WORD   1
3249      GPRML   GETMAN,2,1,YES
3250      .WORD   T$CODE
3251      .WORD   GETMAN
3252      .WORD   1
3253      GPRMD   GETTIM,4,D,377,4,60.,YES
3254      .WORD   T$CODE
3255      .WORD   GETTIM
3256      .WORD   377
3257      .WORD   T$LOLIM
3258      .WORD   T$HILIM
3259      GPRML   GETPLA,6,1,YES
3260      .WORD   T$CODE
3261      .WORD   GETPLA
3262      .WORD   1
3263      GPRMD   GETMAX,10,D,377,1,255.,YES
3264      .WORD   T$CODE
3265      .WORD   GETMAX
3266      .WORD   377
3267      .WORD   T$LOLIM
3268      .WORD   T$HILIM
3269      ENDSFT
3270      .EVEN
3271      L10027:
3272      .NLIST BEX
3273      MGTINT: .ASCIIZ /RUN MANUAL INTERVENTION TESTS/
3274      GETMAN: .ASCIIZ /PERFORM MANUAL PRINTING SPEED MEASUREMENT/
3275      GETTIM: .ASCIIZ /DESIRED TIME INTERVAL FOR PRINTING SPEED CALCULATION/
3276      GETPLA: .ASCIIZ /TESTING IN U.S.A./
3277      GETMAX: .ASCIIZ /AUTODROP ERROR COUNT/
3278      .LIST BEX
3279      .EVEN
3280      ;
3281      PATCH: .BLKW 20
3282      LASTAD
3283      .EVEN
3284      .WORD 0
3285      .WORD 0
3286      L$LAST::
3287      ENDMOD
3288      .END

```

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	J\$JMP = 000167
BIT8 = 000400 G	CSCVEC= 000036	END4 021554	G\$DISP= 000003	LF = 000012 G
BIT9 = 001000 G	CSDCLN= 000044	ERFLG 000400	G\$EXCP= 000400	LINCNT 002276
BNDPAT 023040	CSDDODU= 000051	ERRCOD 002336	G\$HILI= 000002	LINPER 023101
BNDRDY 014164	CSDRPT= 000024	ERRFLG 002340	G\$LOLI= 000001	LINSEC 016414
BNDSWI 003556	CSDU = 000053	ERROR = 100000	G\$NO = 000000	LINSWI 016434
BNDSW1 014134	CSEDIT= 000003	ERRSVC 003112	G\$OFFS= 000400	LINSW1 016520
BNDTST 031731	CSERDF= 000055	ERRTBL 003114 G	G\$OF SI= 000376	LOBYTE= 000377
BNKSWI 003511	CSERHR= 000056	ERR11 011332	G\$PRMA= 000001	LOE = 040000 G
BOE = 000400 G	CSERRO= 000060	ERR12 011406	G\$PRMD= 000002	LOT = 000010 G
BPID25 031760	CSERSF= 000054	ERR13 011471	G\$PRML= 000000	LPBUF 002452
BPID26 031766	CSERSO= 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\$RADL= 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\$GLO= 000030	FLAG96= 010000	H\$MSW1 013721	LSACP 002110 G
BUFADD 002350	CS\$GPRI= 000040	FLSMG 017301	HOE = 100000 G	LSAPT 002036 G
BUFCNT 002352	CS\$INIT= 000011	FLSMS1 017373	IBE = 010000 G	LSAUT 002070 G
BUFREP 002354	CS\$INLP= 000020	FLSMS2 017453	IDU = 000040 G	LSAUTO 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	TIMEOUT-	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	PRIO0 =	000000	T\$ERRN=	000012	VFUINT	014355
L\$DISP	002132	G	L10021	035032	PRIO1 =	000040	T\$EXCP=	000000	VFURDY	014447
L\$DLY	002116	G	L10022	035510	PRIO2 =	000100	T\$FLAG=	000040	VFUSEL	004033
L\$DTP	002040	G	L10023	036216	PRIO3 =	000140	T\$GMAN=	000000	VFUSE1	004121
L\$DTP	002034	G	L10025	036670	PRIO4 =	000200	T\$HILI=	000377	WORK	003154
L\$DUT	002072	G	L10026	036740	PRIO5 =	000240	T\$LAST=	000001	WORK1	003156
L\$DVTY	002222	G	L10027	037140	PRIO6 =	000300	T\$LOLI=	000001	X	= 000040
L\$EF	002052	G	L26M64	023645	PRIO7 =	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\$NS0 =	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\$STMT=	177777	X9	034716
L\$LOAD	002100	G	NONBUF	027721	SFPTBL	002262	T\$STTS=	000001	\$BGNLE=	177777
L\$LUN	002074	G	NONCHR	027370	SKIP3	027714	T\$SAUT=	010002	\$BRJMP=	177777
L\$MREV	002050	G	NOTIM	007702	SPCCNT	033430	T\$SCLE=	010005	\$ERFLG=	000400
L\$NAME	002000	G	NO07	031652	SPED1	023042	T\$SFAR=	010026	\$F\$AND=	000310
L\$PRIO	002042	G	NRGT16	007156	SPED2	023065	T\$SHW =	010001	\$F\$BAD=	000401
L\$PROT	002122	G	NRGT17	007241	SPED3	023071	T\$SINI=	010004	\$F\$BLA=	000170
L\$PRT	002112	G	OFFLIN	023146	STACHR	035342	T\$SPRO=	010000	\$F\$CAS=	000150
L\$REPP	002062	G	ONEFIL=	000001	STATER=	000001	T\$SSOF=	010027	\$F\$DEC=	000220
L\$REV	002010	G	ONLIN1	023206	STATUS	002512	T\$SSRV=	010025	\$F\$DO =	000340
L\$SOFT	037072	G	ONLIN2	023307	STRCNT	002306	T\$SSW =	010003	\$F\$FAL=	000405
L\$SPC	002056	G	ONLIN3	023405	SVCGBL=	000000	T\$STES=	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	\$\$BvTE= 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