LN01 LN01 PRINTER DIAG
CZLNADO

AH-T344D-MC
FICHE 01 OF 01

JUL 1984
digital
Made In USA

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IDENTIFICATION

PRODUCT CODE : AC T343D MC

PRODUCT NAME: CZLNADO LN01 DIAG

MAINTAINER: SMALL SYSTEMS DIAGNOSTICS

PRODUCT DATE: FEBRUARY 1984

AUTHOR: GLENN A. PERNA

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1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

THIS DIAGNOSTIC PROGRAM VERIFIES PROPER PROPER OPERATION OF THE LN01 ELECTRONIC 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 PRINTER. THE INDIVIDUAL TESTS ARE IDENTIFIED AS FOLLOWS:

TEST 1	INTERFACE LOGIC
TEST 2	DATA TRANSFER PATHS
TEST 3	PRINTABLE CHARACTERS
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TEST 5	PRINT CONTROL
TEST 6	MULTIPLE LINE ADVANCE
TEST 7	OVERSTRIKE
TEST 8	INTERLOCK
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TEST 16	DRAW VECTORS
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TEST 18	PORTRAIT
TEST 19	FONT
TEST 20	MISCELLANEOUS CONTROL FUNCTIONS

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+.
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 28K 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.

1.3 RELATED DOCUMENTS AND STANDARDS

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 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 PRINTERS UNDER TEST SHOULD HAVE POWER APPLIED AND BE PLACED ON LINE IN READINESS FOR TESTING. THE LINE PRINTER MUST HAVE ITS OWN M7258 CONTROLLER SET UP AT A DEVICE ADDRESS. THE DIAGNOSTIC PROVIDES A DEFAULT DEVICE ADDRESS OF 777514 WHICH CAN BE USED WHEN A LINE PRINTER IS BEING TESTED. IT WILL BE NECESSARY FOR THE OPERATOR TO RUN THE LINE PRINTER OFF LINE IN THE SELF TEST MODE BEFORE RUNNING THE DIAGNOSTIC.

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 "DDDDD".

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:DDDDD	EXECUTE DDDDD PASSES (DDDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 2.3.
/EOP:DDDDD	REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDDD = 1 TO 64000)
/UNITS:LIST	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)
PRI	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: (O)  (177514) ?
INTERRUPT VECTOR : (O)  (200) ?
```

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

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>
```

```
? FACTOR (0) 0 ?  <CR>

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

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

UNIT 8
CSR ADDRESS (0)  160000<CR>
SUB-DEVICE # (0) ?  7<CR>
Q-FACTOR (0) 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 (0) ?  160000<CR>
SUB-DEVICE # (0) ?  0,1<CR>
Q-FACTOR (0) 0 ?  1.0<CR>

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

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

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

2.7 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

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

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

3.0 ERROR INFORMATION

3.1 TYPES OF ERROR MESSAGES

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

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

,WHERE; NAME = DIAGNOSTIC NAME

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

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

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

3.2 SPECIFIC ERROR MESSAGES

ERROR	DESCRIPTION
1	"PRINTER ERROR" ERROR CONDITION IN THE PRINTER.
2	"PRINTER NOT READY" PRINTER NOT READY TO ACCEPT DATA.
3	"PRINTER DID NOT INTERRUPT" FAILURE IN INTERFACE LOGIC.
4	"LOADING PRINTER BUFFER DOES NOT CLEAR READY" FAILURE IN INTERFACE LOGIC.
5	"PRINTER INTERRUPTED AT SAME LEVEL AS THE PROCESSOR" FAILURE IN INTERFACE LOGIC.
6	"PRINTER ERROR" ERROR CONDITION IN THE PRINTER.
7	"PRINTER NOT READY" PRINTER NOT READY TO ACCEPT DATA.
8	"PAPER OUT INTERLOCK SWITCH FAILURE" FAULTY INTERLOCK SWITCH
9	"PAPER TRAY HANDLE INTERLOCK SWITCH FAILURE" FAULTY INTERLOCK SWITCH
10	"FRONT DOOR 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.

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

NOTE: FOR MORE DETAILED DESCRIPTION OF THE FOLLOWING TESTS,
REFER TO THE INDIVIDUAL TEST MODULES LOCATED IN THE ATTACHED LISTING.
EACH MODULE CONTAINS A TEST DEFINITION AND PSEUDO CODE FOR THE SPECIFIC TEST.

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

TEST 2
DATA TRANSFER PATHS
CHECKS THE DATA TRANSFER PATHS FROM THE PRINTER OUTPUT TO THE PROCESSOR INTERFACE.

TEST 3
PRINTABLE CHARACTERS
CHECKS FOR PROPER PRINTING OF ALL PRINTABLE CHARACTERS.

TEST 4
NON-PRINTABLE CHARACTERS
CHECKS FOR PROPER DETECTION OF ALL NON-PRINTABLE CHARACTERS.

TEST 5
PRINT CONTROL
CHECKS THAT CHARACTERS IN EXCESS OF 132 CHARACTERS ON A LINE ARE DISREGARDED.

TEST 6
MULTIPLE LINE ADVANCE

CHECKS THE MULTIPLE LINE ADVANCE FOR PROPER PAPER MOVEMENT.

TEST 7
OVERSTRIKE
THIS TEST WILL VERIFY CORRECT OPERATION OF THE PRINTER WHILE
OPERATING JUST WITHIN OVERSTRIKE, LINE BUFFER AND PAGE BUFFER LIMITS.

TEST 8
INTERLOCK TEST
THIS TEST CHECKS TO SEE THAT PRINTER INTERLOCKS ARE FUNCTIONING.
IT CHECKS THE ERROR BIT IN THE M7258 MODULE AFTER TRIPPING INTERLOCK
IN PRINTER.

TEST 9
ABSOLUTE AND RELATIVE POSITION
THIS TEST CHECKS THE ABSOLUTE AND RELATIVE POSITIONING COMMANDS BY
USING THEM TO DRAW A RECTANGLE.

TEST 10
NEWLINE MODE
THIS TEST CHECKS THE MACHINES ABILITY TO ENABLE AND DISABLE NEWLINE MODE.

TEST 11
POWER UP DEFAULTS
THIS TEST VERIFIES THE SPECIFIED POWER UP DEFAULT CONDITIONS OF THE PRINTER.

TEST 12
TABS TEST
THIS TEST DOES A COMPREHENSIVE CHECK OF HORIZONTAL AND VERTICAL TAB
FUNCTIONS OF THE PRINTER. IT USES THEM TO DRAW A RECTANGLE.

TEST 13
MARGINS TEST
THIS TEST DOES A COMPREHENSIVE CHECK OF BOTH TOP AND BOTTOM AND
LEFT AND RIGHT MARGIN FUNCTIONS AS WELL AS PHYSICAL LINES PER PAGE FUNCTIONS.

TEST 14
AUTO-UNDERLINE TEST
THIS TEST EXERCISES THE PRINTER'S AUTO-UNDERLINE FUNCTIONS. MESSAGES ARE
PRINTED WITH UNDERLINING AND WITHOUT. TABS AND SPACES ARE CHECKED FOR BEING
UNDERLINED ALSO.

TEST 15
PARTIAL LINE UP/DOWN TEST
THIS TEST EXERCISES THE PRINTER'S ABILITY TO EXECUTE THE PARTIAL LINE UP
AND DOWN ESCAPE SEQUENCE AND FUNCTION.

TEST 16
DRAW VECTORS TEST
THIS TEST EXERCISES THE DRAW VECTOR FUNCTION BY DRAWING A RECTANGULAR GRID
AND INTERMIXING TEXT WITH THE DRAW VECTOR FUNCTION.

TEST 17
JUSTIFY TEST
THIS TEST EXERCISES THE JUSTIFY FUNCTION AS WELL AS DEMONSTRATING THE
USEFULNESS AND LIMITS.

TEST 18
PORTRAIT TEST
THIS TEST DOES A QUICK VERIFY OF THE PRINTER MAJOR FUNCTIONS
IN PORTRAIT MODE USING THE RESIDENT PORTRAIT FONT.

TEST 19
FONT TEST
THE FONT TEST TESTS FUNCTIONS ASSOCIATED WITH MULTIPLE FONT USE
ON THE LN01 SUCH AS:
FONT LOADING,FONT ASSIGNMENT AND FONT SELECTION.

TEST 20
MISCELLANEOUS CONTROL FUNCTIONS TEST
THIS TEST CHECKS THE RESULTS OF SENDING SPECIFIC CONTROL CHARACTERS
WITHIN AN ESCAPE OR CONTROL SEQUENCE. THINGS SUCH AS:
CANCEL,SUBSTITUTE,LINE FEED,FORM FEED ETC.

```
                        .TITLE  CZLNADO LNO1 DIAGNOSTIC
                        .ENABL AMA
                        .SBTTL  IDENTIFICATION

                        ; PRODUCT CODE:         AC-T343D MC

                        ; PRODUCT NAME:         CZLNADO LNO1 DIAG

                        ; MAINTAINER:           SMALL SYSTEMS DIAGNOSTICS

                        ; AUTHORS:              GLENN A. PERNA

                        ; DATE                  FEBRUARY  1984

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;**
; FUNCTIONAL DESCRIPTION
;
; THIS DIAGNOSTIC PROGRAM VERIFIES PROPER OPERATION OF THE LN01
; LINE PRINTER, AND IT'S ASSOCIATED INTERFACE MODULE.
;
; THE PROGRAM CONSISTS OF 20 TESTS.
;
; THE PROGRAM IS COMPATIBLE TO THE PDP 11 DIAGNOSTIC SUPERVISOR AND XXDP+.
;
; -



; VERSION       A-0    JAN  1983        GLENN A. PERNA

; HISTORY       REV. A-0   INITIAL RELEASE       JAN  1983
;                          BASIC LINE PRINTER FUNCTIONS ONLY
;
;               REV. B-0                         MAR  1983
;                          ADDED EXTENDED FUNCTIONALITY TESTING
;
;               REV. C-0                         SEP  1983
;                          RE-RELEASED TO SUPPORT UPGRADED
;                          MEMORY (256K).
;
;               REV. D-0                         FEB 1984
;                          RE RELEASED TO SUPPORT DEC 14/15
;                          ROM'S.
;
```

```
                                        .TITLE  CZLNADO LNO1 TEST
                                .SBTTL PROGRAM HEADER

                                        .MCALL  SVC
000000'                                 SVC                             ;INITIALIZE SUPERVISOR MACROS
                                        .MCALL  STRUCT
000000'                                 STRUCT                          ;STRUCTURED MACRO PACKAGE
        000000                          $LSTIN=         0               ; LIST ASSY CODE LEFT
        000000                          $LSTTAG=        0               ; LIST TAGS LEFT
        177777                          $LOCTAG=        -1

        000000                  SVCINS= 0       ;LIST INSTRUCTIONS
        000000                  SVCTST= 0       ;LIST TEST TAGS
        000000                  SVCSUB= 0       ;LIST SUBTEST TAGS
        000000                  SVCGBL= 0       ;LIST GLOBAL TAGS
        000000                  SVCTAG= 0       ;LIST OTHER TAGS

                                .ENABL AMA
                                .ENABL ABS
                                .ENABL LC
        002000                          .=2000

002000                                  BGNMOD
002000                                  POINTER BGNSW,BGNSFT

002000                                  HEADER  CZLNA,D,0,60,1,340
(4) 002000                      L$NAME::                        ;DIAGNOSTIC NAME
(4) 002000      103                     .ASCII /C/
(4) 002001      132                     .ASCII /Z/
(4) 002002      114                     .ASCII /L/
(4) 002003      116                     .ASCII /N/
(4) 002004      101                     .ASCII /A/
(6) 002005      000                     .BYTE   0
(6) 002006      000                     .BYTE   0
(5) 002007      000                     .BYTE   0
(5) 002010                      L$REV::                         ;REVISION LEVEL
(4) 002010      104                     .ASCII  /D/
(5) 002011                      L$DEPO::                        ;0
(4) 002011      060                     .ASCII  /0/
(5) 002012                      L$UNIT::                        ;NUMBER OF UNITS
(4) 002012  000000                      .WORD   0
(5) 002014                      L$TIML::                        ;LONGEST TEST TIME
(4) 002014  000060                      .WORD   60
(5) 002016                      L$HPCP::                        ;POINTER TO H.W. QUES.
(4) 002016  105314                      .WORD   L$HARD
(5) 002020                      L$SPCP::                        ;POINTER TO S.W. QUES.
(4) 002020  105374                      .WORD   L$SOFT
(5) 002022                      L$HPTP::                        ;PTR. TO DEF. H.W. PTABLE
(4) 002022  002252                      .WORD   L$HW
(5) 002024                      L$SPTP::                        ;PTR. TO S.W. PTABLE
(4) 002024  002264                      .WORD   L$SW
(5) 002026                      L$LADP::                        ;DIAG. END ADDRESS
(4) 002026  105544                      .WORD   L$LAST
(5) 002030                      L$STA::                         ;RESERVED FOR APT STATS
(4) 002030  000000                      .WORD   0
(5) 002032                      L$CO::
```

```
(4)  002032  000000                    .WORD   0
(5)  002034                    L$DTYP::                ;DIAGNOSTIC TYPE
(4)  002034  000001                    .WORD   1
(5)  002036                    L$APT::                 ;APT EXPANSION
(4)  002036  000000                    .WORD   0
(5)  002040                    L$DTP::                 ;PTR. TO DISPATCH TABLE
(4)  002040  002132                    .WORD   L$DISPATCH
(5)  002042                    L$PRIO::                ;DIAGNOSTIC RUN PRIORITY
(4)  002042  000340                    .WORD   340
(5)  002044                    L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
(4)  002044  000000                    .WORD   0
(5)  002046                    L$EXP1::                ;EXPANSION WORD
(4)  002046  000000                    .WORD   0
(5)  002050                    L$MREV::                ;SVC REV AND EDIT #
(4)  002050     003                    .BYTE   C$REVISION
(3)  002051     003                    .BYTE   C$EDIT
(5)  002052                    L$EF::                  ;DIAG. EVENT FLAGS
(4)  002052  000000                    .WORD   0
(5)  002054  000000                    .WORD   0
(5)  002056                    L$SPC::
(4)  002056  000000                    .WORD   0
(5)  002060                    L$DEVP::                ; POINTER TO DEVICE TYPE LIST
(4)  002060  002242                    .WORD   L$DVTYP
(5)  002062                    L$REPP::                ;PTR. TO REPORT CODE
(4)  002062  000000                    .WORD   0
(5)  002064                    L$EXP4::
(4)  002064  000000                    .WORD   0
(5)  002066                    L$EXP5::
(4)  002066  000000                    .WORD   0
(5)  002070                    L$AUT::                 ;PTR. TO ADD UNIT CODE
(4)  002070  000000                    .WORD   0
(5)  002072                    L$DUT::                 ;PTR. TO DROP UNIT CODE
(4)  002072  000000                    .WORD   0
(5)  002074                    L$LUN::                 ;LUN FOR EXERCISERS TO FILL
(4)  002074  000000                    .WORD   0
(5)  002076                    L$DESP::                ;POINTER TO DIAG. DESCRIPTION
(4)  002076  002202                    .WORD   L$DESC
(5)  002100                    L$LOAD::                ;GENERATE SPECIAL AUTOLOAD EMT
(4)  002100  104035                    EMT     E$LOAD
(5)  002102                    L$ETP::                 ;POINTER TO ERRTBL
(4)  002102  000000                    .WORD   0
(5)  002104                    L$ICP::                 ;PTR. TO INIT CODE
(4)  002104  005516                    .WORD   L$INIT
(5)  002106                    L$CCP::                 ;PTR. TO CLEAN-UP CODE
(4)  002106  007266                    .WORD   L$CLEAN
(5)  002110                    L$ACP::                 ;PTR. TO AUTO CODE
(4)  002110  002256                    .WORD   L$AUTO
(5)  002112                    L$PRT::                 ;PTR. TO PROTECT TABLE
(4)  002112  002122                    .WORD   L$PROT
(5)  002114                    L$TEST::                ;TEST NUMBER
(4)  002114  000000                    .WORD   0
(5)  002116                    L$DLY::                 ;DELAY COUNT
(4)  002116  000000                    .WORD   0
(5)  002120                    L$HIME::                ;PTR. TO HIGH MEM
(4)  002120  000000                    .WORD   0
770
```

```
                                        ;
                                        ; THE FOLLOWING IS A LOAD PROTECTION TABLE
                                        ;
                                                BGNPROT
                                        L$PROT::
                                                .WORD   0
                                                .WORD   -1
                                                .WORD   -1
                                                ENDPROT
                                        .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        20              ;X= NUMBER OF TESTS
(4)  002130  000024                             .WORD   20
(3)  002132                             L$DISPATCH::
(6)  002132  007456                             .WORD   T1
(6)  002134  011226                             .WORD   T2
(6)  002136  011774                             .WORD   T3
(6)  002140  013204                             .WORD   T4
(6)  002142  015154                             .WORD   T5
(6)  002144  016516                             .WORD   T6
(6)  002146  017316                             .WORD   T7
(6)  002150  020440                             .WORD   T8
(6)  002152  023476                             .WORD   T9
(6)  002154  025724                             .WORD   T10
(6)  002156  027356                             .WORD   T11
(6)  002160  033354                             .WORD   T12
(6)  002162  037460                             .WORD   T13
(6)  002164  045074                             .WORD   T14
(6)  002166  050422                             .WORD   T15
(6)  002170  052016                             .WORD   T16
(6)  002172  054072                             .WORD   T17
(6)  002174  063606                             .WORD   T18
(6)  002176  070254                             .WORD   T19
(6)  002200  101616                             .WORD   T20
                                        ;
                                        ;FOR USE ON REVISION C OF THE SUPERVISOR
                                        ;
                                                DESCRIP         <CZLNADO LINE PRINTER DIAGNOSTIC>
(4)  002202                             L$DESC::
(3)  002202  055103  047114  042101             .ASCIZ  /CZLNADO LINE PRINTER DIAGNOSTIC/
(3)  002210  020060  044514  042516
(3)  002216  050040  044522  052116
(3)  002224  051105  042040  040511
(3)  002232  047107  051517  044524
(3)  002240  000103
(2)                                             .EVEN
                                                DEVTYP          <LNO1>
(4)  002242                             L$DVTYP::
(3)  002242  047114  030460     000             .ASCIZ  /LNO1/
(2)          002250                             .EVEN
```

```
                                .SBTTL  DEFAULT HARDWARE P-TABLE

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

002250                                  BGNHW   DFPTBL
(3) 002250  000002                      .WORD   L10001-L$HW/2
(3) 002252                      L$HW::
(3) 002252                      DFPTBL::
002252  177514                          .WORD   177514                  ;LP11 REGISTER ADDRESS
002254  000200                          .WORD   200                     ;LP11 INTERRUPT VECTOR
                                ;
                                ;INTERRUPT VECTOR PRIORITY IS 4 AND CANNOT BE CHANGED


002256                                  ENDHW
(3) 002256                      L10001:


002256                                  BGNAUTO
(3) 002256                      L$AUTO::

002256  000240                          NOP             ; NOT USED

002260                                  ENDAUTO
(3) 002260                      L10002:
(3) 002260  104461                      TRAP    C$AUTO
                                .SBTTL  SOFTWARE P-TABLE

                                ;++
                                ; THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
                                ; PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
                                ;--

002262                                  BGNSW   SFPTBL
(3) 002262  000002                      .WORD   L10003 L$SW/2
(3) 002264                      L$SW::
(3) 002264                      SFPTBL::

002264  000000                  INHINT: .WORD   0                       ;0 IF NO INTERVENTION TESTS
                                                                        ;1 IF MANUAL INTERVENTION TESTS
                                                                        ;DEFAULT IS NO

002266  000005                  MAXERR: .WORD   5                       ; AUTODROP ERROR COUNT
                                ; IF ERROR COUNT EXCEEDS MAXERR THE UNIT WILL BE DROPPED FROM TEST

002270                                  ENDSW
(3) 002270                      L10003:

                                .SBTTL  I/O MACRO DEFINITIONS
```

```
                        .MACRO  OUTPUT  ADD,BFCNT,ERR,PRINTS
                                MOV     ADD,BUFADD              ;SAVE THE BUFFER ADDRESS
                        .IF B   BFCNT
                                MOV     #1,BUFCNT               ; BYTE COUNT DEFAULT OF 1
                        .ENDC
                        .IF NB  BFCNT
                                MOV     BFCNT,BUFCNT            ; SUPPLY BYTE COUNT
                        .ENDC
                                MOV     #-1,PRINTR              ; OUTPUT TO ALL UNITS
                        .IF B   ERR
                                MOV     #LPERR,ERRSVC
                        .ENDC
                        .IF NB  ERR
                                MOV     ERR,ERRSVC
                        .ENDC
                        .IF B PRINTS
                                MOV     #1,BUFREP               ; PRINT ONCE DEFAULT
                        .ENDC
                        .IF NB PRINTS
                                MOV     PRINTS,BUFREP           ; SUPPLY PRINT COUNT
                        .ENDC
                                JSR     PC,IOCTRL               ;CALL THE DRIVER
                        .ENDM   OUTPUT


                        .MACRO  OUTPUI  ADD,BFCNT,ERR,UNIT,PRINTS
                                MOV     ADD,BUFADD              ;SAVE BUFFER ADDRESS
                        .IF B   BFCNT
                                MOV #1,BUFCNT                   ; DEFAULT BYTE COUNT OF 1
                        .ENDC
                        .IF NB  BFCNT
                                MOV     BFCNT,BUFCNT            ;BUFFER BYTE COUNT BFCNT
                        .ENDC
                        .IF B   ERR
                                MOV     #LPERR,ERRSVC
                        .ENDC
                        .IF NB  ERR
                                MOV     ERR,ERRSVC
                        .ENDC
                        .IF B PRINTS
                                MOV     #1,BUFREP               ; PRINT ONCE DEFAULT
                        .ENDC
                        .IF NB PRINTS
                                MOV     PRINTS,BUFREP           ; SUPPLY PRINT COUNT
                        .ENDC
                                MOV     UNIT,PRINTR             ; SUPPLY UNIT NUMBER
                                JSR     PC,IOCTRL               ;CALL THE DRIVER
                        .ENDM


                        ; PRINTS IS A PARAMETER CONTROLLING THE NUMBER IF TIMES THE DATA OR
                        ; MESSAGE IS TO BE PRINTED (SENT TO THE PRINTER). DEFAULT IS 1.
                        ;
                        ; A TIMEOUT OF 20. SECONDS IS FURNISHED BASED ON THE FOLLOWING ASSUMPTIONS :
                        ;       1   A PRINTER SPEED OF 300 LPM
```

```
  894                               ;       2   A REPEAT COUNT OF 88 MAX. ( 1 PAGE OF LINES AT 8 LPI. )
  895                               ;       3   AN INITIAL BAND STARTUP TIME OF 2.5 SECONDS.
  896                               ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;.;;;;;;;;;;;;
  897  002270                               ENDMOD
  898                               .SBTTL  GLOBAL ,REAS
  899
  900  002270                               BGNMOD
  901
  902                               ;++
  903                               ; THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES
  904                               ; THAT ARE USED IN MORE THAN ONE TEST.
  905                               ;--
  906
  910  002270                               EQUALS
  (1)                               ;
  (1)                               ; BIT DIFINITIONS
  (1)                               ;
  (1)          100000               BIT15== 100000
  (1)          040000               BIT14== 40000
  (1)          020000               BIT13== 20000
  (1)          010000               BIT12== 10000
  (1)          004000               BIT11== 4000
  (1)          002000               BIT10== 2000
  (1)          001000               BIT09== 1000
  (1)          000400               BIT08== 400
  (1)          000200               BIT07== 200
  (1)          000100               BIT06== 100
  (1)          000040               BIT05== 40
  (1)          000020               BIT04== 20
  (1)          000010               BIT03== 10
  (1)          000004               BIT02== 4
  (1)          000002               BIT01== 2
  (1)          000001               BIT00== 1
  (1)                               ;
  (1)          001000               BIT9==  BIT09
  (1)          000400               BIT8==  BIT08
  (1)          000200               BIT7==  BIT07
  (1)          000100               BIT6==  BIT06
  (1)          000040               BIT5==  BIT05
  (1)          000020               BIT4==  BIT04
  (1)          000010               BIT3==  BIT03
  (1)          000004               BIT2==  BIT02
  (1)          000002               BIT1==  BIT01
  (1)          000001               BIT0==  BIT00
  (1)                               ;
  (1)                               ; EVENT FLAG DEFINITIONS
  (1)                               ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
  (1)                               ;
  (1)          000040               EF.START==       32.                           ; START COMMAND WAS ISSUED
  (1)          000037               EF.RESTART==     31.                           ; RESTART COMMAND WAS ISSUED
  (1)          000036               EF.CONTINUE==    30.                           ; CONTINUE COMMAND WAS ISSUED
  (1)          000035               EF.NEW==         29.                           ; A NEW PASS HAS BEEN STARTED
  (1)          000034               EF.PWR==         28.                           ; A POWER FAIL/POWER-UP OCCURRED
  (1)                               ;
  (1)                               ;
  (1)                               ; PRIORITY LEVEL DEFINITIONS
```

```
(1)
(1)          000340                  PRIO7== 340
(1)          000300                  PRIO6== 300
(1)          000240                  PRIO5== 240
(1)          000200                  PRIO4== 200
(1)          000140                  PRIO3== 140
(1)          000100                  PRIO2== 100
(1)          000040                  PRIO1== 40
(1)          000000                  PRIO0== 0
(1)                                  ;
(1)                                  ;OPERATOR FLAG BITS
(1)                                  ;
(1)          000004                  EVL==        4
(1)          000010                  LOT==       10
(1)          000020                  ADR==       20
(1)          000040                  IDU==       40
(1)          000100                  ISR==      100
(1)          000200                  UAM==      200
(1)          000400                  BOE==      400
(1)          001000                  PNT==     1000
(1)          002000                  PRI==     2000
(1)          004000                  IXE==     4000
(1)          010000                  IBE==    10000
(1)          020000                  IER==    20000
(1)          040000                  LOE==    40000
(1)          100000                  HOE==   100000
911
915          000012                  LF==12
916          000014                  FF==14
917          000015                  CR==15
918          000177                  DEL==177
919          000001                  VERS.1== 1
920                                  ;
921                                  ;GLOBAL ERROR CODES FOR USE BY GENERAL ERROR ROUTINE
922                                  ;
923          000001                  STATER= 1                       ;TRANSMITTER STATUS ERROR IN OUTPUT
924          000002                  TIMOUT= 2                       ;TIMEOUT ERROR IN IO DRIVER MODULE
925                                                                  ;THIS ERROR INDICATES THE LAST CHARACTER
926                                                                  ;WAS NOT TRANSMITTED WITHIN A GIVEN TIME
927          000003                  NOINTR= 3                       ;GROSS TIME OUT ERROR. THE SPECIFIED DID NOT
928                                                                  ;INTERRRUPT. THEREFORE IO DRIVER MODULE WAS
929                                                                  ;NOT CALLED
930                                  ;
931                                  .SBTTL  GENERAL REGISTER USAGE DEFINITIONS
932                                  ;
933                                  ;R0     RESERVED FOR USE BY THE MACRO PACKAGES
934                                  ;R1     MAXIMUM NUMBER OF UNITS TO TEST L$UNIT-1
935                                  ;R2     UNIT NUMBER BY 2. USED TO CALCULATE OFFSET INTO PROPER
936                                  ;       PRINTER TABLE
937                                  ;R3     TEMPORARY STORAGE
938                                  ;R4          "       "
939                                  ;R5
940                                  ;R6     STACK POINTER
941                                  ;R7     PROGRAM COUNTER
942                                  ;
943
```

```
                                ;
                                ; LP STATUS TABLE BIT DEFINITIONS
                                ;
                100000          ERROR = BIT15
                040000          DROPED = BIT14
                020000          ACTIVE = BIT13
                000377          LOBYTE = 377    ; BIT MASK FOR CLEARING LOBYTE (COUNTER)


                                .SBTTL  GLOBAL DATA SECTION


002270  000000                  FLAG:   .WORD   0               ;<CR> FLAG FOR USE BY SUPERVISOR
002272  000000                  LINCNT: .WORD   0               ;LINE COUNTER
002274  000000                  LSTCNT: .WORD   0
002276  000000                  COUNT:  .WORD   0
002300  000000                  CCNT:   .WORD   0
002302  000000                  STRCNT: .WORD   0
002304  000000                  CHRGEN: .WORD   0
002306  000000                  UNIT:   .WORD   0               ;UNIT COUNTER FOR SINGLE UNIT TESTING
002310  000000                  LUNIT:  .WORD   0               ;UNIT COUNTER FOR ERRORS
                                                                ;AND TESTS NOT USING THE OUTPUT
                                                                ;MACROS.
002312  000000                  PTABAD: .WORD   0               ;P-TABLE ADDRESS RETURNED BY GPHARD
002314  000000                  PRINTR: .WORD   0               ;SELECTED LINE NO.
                                                                ;MACRO
002316  000000                  CLKTYP: .WORD   0               ;CLOCK TYPE CONTROL WORD
                                                                ;1= NO CLOCK AVAILABLE
                                                                ;2= KW11-L LINE CLOCK
                                                                ;3= KW11-P PROGRAMABLE CLOCK
002320  000000                  CLOCKP: .WORD   0               ; CLOCK P-TABLE ADDRESS
002322  000000                  CLKCSR: .WORD   0               ;CLOCK CSR ADDRESS
002324  000000                  CLKSET: .WORD   0               ; CLOCK TIME SET REG ADDRESS
002326  000000                  CLKVEC: .WORD   0               ;CLOCK VECTOR ADDRESS
002330  000000                  CLKENA: .WORD   0               ;CLOCK ENABLE BITS
002332  000000                  ERRCOD: .WORD   0               ;ERROR CODE TYPE FOR GENERAL
                                                                ;ERROR ROUTINE
002334  000000                  ERRFLG: .WORD   0               ;EXPECTED ERROR INDICATOR
002336  000000                  UUT:    .WORD   0               ; # UNITS ACTUALLY UNDER TEST
                                                                ;EXITS BACK TO IO DRIVER EQUAL
                                                                ;1 IF ERROR WAS EXPECTED.


002340  000000                  INDEX:  .WORD   0
002342  000000                  VFUCMD: .WORD   0
                                ;
                                ;MACRO  VARIABLES

002344  000000                  BUFADD: .WORD   0               ;BUFFER ADDRESS OF DATA TO BE SENT
                                                                ;TO THE PRINTER
002346  000000                  BUFCNT: .WORD   0               ;NUMBER OF BYTES TO TRANSFER

002350  000000                  BUFREP: .WORD   0               ; NUMBER OF TIMES TO PRINT
                                ;
                                ;
```

```
1000                                    ;
1001                                    ;LNO1 PARAMETER WORD TABLES
1002                                    ;
1003  002352  000020                    LPCSR:  .REPT   16.             ; ADDRESS OF CSR FOR EACH LP11
1004                                            .WORD   0
1005                                            .ENDR
1006  002412  000016                    LPVEC:  .REPT   16              ; INTERRUPT VECTOR ADDRESS
1007                                            .WORD   0
1008                                            .ENDR
1009  002446  000020                    LPBUF:  .REPT 16.               ; DATA BUFFER REGISTER ADDRESS
1010                                            .WORD   0
1011                                            .ENDR
1012  002506  000020                    STATUS: .REPT 16.               ; UNIT STATUS
1013                                            .WORD   0
1014                                            .ENDR
1015  002546  000020                    CURADD: .REPT 16.               ; CURRENT ADDRESS OF OUTPUT DATA BYTE
1016                                            .WORD   0
1017                                            .ENDR
1018  002606  000020                    MSGCNT: .REPT 16.               ; INITIAL BYTE COUNT OF MSG FOR REPEAT RESTORE
1019                                            .WORD 0
1020                                            .ENDR
1021  002646  000020                    REPCNT: .REPT   16.             ; NO. OF TIMES TO REPEAT MESSAGE
1022                                            .WORD   0
1023                                            .ENDR
1024  002706  000020                    MSGADR: .REPT   16.             ; ADDRESS OF DATA TO PRINT START OF DATA
1025                                            .WORD   0
1026                                            .ENDR
1027  002746  000020                    CURCNT: .REPT 16.               ; CURRENT COUNT REMAINING TO OUTPUT
1028                                            .WORD   -1
1029                                            .ENDR
1030  003006  000020                    LPINTR: .REPT 16.               ; INTERRUPT ROUTINE ADDRESS
1031                                            .WORD   0
1032                                            .ENDR
1033                                    ;;;DELCNT:      .REPT 16.
1034                                    ;;;             .WORD   0       ; TIMEOUT DELAY COUNTER
1035                                    ;;;             .ENDR
1036  003046  000000                    ERRSVC: .WORD   0               ; ERROR ROUTINE DISPATCH ADDRESS
1037  003050  000020                    ERRTBL::        .REPT 16.       ; ERROR COUNT FOR EACH UNIT
1038                                            .WORD   0
1039                                            .ENDR
1040
1041  003110  000000                    WORK::  .WORD   0               ; WORK AREA
1042  003112  000000                    WORK1:  .WORD   0
1043
1044
1045
1046                                    .SBTTL  OUTPUT BUFFER
1047                                    ;
1048                                    ;150 BYTES IS RESERVED FOR THE OUTPUT BUFFER AREA
1049                                    ;
1050
1051                                            .EVEN
1052  003114  000226                    OUTBUF: .REPT   150.
1053                                            .BYTE   0
1054                                            .ENDR
1055
```

```
                                        .SBTTL  GLOBAL TEXT SECTION

                                        .NLIST BEX
                                        ;++
                                        ; THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
                                        ; MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
                                        ; MORE THAN ONE TEST.
                                        ;--
003342  051120  047111  042524  CSRERR: .ASCIZ /PRINTER ERROR/
003360  051120  047111  042524  RDYERR: .ASCIZ /PRINTER NOT READY/
003402  040520  042520  020122  PAPSWI: .ASCIZ /PAPER OUT INTERLOCK SWITCH FAILURE - MAKE SURE PAPER IS RESTORED/
003503     120  050101  051105  HANSWI: .ASCIZ /PAPER TRAY HANDLE INTERLOCK SWITCH FAILURE/
003556  051106  047117  020124  DOOSWI: .ASCIZ /FRONT DOOR INTERLOCK SWITCH FAILURE/
003622  051124  047101  046523  INTER1: .ASCIZ  /TRANSMIT INTERRUPT TIMEOUT/
003655     120  044522  052116  TXERR:  .ASCIZ  /PRINTER STATUS ERROR/
003702  052517  050124  052125  OUTTIM: .ASCIZ  /OUTPUT TIMEOUT ERROR/
003727     125  044516  020124  TXNOIN: .ASCIZ  /UNIT FAILED TO INTERRUPT/
003760  046101  020114  047125  UUTEQ0: .ASCIZ  /ALL UNITS HAVE BEEN DROPPED..RESTART../
004027     033     143          REINIT: .BYTE   33,143                          ; RESETS DEFAULT CONDITIONS IN LN01
004031     033     133     062  SELDEC: .BYTE   33,133,62,40,111                ; SELECT DECIPOINTS AS PARAMETER
004036     033     133     067  SELPIX: .BYTE   33,133,67,40,111                ; SELECT PIXELS AS PARAMETER
004043     015     012     000  ACRLF:: .BYTE   15,12,0
004046     015     012     012  SKIP3:: .BYTE   15,12,12,12
004052     033     133     061  DECFIN:: .BYTE  33,133,61,41,175                    ; SEQUENCE FOR TOGGLING PAPER OF
004060                          .EVEN


                                        ;
                                        .LIST BEX
                                        ;
                                        ; FORMAT STATEMENTS USED IN PRINT CALLS
                                        ;
004060  040445  050114  030461  LPDROP: .ASCIZ  /%ALP11 UNIT %D2%A DROPPED FROM TEST%N/
004066  052440  044516  020124
004074  042045  022462  020101
004102  051104  050117  042520
004110  020104  051106  046517
004116  052040  051505  022524
004124  000116


                                        .SBTTL  GLOBAL SUBROUTINES  SECTION

                                        ;++
                                        ; THE GLOBAL SUBROUTINE SECTION CONTAINS THE SUBROUTINES
                                        ; THAT ARE USED BY MORE THAN ONE TEST.
                                        ; -


                                        ;++
```

```
1106                                    ; FUNCTIONAL DESCRIPTION:
1107                                    ;    SUBROUTINE TO PRINT THE GENERAL ERROR INFORMATION.
1108                                    ;       PRINTS THE ERROR MESSAGE IN THE FOLLOWING FORMAT:
1109                                    ;
1110                                    ;       "ERROR AT CSR XXXXXX UNIT YY"
1111                                    ;
1112                                    ;       WHERE XXXXXX=   DEVICE CSR ADDRESS
1113                                    ;                 YY=   UNIT NUMBER THAT FAILED
1114                                    ;
1115                                    ;       CALLING SEQUENCE
1116                                    ;               JSR PC,LPERR
1117                                    ;       REQUIRED PARAMETERS
1118                                    ;               ERRCOD MUST BE SE' TO ONE OF THE ERROR CODES DESCRIBED
1119                                    ;               UNDER ERROR CODES.
1120                                    ;
1121                                    ;--
1122                                    ;
1123                                    ;
1124                                    ;               R2 IS USED INTERNAL TO THE ROUTINE.
1125                                    ;               THE ROUTINE DOES A SAVE ON R2
1126                                    ;               AND RESTORES IT PRIOR TO EXITING.
1127                                    ;
1128
1129  004126                            LPERR:  SELECT ERRCOD OF 3 VERIFY       ;SELECT PROPER MESSAGE FORMAT
 (2)  004126  013746  002332                    MOV     ERRCOD,-(SP)
 (6)  004132  002455                            BLT     50005$
 (3)  004134  023727  002332  000003           CMP     ERRCOD,#3
 (7)  004142  003051                            BGT     50005$
 (2)  004144  006316                            ASL     (SP)
 (3)  004146  062716  004154                    ADD     #50000$,(SP)
 (2)  004152  013607                            MOV     @(SP)+,PC
 (3)  004154                            50000$:
 (5)  004154  004272                            .WORD   50004$
 (5)  004156  004164                            .WORD   50003$
 (5)  004160  004212                            .WORD   50002$
 (5)  004162  004240                            .WORD   50001$
1130
1131  004164                                    CASE 1                          ;STATUS ERROR
 (5)  004164                            50003$:
1132  004164                                    LET ERRTBL(R2) := ERRTBL(R2) + #1
 (7)  004164  005262  003050                    INC     ERRTBL(R2)
1133  004170                                    LET L$LUN := R2 SHIFT -1
 (5)  004170  010237  002074                    MOV     R2,L$LUN
 (8)  004174  006237  002074                    ASR     L$LUN
1134  004200                                    ERRHRD  14,TXERR
 (4)  004200  104456                            TRAP    C$ERHRD
 (5)  004202  000016                            .WORD   14
 (5)  004204  003655                            .WORD   TXERR
 (5)  004206  000000                            .WORD   0
1135
1136  004210                                    CASE 2                          ;OUTPUT TIMEOUT ERROR
 (4)  004210  000430                            BR      50006$
 (5)  004212                            50002$:
1137  004212                                    LET ERRTBL(R2) := ERRTBL(R2) + #1
 (7)  004212  005262  003050                    INC     ERRTBL(R2)
1138  004216                                    LET L$LUN := R2 SHIFT  1
```

```
 (5)  004216  010237  002074          MOV     R2,L$LUN
 (8)  004222  006237  002074          ASR     L$LUN
1139  004226                          ERRHRD  15,OUTTIM       ;
 (4)  004226  104456                  TRAP    C$ERHRD
 (5)  004230  000017                  .WORD   15
 (5)  004232  003702                  .WORD   OUTTIM
 (5)  004234  000000                  .WORD   0
1140
1141  004236                          CASE 3
 (4)  004236  000415                  BR      50006$
 (5)  004240                  50001$:
1142                                  ;  NEVER RECIEVED THE INTERRUPT
1143  004240                          LET ERRTBL(R2) := ERRTBL(R2) + #1
 (7)  004240  005262  003050          INC     ERRTBL(R2)
1144  004244                          LET L$LUN := R2 SHIFT -1
 (5)  004244  010237  002074          MOV     R2,L$LUN
 (8)  004250  006237  002074          ASR     L$LUN
1145  004254                          ERRHRD 16,TXNOIN
 (4)  004254  104456                  TRAP    C$ERHRD
 (5)  004256  000020                  .WORD   16
 (5)  004260  003727                  .WORD   TXNOIN
 (5)  004262  000000                  .WORD   0
1146
1147
1148
1149  004264                  ENDSELECT
 (3)  004264  000402                  BR      50006$
 (3)  004266                  50005$:
 (2)  004266  062706  000002          ADD     #2,SP
 (3)  004272                  50004$:
 (3)  004272                  50006$:
1150
1151  004272                          IF ERRTBL(R2) GT MAXERR THEN
 (6)  004272  026237  003050  002266  CMP     ERRTBL(R2),MAXERR
 (10) 004300  003402                  BLE     50007$
1152  004302  004737  005354              JSR PC,DROP??       ; MAXIMUM ERROR COUNT EXCEEDED !
1153  004306                          ENDIF
 (4)  004306                  50007$:
1154  004306                          LET STATUS(R2) := STATUS(R2) CLR.BY #ERROR
 (7)  004306  042762  100000  002506  BIC     #ERROR,STATUS(R2)
1155  004314                          LET ERRCOD := #0
 (4)  004314  005037  002332          CLR     ERRCOD
1156  004320                          LET @LPCSR(R2) := #100          ; CLEAR THE ERROR BIT AND ENABLE INTERRUPTS
 (4)  004320  012772  000100  002352  MOV     #100,@LPCSR(R2)
1157  004326  000207                  RTS     PC              ;AND EXIT
1158
1159                                  ;*************************************************************
1160                                  ; BIN2DA        BINARY TO DECIMAL ASCII CONVERSION ROUTINE
1161                                  ;               ENTER WITH NUMBER TO BE CONVERTED ON THE STACK
1162                                  ;               FOLLOWED BY THE ADDRESS OF A 5 BYTE BUFFER
1163                                  ;               FOR THE ASCII STRING. 5 DIGITS WILL BE CONVERTED
1164                                  ;               LEADING ZEROES WILL BE CONVERTED TO SPACES.
1165                                  ;               CALL BY JSR  PC,BIN2DA
1166                                  ;*************************************************************
1167
1168  004330                  BIN2DA: PUSH R4,R5
```

```
                        MOV     R4,-(SP)
                        MOV     R5,-(SP)
1169  004334            LET R4 := 6(SP)         ; GET ADDRESS FOR ASCII STRING
 (4)  004334  016604  000006   MOV     6(SP),R4
1170  004340            LET R5 := @TABLDA       ; GET ADDRESS OF DECIMAL TABLE
 (4)  004340  012705  004522   MOV     @TABLDA,R5
1171  004344            LET FLAGDA := #0        ; LEADING ZERO FLAG
 (4)  004344  005037  004534   CLR     FLAGDA
1172  004350            LET COUNTD := #0
 (4)  004350  005037  004536   CLR     COUNTD
1173                    ; 8.(SP) HAS NUMBER TO BE CONVERTED
1174  004354            DECR DIGITS FROM #4 TO #0 BY #1 ; DO 5 DIGITS
 (5)  004354  012737  000004  004540   MOV     #4,DIGITS
 (7)  004362  000402   BR      50010$
 (6)  004364        50011$:
(10)  004364  005337  004540   DEC     DIGITS
 (7)  004370        50010$:
 (7)  004370  005737  004540   TST     DIGITS
 (9)  004374  002435   BLT     50012$
1175  004376            WHILE 8.(SP) GE (R5) DO     ; CREATE A DIGIT
 (4)  004376        50013$:
 (6)  004376  026615  000010   CMP     8.(SP),(R5)
(10)  004402  002405   BLT     50014$
1176  004404            LET 8.(SP) := 8.(SP)   (R5)
 (7)  004404  161566  000010   SUB     (R5),8.(SP)
1177  004410            LET COUNTD := COUNTD + #1
 (7)  004410  005237  004536   INC     COUNTD
1178  004414        ENDDO
 (4)  004414  000770   BR      50013$
 (3)  004416        50014$:
1179                    ; CONVERT DIGIT TO ASCII OR SUPPLY A SPACE
1180  004416            IF COUNTD GT #0 OR FLAGDA GT #0 THEN
 (6)  004416  005737  004536   TST     COUNTD
 (8)  004422  003003   BGT     50015$
 (6)  004424  005737  004534   TST     FLAGDA
(10)  004430  003410   BLE     50016$
 (6)  004432        50015$:
1181  004432            LET COUNTD := COUNTD SET.BY #60
 (7)  004432  052737  000060  004536   BIS     #60,COUNTD
1182  004440            LET (R4)+ :B= COUNTD
 (4)  004440  113724  004536   MOVB    COUNTD,(R4)+
1183  004444            LET FLAGDA := FLAGDA + #1
 (7)  004444  005237  004534   INC     FLAGDA
1184  004450        ELSE
 (4)  004450  000402   BR      50017$
 (3)  004452        50016$:
1185  004452            LET (R4)+ :B= #40
 (4)  004452  112724  000040   MOVB    #40,(R4)+
1186  004456        ENDIF
 (4)  004456        50017$:
1187                    ; DO THE NEXT DIGIT
1188  004456        LET R5 := R5 + #2
 (7)  004456  062705  000002   ADD     #2,R5
1189  004462            LET COUNTD := #0
 (4)  004462  005037  004536   CLR     COUNTD
1190  004466        ENDDECR
```

```
 (5)  004466  000736                          BR      50011$
 (4)  004470                                50012$:
1191                                        ; IF NUMBER WAS A ZERO PRINT A '0'
1192  004470                                IF FLAGDA EQ #0 THEN
 (6)  004470  005737  004534                TST     FLAGDA
 (10) 004474  001002                        BNE     50020$
1193  004476                                    LET -(R4) :B= #060
 (4)  004476  112744  000060                MOVB    #60,-(R4)
1194  004502                                ENDIF
 (4)  004502                                50020$:
1195                                        ; CLEAN UP THE STACK AND EXIT
1196  004502                                LET 8.(SP) := 4(SP)
 (4)  004502  016666  000004  000010        MOV     4(SP),8.(SP)
1197  004510                                POP     R5,R4
 (2)  004510  012605                        MOV     (SP)+,R5
 (3)  004512  012604                        MOV     (SP)+,R4
1198  004514                                LET SP := SP + #4
 (7)  004514  062706  000004                ADD     #4,SP
1199  004520  000207                        RTS     PC
1200
1201
1202  004522  023420  001750  000144  TABLDA: .WORD   10000.,1000.,100.,10.,1
      004530  000012  000001
1203  004534  000000                  FLAGDA: .WORD   0
1204  004536  000000                  COUNTD: .WORD   0
1205  004540  000000                  DIGITS: .WORD   0
1206
1207                                        .SBTTL  I/O DRIVER
1208
1209                                        ;
1210                                        ;
1211                                        ;++
1212                                        ;THE I/O DRIVER ROUTINE IS INVOKED BY MEANS OF THE INTERRUPT SYSTEM.
1213                                        ;CALL TO IT IS JMP  IODRV.
1214                                        ;RETURN   RTI.
1215                                        ;ENTER ROUTINE WITH R2 SET UP TO DESIRED UNIT *2. R2 IS USED
1216                                        ;TO CALCULATE OFFSET INTO PROPER TABLE.
1217                                        ;R1 EQUALS MAXIMUM NUMBER OF UNITS ON SYSTEM UNDER TEST.
1218                                        ;
1219                                        ;--
1220                                        ;
1221                                        ; CHECK FOR ERROR FLAG IN STATUS REG.
1222                                        ;
1223  004542                                IODRV:  IF #BIT15 NOTSETIN @LPCSR(R2) THEN
 (6)  004542  032772  100000  002352        BIT     #BIT15,@LPCSR(R2)
 (10) 004550  001061                        BNE     50021$
1224                                        ;
1225                                        ; IF COUNT NOT ZERO SEND NEXT BYTE
1226                                        ;
1227  004552                                    IF CURCNT(R2) GT #0 THEN
 (6)  004552  005762  002746                TST     CURCNT(R2)
 (10) 004556  003416                        BLE     50022$
1228  004560                                LET @LPBUF(R2) :B= @CURADD(R2)
 (4)  004560  117272  002546  002446        MOVB    @CURADD(R2),@LPBUF(R2)
1229  004566                                LET CURADD(R2) := CURADD(R2) + #1
 (7)  004566  005262  002546                INC     CURADD(R2)
```

```
1230                                        ;
1231                                        ; ENABLE INTERRUPT FOR NEXT BYTE
1232                                        ;
1233  004572                                            LET STATUS(R2) := STATUS(R2) SET.BY #ACTIVE
 (7)  004572  052762  020000  002506          BIS      #ACTIVE,STATUS(R2)
1234  004600                                            LET CURCNT(R2) := CURCNT(R2) - #1
 (7)  004600  005362  002746                  DEC      CURCNT(R2)
1235  004604                                            LET @LPCSR(R2) := #100
 (4)  004604  012772  000100  002352          MOV      #100,@LPCSR(R2)
1236  004612                                        ELSE
 (4)  004612  000437                          BR       50023$
 (3)  004614                                 50022$:
1237                                         ; CURRENT MSG DONE, IF PRINT COUNT NOT ZERO SEND AGAIN
1238  004614                                                LET REPCNT(R2) := REPCNT(R2)   #1
 (7)  004614  005362  002646                  DEC      REPCNT(R2)
1239  004620                                                IF REPCNT(R2) GT #0 THEN
 (6)  004620  005762  002646                  TST      REPCNT(R2)
 (10) 004624  003424                          BLE      50024$
1240  004626                                                    LET CURADD(R2) := MSGADR(R2)  ; RESTORE THE MSG ADDR
 (4)  004626  016262  002706  002546          MOV      MSGADR(R2),CURADD(R2)
1241  004634                                                    LET CURCNT(R2) := MSGCNT(R2)  ; RESTORE THE BYTE COUNT
 (4)  004634  016262  002606  002746          MOV      MSGCNT(R2),CURCNT(R2)
1242  004642                                                    LET @LPBUF(R2) :B= @CURADD(R2)  ; RESEND THE MESSAGE
 (4)  004642  117272  002546  002446          MOVB     @CURADD(R2),@LPBUF(R2)
1243  004650                                                    LET CURADD(R2) := CURADD(R2) + #1 ; BUMP THE POINTER
 (7)  004650  005262  002546                  INC      CURADD(R2)
1244  004654                                                    LET CURCNT(R2) := CURCNT(R2) - #1 ; DROP BYTE COUNT
 (7)  004654  005362  002746                  DEC      CURCNT(R2)
1245  004660                                                    LET STATUS(R2) := STATUS(R2) SET.BY #ACTIVE
 (7)  004660  052762  020000  002506          BIS      #ACTIVE,STATUS(R2)
1246  004666                                                    LET @LPCSR(R2) := #100  ; RE-ENABLE INTERRUPTS
 (4)  004666  012772  000100  002352          MOV      #100,@LPCSR(R2)
1247  004674                                                ELSE
 (4)  004674  000406                          BR       50025$
 (3)  004676                                 50024$:
1248                                         ; CURRENT MSG DONE, REPEAT COUNT =0
1249                                         ; CLEAR ACTIVE AND DISABLE INTERRUPTS.
1250  004676                                                    LET STATUS(R2) := STATUS(R2) CLR.BY #ACTIVE
 (7)  004676  042762  020000  002506          BIC      #ACTIVE,STATUS(R2)
1251  004704                                                    LET @LPCSR(R2) := #00
 (4)  004704  012772  000000  002352          MOV      #00,@LPCSR(R2)
1252  004712                                                ENDIF
 (4)  004712                                 50025$:
1253  004712                                            ENDIF
 (4)  004712                                 50023$:
1254  004712                                        ELSE
 (4)  004712  000410                          BR       50026$
 (3)  004714                                 50021$:
1255                                         ; CLEAR ERROR CONDITION, ENABLE INTERRUPTS
1256                                         ; SET ERROR FLAG
1257  004714                                            LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
 (7)  004714  052762  100000  002506          BIS      #ERROR,STATUS(R2)
1258  004722                                            LET ERRCOD := #STATER        ; STATUS ERROR
 (4)  004722  012737  000001  002332          MOV      #STATER,ERRCOD
1259  004730  004777  176112                      JSR PC,@ERRSVC
1260                                             ; ERROR SERVICE SHOULD CLEAR ERROR BIT AND ENABLE INTR
```

```
1261  004734                                  ENDIF
 (4)  004734                            50026$:
1262  004734                                  POP R2
 (2)  004734  012602                        MOV     (SP)+,R2
1263  004736  000002                        RTI
1264                                   .SBTTL I/O CONTROL
1265                                   ;**
1266                                   ;
1267                                   ; THE I/O CONTROL SUBROUTINE IS A SINGLE ENTRY QUEUE MANAGER.
1268                                   ; THIS ROUTINE IS INVOKED BY A JSR FROM AN I/O CALL.
1269                                   ; INPUTS:       PRINTR  -1 FOR ALL TERMINALS
1270                                   ;                       N FOR PRINTER NUMBER 'N'
1271                                   ;               BUFADD  ADDRESS OF MESSAGE TO PRINT
1272                                   ;               BUFCNT  BYTE COUNT TO TRANSMIT TO PRINTER
1273                                   ;
1274                                   ;               ERRSVC  ADDRESS OF ERROR SERVICE SUBROUTINE
1275                                   ;               BUFREP IS NO. OF TIMES TO PRINT THE MESSAGE
1276                                   ;--
1277
1278  004740                           IOCTRL: PUSH    R2,R3,R4
 (2)  004740  010246                        MOV     R2,-(SP)
 (3)  004742  010346                        MOV     R3,-(SP)
 (4)  004744  010446                        MOV     R4,-(SP)
1279                                   ;
1280                                   ; PRINTR CONTAINS THE UNIT NUMBER.  IF
1281                                   ; PRINTR = -1, THEN QUEUE TO ALL PRINTERS.
1282                                   ;
1283  004746                                  IF PRINTR EQ #-1 THEN
 (6)  004746  023727  002314  177777        CMP     PRINTR,#-1
 (10) 004754  001005                        BNE     50027$
1284  004756                                     LET R3 := L$UNIT
 (4)  004756  013703  002012                MOV     L$UNIT,R3
1285  004762  005037  002074                   CLR L$LUN
1286  004766                                  ELSE
 (4)  004766  000405                        BR      50030$
 (3)  004770                            50027$:
1287  004770                                     LET R3 := #1
 (4)  004770  012703  000001                MOV     #1,R3
1288  004774                                     LET L$LUN := PRINTR
 (4)  004774  013737  002314  002074        MOV     PRINTR,L$LUN
1289  005002                                  ENDIF
 (4)  005002                            50030$:
1290
1291                                   ;
1292                                   ; DO FOR SELECTED PRINTER(S)
1293                                   ;
1294  005002                                  WHILE R3 GT #0 DO
 (4)  005002                            50031$:
 (6)  005002  005703                        TST     R3
 (10) 005004  003534                        BLE     50032$
1295                                   ;
1296                                   ; USE R2 AS AN INDEX INTO THE UNIT TABLES
1297                                   ;
1298  005006                                     LET R2 := L$LUN SHIFT 1
 (5)  005006  013702  002074                MOV     L$LUN,R2
 (8)  005012  006302                        ASL     R2
```

```
1299  005014  005037  002332                      CLR  ERRCOD
1300                                          ;
1301                                          ; IF THE UNIT HAS BEEN DROPPED SELECT THE NEXT UNIT
1302                                          ;
1303  005020                                        IF @DROPED NOTSETIN STATUS(R2) THEN
 (6)  005020  032762  040000  002506          BIT     @DROPED,STATUS(R2)
 (10) 005026  001117                          BNE     50033$
1304                                          ;
1305                                          ;TEST FOR DVC ERROR BIT SET
1306                                          ;
1307  005030                                        IF @BIT15 SETIN @LPCSR(R2) THEN
 (6)  005030  032772  100000  002352          BIT     @BIT15,@LPCSR(R2)
 (10) 005036  001407                          BEQ     50034$
1308  005040                                           LET ERRCOD := @STATER                ; STATUS REG ERROR BIT 15 SET IN
 (4)  005040  012737  000001  002332          MOV     @STATER,ERRCOD
1309  005046                                           LET STATUS(R2) := STATUS(R2) SET.BY @ERROR
 (7)  005046  052762  100000  002506          BIS     @ERROR,STATUS(R2)
1310  005054                                        ELSE
 (4)  005054  000451                          BR      50035$
 (3)  005056                                50034$:
1311                                          ;
1312                                          ; MAKE SURE PREVIOUS MESSAGE IS DONE
1313                                          ;
1314  005056                                           IF @ACTIVE SETIN STATUS(R2) THEN
 (6)  005056  032762  020000  002506          BIT     @ACTIVE,STATUS(R2)
 (10) 005064  001437                          BEQ     50036$
1315  005066                                                LET R4 := @20000.               ; TIMEOUT COUNTER
 (4)  005066  012704  047040                  MOV     @20000.,R4
1316  005072                                                WHILE @ACTIVE SETIN STATUS(R2) DO
 (4)  005072                                50037$:
 (6)  005072  032762  020000  002506          BIT     @ACTIVE,STATUS(R2)
 (10) 005100  001430                          BEQ     50040$
1317  005102                                                     DELAY 2.                   ; WAIT 200 MICROSECONDS
 (2)  005102  012727  000002                  MOV     #2.,(PC)+
 (2)  005106  000000                          .WORD   0
 (2)  005110  013727  002116                  MOV     L$DLY,(PC)+
 (2)  005114  000000                          .WORD   0
 (2)  005116  005367  177772                  DEC     -6(PC)
 (2)  005122  001375                          BNE     .-4
 (2)  005124  005367  177756                  DEC     -22(PC)
 (2)  005130  001367                          BNE     .-20
1318  005132  005304                                     DEC R4                           ; DEC TIMEOUT COUNTER
1319  005134                                             IFCOND EQ THEN
 (7)  005134  001011                          BNE     50041$
1320  005136                                                LET ERRCOD := @TIMOUT
 (4)  005136  012737  000002  002332          MOV     @TIMOUT,ERRCOD
1321  005144  042762  020000  002506                      BIC     @ACTIVE,STATUS(R2)
1322  005152  052762  100000  002506                      BIS     @ERROR,STATUS(R2)
1323  005160                                             ENDIF
 (4)  005160                                50041$:
1324  005160                                          ENDDO
 (4)  005160  000744                          BR      50037$
 (3)  005162                                50040$:
1325  005162                                             ELSE
 (4)  005162  000406                          BR      50042$
 (3)  005164                                50036$:
```

```
1326  005164                                                  IF CURCNT(R2) GT #0 THEN
 (6)  005164  005762  002746          TST     CURCNT(R2)
 (10) 005170  003403                  BLE     50043$
1327                                  ;
1328                                  ; OUTPUT WAS QUEUED BUT I/O DRIVER WAS NEVER INVOKED (VIA INTERRUPT)
1329                                  ;
1330  005172                                                    LET ERRCOD := #NOINTR
 (4)  005172  012737  000003  002332  MOV     #NOINTR,ERRCOD
1331  005200                                                  ENDIF
 (4)  005200                          50043$:
1332  005200                                                ENDIF
 (4)  005200                          50042$:
1333  005200                                                ENDIF
 (4)  005200                          50035$:
1334  005200                                                IF ERRCOD NE #0 THEN
 (6)  005200  005737  002332          TST     ERRCOD
 (10) 005204  001403                  BEQ     50044$
1335  005206                                                  CALL @ERRSVC                    ; REPORT THE ERROR
 (3)  005206  004777  175634          JSR     PC,@ERRSVC
1336  005212                                                  ELSE
 (4)  005212  000425                  BR      50045$
 (3)  005214                          50044$:
1337                                  ;
1338                                  ; QUEUE THE MESSAGE AND ENABLE INTERRUPTS -
1339                                  ; THE I/O DRIVER WILL PICK UP FROM HERE.
1340                                  ;
1341  005214                                                    LET CURADD(R2) := BUFADD      ; BYTE ADDRESS
 (4)  005214  013762  002344  002546  MOV     BUFADD,CURADD(R2)
1342  005222                                                    LET MSGADR(R2) := BUFADD      ; MESSAGE ADDRESS
 (4)  005222  013762  002344  002706  MOV     BUFADD,MSGADR(R2)
1343  005230                                                    LET CURCNT(R2) := BUFCNT      ; OUTPUT COUNT
 (4)  005230  013762  002346  002746  MOV     BUFCNT,CURCNT(R2)
1344  005236                                                    LET MSGCNT(R2) := BUFCNT      ; BYTE COUNT
 (4)  005236  013762  002346  002606  MOV     BUFCNT,MSGCNT(R2)
1345  005244                                                    LET REPCNT(R2) := BUFREP      ; PRINT COUNT
 (4)  005244  013762  002350  002646  MOV     BUFREP,REPCNT(R2)
1346  005252                                                    IF CURCNT(R2) GT #0 THEN
 (6)  005252  005762  002746          TST     CURCNT(R2)
 (10) 005256  003403                  BLE     50046$
1347  005260                                                      LET @LPCSR(R2) := #100      ; ENABLE INTERRUPTS
 (4)  005260  012772  000100  002352  MOV     #100,@LPCSR(R2)
1348  005266                                                    ENDIF
 (4)  005266                          50046$:
1349  005266                                                  ENDIF
 (4)  005266                          50045$:
1350  005266                                              ENDIF
 (4)  005266                          50033$:
1351                                  ;
1352                                  ; SELECT THE NEXT UNIT AND DECREMENT THE LINECOUNT
1353                                  ;
1354  005266  005303                      DEC R3
1355  005270  005237  002074              INC L$LUN
1356  005274                          ENDDO
 (4)  005274  000642                  BR      50031$
 (3)  005276                          50032$:
1357
```

```
 1358  005276                                  POP     R4,R3,R2
  (2)  005276  012604                          MOV     (SP)+,R4
  (3)  005300  012603                          MOV     (SP)+,R3
  (4)  005302  012602                          MOV     (SP)+,R2
 1359  005304  000207                          RTS     PC
 1360
 1361                                 ;++++
 1362                                 ; SUBROUTINE    QUIET
 1363                                 ;
 1364                                 ; THIS SUBROUTINE WILL EFFECTIVLY DELAY UNTIL ALL QUEUED OUTPUT
 1365                                 ; IS FINISHED. THE DELAY IS ACCOMPLISHED BY QUEUEING A NULL
 1366                                 ; MESSAGE TO ALL LINES.
 1367                                 ; - --
 1368
 1369  005306                         QUIET:  OUTPUT  #0,#0           ; NULL MESSAGE OUTPUT
 1370  005350  000240                         NOP
 1371  005352  000207                         RTS     PC
 1372
 1373                                 ;*****************************************************************
 1374                                 ; DROPIT        FUNCTIONAL DESCRIPTION :
 1375                                 ;
 1376                                 ; THIS SUBROUTINE IS USED TO DROP A BAD PRINTER FROM THE TEST
 1377                                 ; DISABLE ANY INTERRUPTS FROM THE PRINTER, AND NOTIFY THE
 1378                                 ; OPERATOR THAT THE PRINTER WAS DROPPED.
 1379                                 ;=================================================================
 1380
 1381  005354                         DROPIT: LET STATUS(R2) := STATUS(R2) SET.BY #DROPED
  (7)  005354  052762  040000  002506         BIS     #DROPED,STATUS(R2)
 1382  005362                                 LET CURCNT(R2) := #-1
  (4)  005362  012762  177777  002746         MOV     #-1,CURCNT(R2)
 1383  005370                                 LET @LPCSR(R2) := #0
  (4)  005370  005072  002352                 CLR     @LPCSR(R2)
 1384  005374                                 PRINTF #LPDROP, L$LUN
  (8)  005374  013746  002074                 MOV     L$LUN,-(SP)
  (7)  005400  012746  004060                 MOV     #LPDROP,-(SP)
  (6)  005404  012746  000002                 MOV     #2,-(SP)
  (3)  005410  010600                         MOV     SP,R0
  (4)  005412  104417                         TRAP    C$PNTF
  (4)  005414  062706  000006                 ADD     #6,SP
 1385  005420                                 LET ERRTBL(R2) := #0
  (4)  005420  005062  003050                 CLR     ERRTBL(R2)
 1386  005424                                 LET UUT := UUT - #1
  (7)  005424  005337  002336                 DEC     UUT
 1387  005430                                 IF UUT EQ #0 THEN
  (6)  005430  005737  002336                 TST     UUT
 (10)  005434  001011                         BNE     50047$
 1388  005436                                 PRINTF #UUTEQ0
  (7)  005436  012746  003760                 MOV     #UUTEQ0,-(SP)
  (6)  005442  012746  000001                 MOV     #1,-(SP)
  (3)  005446  010600                         MOV     SP,R0
  (4)  005450  104417                         TRAP    C$PNTF
  (4)  005452  062706  000004                 ADD     #4,SP
 1389  005456                                     DOCLN       ; NOTHING TO TEST
  (3)  005456  104444                         TRAP    C$DCLN
 1390  005460                                 ENDIF
  (4)  005460                         50047$:
```

```
1391  005460  000207                          RTS     PC
1392
1393
1394
1395                                  ;*****************************************************************
1396                                  ; FAKE          FUNCTIONAL DESCRIPTION:
1397                                  ;
1398                                  ; THIS SUBROUTINE IS REQUIRED TO INSURE PROPER PASS COUNT REPORTS
1399                                  ; IN A MULTI UNIT MODE OF OPERATION.
1400                                  ;*****************************************************************
1401
1402  005462                          FAKE:   LET L$LUN := #0
 (4)  005462  005037  002074                  CLR     L$LUN
1403  005466                                  WHILE L$LUN LT L$UNIT DO
 (4)  005466                          50050$:
 (6)  005466  023737  002074  002012          CMP     L$LUN,L$UNIT
 (10) 005474  002007                          BGE     50051$
1404  005476                                      GPHARD      L$LUN, R3
 (3)  005476  013700  002074                  MOV     L$LUN,R0
 (3)  005502  104442                          TRAP    C$GPHRD
 (3)  005504  010003                          MOV     R0,R3
1405  005506                                      LET L$LUN := L$LUN + #1
 (7)  005506  005237  002074                  INC     L$LUN
1406  005512                                  ENDDO
 (4)  005512  000765                          BR      50050$
 (3)  005514                          50051$:
1407  005514  000207                          RTS     PC
1408
1409
1410  005516                                  ENDMOD
1411                                  .SBTTL  INITIALIZATION SECTION
1412                                  ;++
1413                                  ;THE INITIALIZE ROUTINE IS EXECUTED AT THE BEGINNING OF EACH SUB-PASS AND IS
1414                                  ;PRIMARILY USED FOR REQUESTING P-TABLE PARAMETERS. INFORMATION REQUESTED FROM
1415                                  ;THE OPERATOR INCLUDE THE NUMBER OF UNITS UNDER TEST, DEVICE ADDRESSES, VECTORS,
1416                                  ;AND CLOCK TYPE.
1417                                  ;--
1418  005516                          BGNMOD
1419  005516                          BGNINIT
 (3)  005516                          L$INIT::
1420                                  ;RESET EXTERNAL BUS IF START EVENT FLAG IS SET
1421                                  ;OR POWER FAIL RESTART
1422  005516                                  READEF  #EF.START               ;TEST START EF INDICATOR
 (3)  005516  012700  000040                  MOV     #EF.START,R0
 (3)  005522  104447                          TRAP    C$REFG
1423  005524                                  BCOMPLETE 1$                    ;BRANCH IF FROM START UP
 (2)  005524  103466                          BCS     1$
1424  005526                                  READEF  #EF.RESTART             ;NOW THE RESTARTFLAG
 (3)  005526  012700  000037                  MOV     #EF.RESTART,R0
 (3)  005532  104447                          TRAP    C$REFG
1425  005534                                  BCOMPLETE 1$                    ;IF EITHER START OR POWER FAIL RESTART
 (2)  005534  103462                          BCS     1$
1426                                                                          ;DO A BUS RESET
1427  005536  004737  005462                  JSR     PC,FAKE                 ; UPDATE PASS COUNT
1428  005542                                  SETPRI  #PRI00                  ; PRIORITY ZERO
 (3)  005542  012700  000000                  MOV     #PRI00,R0
```

```
  (3)  005546  104441                          TRAP    C$SPRI
 1429  005550                                  LET OUTBUF :B= #14
  (4)  005550  112737  000014  003114          MOVB    #14,OUTBUF
 1430  005556                                  OUTPUT #OUTBUF,#1
 1431  005620                                  DECR WORK1 FROM #6 TO #1 BY #1
  (5)  005620  012737  000006  003112          MOV     #6,WORK1
  (7)  005626  000402                          BR      50052$
  (6)  005630                           50053$:
  (10) 005630  005337  003112                  DEC     WORK1
  (7)  005634                           50052$:
  (7)  005634  023727  003112  000001          CMP     WORK1,#1
  (9)  005642  002415                          BLT     50054$
 1432  005644                                  DELAY 250
  (2)  005644  012727  000250                  MOV     #250,(PC)+
  (2)  005650  000000                          .WORD   0
  (2)  005652  013727  002116                  MOV     L$DLY,(PC)+
  (2)  005656  000000                          .WORD   0
  (2)  005660  005367  177772                  DEC     -6(PC)
  (2)  005664  001375                          BNE     .-4
  (2)  005666  005367  177756                  DEC     -22(PC)
  (2)  005672  001367                          BNE     .-20
 1433  005674                                  ENDDEC
  (5)  005674  000755                          BR      50053$
  (4)  005676                           50054$:
 1434  005676                                  EXIT INIT                       ; ELSE EXIT INIT CODE
  (3)  005676  104432                          TRAP    C$EXIT
  (3)  005700  001300                          .WORD   L10004 .
 1435                                   ;
 1436                                   ;POWER UP RESTART OR START COMMAND ISSUED
 1437                                   ;
 1438  005702                           1$:     BRESET                          ;RESET THE BUS
  (3)  005702  104433                          TRAP    C$RESET
 1439  005704                                  IF L$UNIT GT #16. THEN
  (6)  005704  023727  002012  000020          CMP     L$UNIT,#16.
  (10) 005712  003420                          BLE     50055$
 1440  005714                                      PRINTF #NRGT16
  (7)  005714  012746  006542                  MOV     #NRGT16,-(SP)
  (6)  005720  012746  000001                  MOV     #1,-(SP)
  (3)  005724  010600                          MOV     SP,R0
  (4)  005726  104417                          TRAP    C$PNTF
  (4)  005730  062706  000004                  ADD     #4,SP
 1441  005734                                      PRINTF #NRGT17
  (7)  005734  012746  006625                  MOV     #NRGT17,-(SP)
  (6)  005740  012746  000001                  MOV     #1,-(SP)
  (3)  005744  010600                          MOV     SP,R0
  (4)  005746  104417                          TRAP    C$PNTF
  (4)  005750  062706  000004                  ADD     #4,SP
 1442  005754                                  ENDIF
  (4)  005754                           50055$:
 1443  005754                                  MANUAL                          ; CHECK FOR UNATTENDED MODE
  (3)  005754  104450                          TRAP    C$MANI
 1444  005756                                  BNCOMPLETE      2$              ; IF UNATTENDED BYPASS MANUAL INSTRUCTIONS
  (2)  005756  103024                          BCC     2$
 1445
 1446  005760                                  PRINTF #RESET1
  (7)  005760  012746  006735                  MOV     #RESET1,-(SP)
```

```
   (6)  005764  012746  000001                MOV     #1,-(SP)
   (3)  005770  010600                         MOV     SP,R0
   (4)  005772  104417                         TRAP    C$PNTF
   (4)  005774  062706  000004                ADD     #4,SP
  1447                                ;
  1448                                ;WAIT FOR A "CR" BEFORE GOING ON
  1449                                ;
  1450  006000                                LET FLAG := #0
   (4)  006000  005037  002270                CLR     FLAG
  1451  006004                                LET ERRCOD := #0
   (4)  006004  005037  002332                CLR     ERRCOD
  1452  006010                                LET UUT := #0
   (4)  006010  005037  002336                CLR     UUT
  1453  006014                          100$:
  1454  006014                                GMANIL  READY,FLAG,100000,YES
   (3)  006014  104443                         TRAP    C$GMAN
   (3)  006016  000404                         BR      10000$
   (4)  006020  002270                         .WORD   FLAG
   (5)  006022  000130                         .WORD   T$CODE
   (5)  006024  007006                         .WORD   READY
   (5)  006026  100000                         .WORD   100000
   (3)  006030                          10000$:
  1455                                ;
  1456                                ;REQUEST P-TABLE FOR PRINTERS UNDER TEST
  1457                                ;
  1458  006030                          2$:     LET R1 := L$UNIT - #1           ;MAXIMUM NUMBER OF UNITS
   (5)  006030  013701  002012                MOV     L$UNIT,R1
   (7)  006034  005301                        DEC     R1
  1459  006036                                INCR L$LUN FROM #0 TO R1 BY #1
   (5)  006036  005037  002074                CLR     L$LUN
   (7)  006042  000402                        BR      50056$
   (6)  006044                          50057$:
  (10)  006044  005237  002074                INC     L$LUN
   (7)  006050                          50056$:
   (7)  006050  023701  002074                CMP     L$LUN,R1
   (9)  006054  003071                        BGT     50060$
  1460  006056                                GPHARD L$LUN,R3             ;REQUEST P TABLE ADDRESS
   (3)  006056  013700  002074                MOV     L$LUN,R0
   (3)  006062  104442                        TRAP    C$GPHRD
   (3)  006064  010003                        MOV     R0,R3
  1461  006066                                BNCOMPLETE 3$               ;BRANCH IF DEVICE NOT PRESENT
   (2)  006066  103060                        BCC     3$
  1462  006070                                LET R2 := L$LUN SHIFT 1
   (5)  006070  013702  002074                MOV     L$LUN,R2
   (8)  006074  006302                        ASL     R2
  1463  006076                                LET ERRTBL(R2) := #0
   (4)  006076  005062  003050                CLR     ERRTBL(R2)
  1464  006102                                LET CURCNT(R2) := # 1
   (4)  006102  012762  177777  002746        MOV     #-1,CURCNT(R2)
  1465                                ;;;             LET DELCNT(R2) := #0
  1466  006110                                LET REPCNT(R2) := #0
   (4)  006110  005062  002646                CLR     REPCNT(R2)
  1467                                ;
  1468                                ;LOAD CSR ADDRESS INTO TABLE
  1469                                ;
  1470  006114                                LET LPCSR(R2) := (R3)+      ;SET UP CSR ADDRESS FOR DEVICE
```

```
 (4)  006114  012362  002352                    MOV     (R3)+,LPCSR(R2)
1471  006120                                         LET LPBUF(R2) := LPCSR(R2) + #2
 (5)  006120  016262  002352  002446            MOV     LPCSR(R2),LPBUF(R2)
 (7)  006126  062762  000002  002446            ADD     #2,LPBUF(R2)
1472                                    ;
1473                                    ;SET UP VECTOR ADDRESS INTO GIVEN TABLE
1474                                    ;
1475  006134                                         LET LPVEC(R2) := (R3)+
 (4)  006134  012362  002412                    MOV     (R3)+,LPVEC(R2)
1476                                    ;
1477                                    ;SET UP DEVICE INTERRUPT VECTOR INFORMATION
1478                                    ;
1479  006140                                    LET WORK := R2 SHIFT 3
 (5)  006140  010237  003110                    MOV     R2,WORK
 (8)  006144  006337  003110                    ASL     WORK
 (8)  006150  006337  003110                    ASL     WORK
 (8)  006154  006337  003110                    ASL     WORK
1480  006160                                    LET WORK := WORK + #INTOO
 (7)  006160  062737  104624  003110            ADD     #INTOO,WORK
1481  006166                                    LET LPINTR(R2) := WORK
 (4)  006166  013762  003110  003006            MOV     WORK,LPINTR(R2)
1482  006174                                    SETVEC LPVEC(R2), LPINTR(R2), #PRIO4
 (7)  006174  012746  000200                    MOV     #PRIO4,-(SP)
 (6)  006200  016246  003006                    MOV     LPINTR(R2),-(SP)
 (5)  006204  016246  002412                    MOV     LPVEC(R2),-(SP)
 (4)  006210  012746  000003                    MOV     #3,-(SP)
 (3)  006214  104437                            TRAP    C$SVEC
 (2)  006216  062706  000010                    ADD     #10,SP
1483                                    ;
1484                                    ; ADD ONE TO UNIT UNDER TEST COUNT
1485                                    ;
1486  006222                                    LET UUT := UUT + #1
 (7)  006222  005237  002336                    INC     UUT
1487  006226  000403                                BR  4$
1488                                    ;
1489                                    ;INDICATE L$LUN NOT AVAILABLE FOR TESTING
1490                                    ;
1491  006230                            3$:          LET STATUS(R2) := STATUS(R2) SET.BY #DROPED
 (7)  006230  052762  040000  002506            BIS     #DROPED,STATUS(R2)
1492  006236                            4$:     ENDINC                                  ;GO BACK AND DO IT AGAIN
 (5)  006236  000702                            BR      50057$
 (4)  006240                            50060$:
1493                                    ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
1494                                    ; SETUP TO HANDLE CLOCK INTERRUPTS
1495                                    ; IF AN L-CLOCK IS ON THE SYSTEM THEN SETUP A NOOP INTERRUPT
1496                                    ; HANDLER BECAUSE LSI SYSTEMS MAY HAVE THE CLOCK ENABLED AT ALL TIMES.
1497  006240                                    LET CLKTYP := #1        ; DEFAULT FOR NO CLOCK ON SYSTEM
 (4)  006240  012737  000001  002316            MOV     #1,CLKTYP
1498  006246                                    CLOCK   L,R4            ; TEST FOR L-CLOCK
 (3)  006246  012700  000114                    MOV     #'L,R0
 (3)  006252  104462                            TRAP    C$CLCK
 (3)  006254  010004                            MOV     R0,R4
1499  006256                                    IFCOND CS THEN          ; WE HAVE AN L-CLOCK
 (7)  006256  103031                            BCC     50061$
1500  006260                                         LET CLKTYP := #2
 (4)  006260  012737  000002  002316            MOV     #2,CLKTYP
```

```
1501  006266                                        LET CLOCKP := R4
 (4)  006266  010437  002320                  MOV     R4,CLOCKP
1502  006272                                        LET CLKCSR := @CLOCKP
 (4)  006272  017737  174022  002322          MOV     @CLOCKP,CLKCSR
1503  006300                                        LET @CLKCSR := #00  ; TRY TO DISABLE INTERRUPTS
 (4)  006300  012777  000000  174014          MOV     #00,@CLKCSR
1504                                                ; SETUP THE NOOP HANDLER
1505  006306                                        LET CLKVEC := 4(R4)
 (4)  006306  016437  000004  002326          MOV     4(R4),CLKVEC
1506  006314                                        SETVEC  CLKVEC,#IGNORE,#PRIO6
 (7)  006314  012746  000300                  MOV     #PRIO6,-(SP)
 (6)  006320  012746  007202                  MOV     #IGNORE,-(SP)
 (5)  006324  013746  002326                  MOV     CLKVEC,-(SP)
 (4)  006330  012746  000003                  MOV     #3,-(SP)
 (3)  006334  104437                          TRAP    C$SVEC
 (2)  006336  062706  000010                  ADD     #10,SP
1507  006342                                        ENDIF
 (4)  006342                              50061$:
1508                                      ; IF A P-CLOCK IS ON THE SYSTEM UPGRADE CLOCK TYPE TO 3
1509  006342                              CK1:    CLOCK   P,R4
 (3)  006342  012700  000120                  MOV     #'P,R0
 (3)  006346  104462                          TRAP    C$CLCK
 (3)  006350  010004                          MOV     R0,R4
1510  006352                                        IFCOND CS THEN          ; WE HAVE A P-CLOCK
 (7)  006352  103016                          BCC     50062$
1511  006354                                        LET CLKTYP := #3
 (4)  006354  012737  000003  002316          MOV     #3,CLKTYP
1512  006362                                        LET CLOCKP := R4
 (4)  006362  010437  002320                  MOV     R4,CLOCKP
1513  006366                                        LET CLKCSR := @CLOCKP
 (4)  006366  017737  173726  002322          MOV     @CLOCKP,CLKCSR
1514  006374                                        LET CLKVEC := 4(R4)
 (4)  006374  016437  000004  002326          MOV     4(R4),CLKVEC
1515                                                ; TRY TO DISABLE THE P-CLOCK
1516  006402                                        LET @CLKCSR := #00
 (4)  006402  012777  000000  173712          MOV     #00,@CLKCSR
1517  006410                                        ENDIF
 (4)  006410                              50062$:
1518                                      ; IF NO CLOCKS ON THE SYSTEM NOTIFY THE OPERATOR
1519  006410                                        IF CLKTYP EQ #1 THEN
 (6)  006410  023727  002316  000001          CMP     CLKTYP,#1
 (10) 006416  001020                          BNE     50063$
1520  006420                                        PRINTF #NOCLCK
 (7)  006420  012746  007043                  MOV     #NOCLCK,-(SP)
 (6)  006424  012746  000001                  MOV     #1,-(SP)
 (3)  006430  010600                          MOV     SP,R0
 (4)  006432  104417                          TRAP    C$PNTF
 (4)  006434  062706  000004                  ADD     #4,SP
1521  006440                                        PRINTF #NOTIM
 (7)  006440  012746  007105                  MOV     #NOTIM,-(SP)
 (6)  006444  012746  000001                  MOV     #1,-(SP)
 (3)  006450  010600                          MOV     SP,R0
 (4)  006452  104417                          TRAP    C$PNTF
 (4)  006454  062706  000004                  ADD     #4,SP
1522  006460                                        ENDIF
 (4)  006460                              50063$:
```

```
 1523  006460                                    SETPRI #PRI00
  (3)  006460  012700  000000                    MOV     #PRI00,R0
  (3)  006464  104441                            TRAP    C$SPRI
 1524  006466                            LET OUTBUF :B= #14
  (4)  006466  112737  000014  003114            MOVB    #14,OUTBUF
 1525  006474                            OUTPUT #OUTBUF,#1
 1526  006536                            EXIT INIT
  (3)  006536  104432                            TRAP    C$EXIT
  (3)  006540  000440                            .WORD   L10004-.
 1527                                    .NLIST BEX
 1528
 1529  006542  047045  040445  052516    NRGT16: .ASCIZ  /%N%ANUMBER OF LINE PRINTERS UNDER TEST EXCEEDS 16./
 1530  006625     045  022516  047501    NRGT17: .ASCIZ  /%N%AONLY 16 WILL BE TESTED./
 1531  006661     045  022516  051101    MRESET: .ASCIZ  /%N%ARESET PRINTER(S),  AND PLACE ON LINE.%N/
 1532  006735     045  022516  051101    RESET1: .ASCIZ /%N%ARESET PRINTER(S) AND PLACE ON LINE%N/
 1533
 1534  007006  042504  051120  051505    READY:  .ASCIZ  /DEPRESS "RETURN" WHEN READY./
 1535  007043     045  022516  044101    NOCLCK: .ASCIZ  /%N%AHARDWARE CLOCK NOT AVAILABLE./
 1536  007105     045  022516  040501    NOTIM:  .ASCIZ  /%N%AAUTO PRINTING SPEED MEASUREMENT CANNOT BE PERFORMED./
 1537                                    .EVEN
 1538  007176  000000                    PLOC:   .WORD   0
 1539
 1540                                    .LIST BEX
 1541  007200                            ENDINIT
  (3)  007200                            L10004:
  (3)  007200  104411                            TRAP    C$INIT
 1542
 1543                                    ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
 1544                                    ; IGNORE        AN INTERRUPT CATCHER FOR THE L CLOCK
 1545                                    ;               THAT IGNORES THE INTERRUPT.
 1546                                    ;               USED FOR SYSTEMS WHERE CLOCK CANNOT BE TURNED OFF.
 1547                                    ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
 1548
 1549  007202                            IGNORE:         ; NOOP
 1550  007202  000002                            RTI
 1551
 1552
 1553
 1554                                    ;- -- - -- - ---   -   -  -   -          -- -   -    - -
 1555                                    ;
 1556                                    ; RESVEC        FUNCTIONAL DESCRIPTION
 1557                                    ;
 1558                                    ;       THIS SUBROUTINE WILL SETUP ALL UNITS VECTOR AREAS
 1559                                    ;       TO THE 'NORMAL' INTERRUPT ROUTINES STARTING AT INT00.
 1560                                    ;--  -  --  -   - - -  --  -  ------- - - -      - -
 1561
 1562  007204                            RESVEC::        PUSH    R3,R4
  (2)  007204  010346                            MOV     R3,(SP)
  (3)  007206  010446                            MOV     R4,(SP)
 1563  007210                                    LET  R4 := #0
  (4)  007210  005004                            CLR     R4
 1564  007212                                    LET R3 := L$UNIT
  (4)  007212  013703  002012                    MOV     L$UNIT,R3
 1565  007216                                    WHILE R3 GT #0 DO
  (4)  007216                            50064$:
  (6)  007216  005703                            TST     R3
```

```
 (10) 007220  003417                        BLE     50065$
1566  007222                                    SETVEC LPVEC(R4), LPINTR(R4), #PRIO4
 (7)  007222  012746  000200                  MOV     #PRIO4,-(SP)
 (6)  007226  016446  003006                  MOV     LPINTR(R4),-(SP)
 (5)  007232  016446  002412                  MOV     LPVEC(R4),-(SP)
 (4)  007236  012746  000003                  MOV     #3, (SP)
 (3)  007242  104437                          TRAP    C$SVEC
 (2)  007244  062706  000010                  ADD     #10,SP
1567  007250                                    LET R4 := R4 + #2
 (7)  007250  062704  000002                  ADD     #2,R4
1568  007254                                    LET R3 := R3   #1
 (7)  007254  005303                          DEC     R3
1569  007256                                    ENDDO
 (4)  007256  000757                          BR      50064$
 (3)  007260                          50065$:
1570  007260                                    POP R4,R3
 (2)  007260  012604                          MOV     (SP)+,R4
 (3)  007262  012603                          MOV     (SP)+,R3
1571  007264  000207                          RTS     PC
1572
1573                                  .SBTTL  CLEANUP CODING SECTION
1574  007266                          STARS
 (2)                                  ;;*****************************************************************
1575                                  ;;
1576                                  ;THE PURPOSE OF THE CLEANUP SECTION IS TO CLEANUP ALL PRINTERS UNDER TEST
1577                                  ;AND RETEST ANY UNITS WHICH HAVE BEEN DROPPED FROM  TESTING TO INSURE THAT
1578                                  ;THEY HAVE NOT COME BACK ON LINE. IF THE DEVICE HAS COME BACK ON LINE
1579                                  ;TESTING WILL BE RESTARTED ON THE DEVICE. THIS INSURES THAT
1580                                  ;IN THE EVENT A PAPER OUT OCCURRED AND THE OPERATOR HAS PUT ADDITIONAL PAPER
1581                                  ;INTO THE UNIT UNDER TEST, THE INITIALIZATION SEQUENCE DOES NOT
1582                                  ;HAVE TO BE DONE AGAIN IN ORDER TO GET THE DEVICE ACTIVE.
1583                                  ;--
1584  007266                          STARS
 (2)                                  ;;*****************************************************************
1585  007266                          BGNCLN
 (3)  007266                          L$CLEAN::
1586  007266                                    SETPRI #PRIO7
 (3)  007266  012700  000340                  MOV     #PRIO7,R0
 (3)  007272  104441                          TRAP    C$SPRI
1587  007274                                BRESET
 (3)  007274  104433                          TRAP    C$RESET
1588
1589  007276                          CLEAN:  LET R1 := L$UNIT - #1    ;NUMBER OF UNITS-1
 (5)  007276  013701  002012                  MOV     L$UNIT,R1
 (7)  007302  005301                          DEC     R1
1590  007304                                    INCR L$LUN FROM #0 TO R1 BY #1
 (5)  007304  005037  002074                  CLR     L$LUN
 (7)  007310  000402                          BR      50066$
 (6)  007312                          50067$:
 (10) 007312  005237  002074                  INC     L$LUN
 (7)  007316                          50066$:
 (7)  007316  023701  002074                  CMP     L$LUN,R1
 (9)  007322  003016                          BGT     50070$
1591                                          ; DISABLE ALL INTERRUPTS, SELECT ALL LINES
1592                                          ; ZERO ALL ERROR COUNTS
1593  007324                                    LET R2 := L$LUN SHIFT 1
```

```
 (5)  007324  013702  002074                    MOV     L$LUN,R2
 (8)  007330  006302                            ASL     R2
1594                                                ; CLEAR ALL BITS IN STATUS EXCEPT DEVICE TYPE
1595  007332                                        LET STATUS(R2) := STATUS(R2) CLR.BY @ERROR!DROPED!ACTIVE!LOBYTE
 (7)  007332  042762  160377  002506              BIC     @ERROR!DROPED!ACTIVE!LOBYTE,STATUS(R2)
1596  007340                                        LET CURCNT(R2) := 0-1
 (4)  007340  012762  177777  002746              MOV     #-1,CURCNT(R2)
1597  007346                                        LET ERRTBL(R2) := #0
 (4)  007346  005062  003050                      CLR     ERRTBL(R2)
1598                                        ;;;     LET DELCNT(R2) := #0
1599  007352                                        LET REPCNT(R2) := #0
 (4)  007352  005062  002646                      CLR     REPCNT(R2)
1600  007356                                        ENDINC
 (5)  007356  000755                              BR      50067$
 (4)  007360                                50070$:
1601  007360  004737  007204                      JSR     PC,RESVEC               ; RESET THE VECTORS
1602  007364                                        IF CLKTYP EQ #3 THEN
 (6)  007364  023727  002316  000003              CMP     CLKTYP,#3
 (10) 007372  001006                              BNE     50071$
1603  007374                                        CLRVEC @CLKVEC
 (3)  007374  017700  172726                      MOV     @CLKVEC,R0
 (3)  007400  104436                              TRAP    C$CVEC
1604  007402                                        LET @CLKCSR := #00
 (4)  007402  012777  000000  172712              MOV     #00,@CLKCSR
1605  007410                                        ENDIF
 (4)  007410                                50071$:
1606  007410                                        IF CLKTYP EQ #2 THEN
 (6)  007410  023727  002316  000002              CMP     CLKTYP,#2
 (10) 007416  001013                              BNE     50072$
1607  007420                                        SETVEC CLKVEC,#IGNORE,#PRI06
 (7)  007420  012746  000300                      MOV     #PRI06,-(SP)
 (6)  007424  012746  007202                      MOV     #IGNORE,-(SP)
 (5)  007430  013746  002326                      MOV     CLKVEC,-(SP)
 (4)  007434  012746  000003                      MOV     #3,-(SP)
 (3)  007440  104437                              TRAP    C$SVEC
 (2)  007442  062706  000010                      ADD     #10,SP
1608  007446                                        ENDIF
 (4)  007446                                50072$:
1609  007446                                        SETPRI #PRI00
 (3)  007446  012700  000000                      MOV     #PRI00,R0
 (3)  007452  104441                              TRAP    C$SPRI
1610  007454                                ENDCLN
 (3)  007454                                L10005:
 (3)  007454  104412                              TRAP    C$CLEAN
1611
1612  007456                                ENDMOD
1613                                        .SBTTL  INTERFACE LOGIC
1614                                        ;MODULE         INLOG.P11
1615
1616  007456                                BGNMOD
1617                                        ;++
1618                                        ;THIS TEST VERIFIES THE OPERATION OF THE INTERFACE LOGIC. TESTS ARE
1619                                        ;PERFORMED FOR PRINTER ERROR, PRINTER READY, AND CLEARING PRINTER READY
1620                                        ;BY LOADING A CHARACTER INTO THE OUTPUT BUFFER. ALSO IT IS VERIFIED
1621                                        ;THAT THE PRINTER WILL NOT INTERRUPT IF IT IS AT THE SAME PRIORITY LEVEL
1622                                        ;AS THE PROCESSOR, BUT WILL INTERRUPT IF THE PROCESSOR IS AT A LOWER
```

```
1623                                    ;PRIORITY LEVEL. THE PRINTER IS AT PRIORITY LEVEL 4.
1624                                    ;
1625                                    ;
1626                                    ;-
1627  007456                            BGNTST  1
 (3)  007456                            T1::
1628  007456                            LET R1 := L$UNIT - #1                   ;MAX NUMBER OF UNITS ON SYSTEM
 (5)  007456  013701  002012                      MOV     L$UNIT,R1
 (7)  007462  005301                              DEC     R1
1629                                    ;
1630                                    ;HARD CODED INCREMEMNT LOOP
1631                                    ;INCR LUNIT FROM #0 TO R1 BY #1         ;START LOOP
1632                                    ;
1633  007464  005037  002310                      CLR     LUNIT                   ;UNIT TO 0
1634  007470  000402                              BR      T1C                     ;DO COMPARE
1635  007472                            T1A:
1636  007472  005237  002310                      INC     LUNIT                   ;UPDATE UNIT NUMBER
1637  007476                            T1C:
1638  007476  023701  002310                      CMP     LUNIT,R1                ;DO COMPARISON OF UNIT NUMBER
1639  007502  003402                              BLE     1$                      ;ONTO NEXT UNIT
1640  007504  000137  010244                      JMP     T1B                     ;EXIT LOOP
1641  007510                            1$:
1642  007510                                    LET R2 := LUNIT SHIFT 1
 (5)  007510  013702  002310                      MOV     LUNIT,R2
 (8)  007514  006302                              ASL     R2
1643  007516                                IF #BIT15 SETIN @LPCSR(R2) THEN
 (6)  007516  032772  100000  002352              BIT     #BIT15,@LPCSR(R2)
 (10) 007524  001416                              BEQ     50073$
1644  007526                                    LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
 (7)  007526  052762  100000  002506              BIS     #ERROR,STATUS(R2)
1645  007534                                    LET ERRTBL(R2) := ERRTBL(R2) + #1
 (7)  007534  005262  003050                      INC     ERRTBL(R2)
1646  007540                                    LET L$LUN := LUNIT
 (4)  007540  013737  002310  002074              MOV     LUNIT,L$LUN
1647  007546                                    ERRHRD 1,CSRERR         ;ERROR BIT WAS SET. SAY SO
 (4)  007546  104456                              TRAP    C$ERHRD
 (5)  007550  000001                              .WORD   1
 (5)  007552  003342                              .WORD   CSRERR
 (5)  007554  000000                              .WORD   0
1648  007556                                    LET @LPCSR(R2) := #0
 (4)  007556  005072  002352                      CLR     @LPCSR(R2)
1649  007562                                ENDIF
 (4)  007562                            50073$:
1650                                    ;TIME DELAY
1651                                            ; IF NOT READY ALLOW 3 SECONDS TO COME UP
1652  007562                                    IF #BIT7 NOTSETIN @LPCSR(R2) THEN
 (6)  007562  032772  000200  002352              BIT     #BIT7,@LPCSR(R2)
 (10) 007570  001027                              BNE     50074$
1653  007572                                        DECR WORK1 FROM #30. TO #1 BY #1
 (5)  007572  012737  000036  003112              MOV     #30.,WORK1
 (7)  007600  000402                              BR      50075$
 (6)  007602                            50076$:
 (10) 007602  005337  003112                      DEC     WORK1
 (7)  007606                            50075$:
 (7)  007606  023727  003112  000001              CMP     WORK1,#1
 (9)  007614  002415                              BLT     50077$
```

```
 1654  007616                                        DELAY 250
  (2)  007616  012727  000250              MOV     #250,(PC)+
  (2)  007622  000000                      .WORD   0
  (2)  007624  013727  002116              MOV     L$DLY,(PC)+
  (2)  007630  000000                      .WORD   0
  (2)  007632  005367  177772              DEC     -6(PC)
  (2)  007636  001375                      BNE     .-4
  (2)  007640  005367  177756              DEC     -22(PC)
  (2)  007644  001367                      BNE     .-20
 1655  007646                                  ENDDEC
  (5)  007646  000755                      BR      50076$
  (4)  007650                      50077$:
 1656  007650                              ENDIF
  (4)  007650                      50074$:
 1657                              ;
 1658                              ;NOW TEST FOR PRINTER READY
 1659                              ;
 1660  007650                          IF #BIT07 NOTSETIN @LPCSR(R2) THEN          ;TEST FOR THE READY BIT
  (6)  007650  032772  000200  002352      BIT     #BIT07,@LPCSR(R2)
 (10)  007656  001014                      BNE     50100$
 1661  007660                              LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
  (7)  007660  052762  100000  002506      BIS     #ERROR,STATUS(R2)
 1662  007666                              LET L$LUN := LUNIT
  (4)  007666  013737  002310  002074      MOV     LUNIT,L$LUN
 1663  007674                              LET ERRTBL(R2) := ERRTBL(R2) + #1
  (7)  007674  005262  003050              INC     ERRTBL(R2)
 1664  007700                              ERRHRD 2,RDYERR          ;REPORT AN ERROR
  (4)  007700  104456                      TRAP    C$ERHRD
  (5)  007702  000002                      .WORD   2
  (5)  007704  003360                      .WORD   RDYERR
  (5)  007706  000000                      .WORD   0
 1665  007710                          ENDIF
  (4)  007710                      50100$:
 1666                              ;
 1667                              ;INSURE LOADING CHARACTER CAUSES PRINTER READY TO GO AWAY
 1668                              ;
 1669  007710                          LET @LPBUF(R2) := #12
  (4)  007710  012772  000012  002446      MOV     #12,@LPBUF(R2)
 1670  007716                          IF #BIT07 SETIN @LPCSR(R2) THEN
  (6)  007716  032772  000200  002352      BIT     #BIT07,@LPCSR(R2)
 (10)  007724  001416                      BEQ     50101$
 1671  007726                              LET STATUS(R2) := STATUS(R2) SET.BY #ERROR
  (7)  007726  052762  100000  002506      BIS     #ERROR,STATUS(R2)
 1672  007734                              LET ERRTBL(R2) := ERRTBL(R2) + #1
  (7)  007734  005262  003050              INC     ERRTBL(R2)
 1673  007740                              LET L$LUN := LUNIT
  (4)  007740  013737  002310  002074      MOV     LUNIT,L$LUN
 1674  007746                              ERRHRD 3,ERR11           ;REPORT AN ERROR
  (4)  007746  104456                      TRAP    C$ERHRD
  (5)  007750  000003                      .WORD   3
  (5)  007752  011010                      .WORD   ERR11
  (5)  007754  000000                      .WORD   0
 1675  007756                              LET @LPCSR(R2) := #0
  (4)  007756  005072  002352              CLR     @LPCSR(R2)
 1676  007762                          ENDIF
  (4)  007762                      50101$:
```

```
1677                                    ;
1678                                    ;VERIFY THAT THE PRINTER WILL NOT INTERRUPT IF IT IS AT A PRIORITY LEVEL
1679                                    ;THE SAME AS THE CPU
1680                                    ;
1681  007762                                SETPRI #PRIO4                       ;CPU TO PRIORITY 4
 (3)  007762  012700  000200                    MOV     #PRIO4,R0
 (3)  007766  104441                            TRAP    C$SPRI
1682  007770                                SETVEC LPVEC(R2),#INTERR,#PRIO4     ;LP VECTOR SET UP
 (7)  007770  012746  000200                    MOV     #PRIO4,-(SP)
 (6)  007774  012746  010516                    MOV     #INTERR,-(SP)
 (5)  010000  016246  002412                    MOV     LPVEC(R2),-(SP)
 (4)  010004  012746  000003                    MOV     #3,-(SP)
 (3)  010010  104437                            TRAP    C$SVEC
 (2)  010012  062706  000010                    ADD     #10,SP
1683  010016                                LET &LPCSR(R2) := &LPCSR(R2) SET.BY #100    ;INTERRUPT ENABLE
 (7)  010016  052772  000100  002352            BIS     #100,&LPCSR(R2)
1684  010024                                DECR WORK1 FROM #30. TO #1 BY #1
 (5)  010024  012737  000036  003112            MOV     #30.,WORK1
 (7)  010032  000402                            BR      50102$
 (6)  010034                            50103$:
 (10) 010034  005337  003112                    DEC     WORK1
 (7)  010040                            50102$:
 (7)  010040  023727  003112  000001            CMP     WORK1,#1
 (9)  010046  002415                            BLT     50104$
1685  010050                                    DELAY   250.              ; ALLOW FOR DELAY
 (2)  010050  012727  000372                    MOV     #250.,(PC)+
 (2)  010054  000000                            .WORD   0
 (2)  010056  013727  002116                    MOV     L$DLY,(PC)+
 (2)  010062  000000                            .WORD   0
 (2)  010064  005367  177772                    DEC     -6(PC)
 (2)  010070  001375                            BNE     .-4
 (2)  010072  005367  177756                    DEC     -22(PC)
 (2)  010076  001367                            BNE     .-20
1686  010100                                ENDDEC
 (5)  010100  000755                            BR      50103$
 (4)  010102                            50104$:
1687                                    ;
1688                                    ;NOW TEST THAT THE PRINTER WILL INTERRUPT IF THE CPU PRIORITY IS LOWER THAN
1689                                    ;THE PRINTER PRIORITY
1690                                    ;
1691  010102                                LET &LPCSR(R2) := &LPCSR(R2) CLR.BY #100    ;CLEAR INTERRUPT ENABLE
 (7)  010102  042772  000100  002352            BIC     #100,&LPCSR(R2)
1692  010110                                SETPRI #PRIO3                       ;CPU TO PRIORITY 3
 (3)  010110  012700  000140                    MOV     #PRIO3,R0
 (3)  010114  104441                            TRAP    C$SPRI
1693  010116                                SETVEC LPVEC(R2),#INTHDL,#PRIO4
 (7)  010116  012746  000200                    MOV     #PRIO4,-(SP)
 (6)  010122  012746  010546                    MOV     #INTHDL,-(SP)
 (5)  010126  016246  002412                    MOV     LPVEC(R2),-(SP)
 (4)  010132  012746  000003                    MOV     #3,-(SP)
 (3)  010136  104437                            TRAP    C$SVEC
 (2)  010140  062706  000010                    ADD     #10,SP
1694  010144                                LET &LPCSR(R2) := &LPCSR(R2) SET.BY #100    ;INTERRUPT ENABLE
 (7)  010144  052772  000100  002352            BIS     #100,&LPCSR(R2)
1695  010152                                    DELAY 75.                   ; ALLOW FOR DELAY
 (2)  010152  012727  000113                    MOV     #75.,(PC)+
```

```
 (2)  010156  000000                          .WORD   0
 (2)  010160  013727  002116                  MOV     L$DLY,(PC)+
 (2)  010164  000000                          .WORD   0
 (2)  010166  005367  177772                  DEC     -6(PC)
 (2)  010172  001375                          BNE     .-4
 (2)  010174  005367  177756                  DEC     -22(PC)
 (2)  010200  001367                          BNE     .-20
1696  010202                                  LET ERRTBL(R2) := ERRTBL(R2) + #1
 (7)  010202  005262  003050                  INC     ERRTBL(R2)
1697  010206                                  LET L$LUN := LUNIT
 (4)  010206  013737  002310  002074          MOV     LUNIT,L$LUN
1698  010214                              ERRHRD 4,ERR13
 (4)  010214  104456                          TRAP    C$ERHRD
 (5)  010216  000004                          .WORD   4
 (5)  010220  011147                          .WORD   ERR13
 (5)  010222  000000                          .WORD   0
1699  010224                          END2:   LET @LPCSR(R2) := #00           ; CLEAR THE LPCSR
 (4)  010224  012772  000000  002352          MOV     #00,@LPCSR(R2)
1700  010232                                  LET STATUS(R2) := STATUS(R2) CLR.BY #ERROR!DROPED!ACTIVE
 (7)  010232  042762  160000  002506          BIC     #ERROR!DROPED!ACTIVE,STATUS(R2)
1701                                    :::     LET DELCNT(R2) := #0
1702                                    ;
1703                                    ;END OF HARD CODED INCREMENT LOOP
1704                                    ;ENDINC
1705                                    ;
1706  010240  000137  007472                  JMP     T1A                            ;UPDATE UNIT #
1707  010244  004737  007204          T1B:    JSR     PC,RESVEC       ; RESET STANDARD VECTORS
1708  010250                                  SETPRI #PRI00
 (3)  010250  012700  000000                  MOV     #PRI00,R0
 (3)  010254  104441                          TRAP    C$SPRI
1709  010256                                  OUTPUT #INTFAC,#47.
1710  010320                                  OUTPUT #DFAULT,#107.    ;PRINTS ON A NEW PAGE THE DEFAULT POWER UP
1712  010362                                  OUTPUT #DECFIN,#5               ; TOGGLE THE PAPER OFFSET
1714  010424                                  LET OUTBUF :B= #14
 (4)  010424  112737  000014  003114          MOVB    #14,OUTBUF
1715  010432                                  OUTPUT #OUTBUF,#1
1716  010474  004737  005306                  JSR PC,QUIET
1717  010500                                  WHILE #BIT7 NOTSETIN @LPCSR(R2) DO      ;WAIT FOR READY
 (4)  010500                          50105$:
 (6)  010500  032772  000200  002352          BIT     #BIT7,@LPCSR(R2)
 (10) 010506  001001                          BNE     50106$
1718  010510                                  ENDDO
 (4)  010510  000773                          BR      50105$
 (3)  010512                          50106$:
1719  010512                          EXIT TST                                ;EXIT THE TEST
 (3)  010512  104432                          TRAP    C$EXIT
 (3)  010514  000510                          .WORD   L10006-.
1720                                    ;
1721                                    ;INTERRUPT HANDLER TO SERVICE FAULTY INTERRUPT FROM LP INTERFACE.
1722                                    ;THIS ROUTINE IS ENTERED ONLY WHEN THE LP INTERRUPTS AT THE SAME LEVEL AS
1723                                    ;THE CPU AND IS CONSIDERED AN ERROR.
1724                                    ;
1725  010516                          BGNSRV
1726  010516                          INTERR: LET ERRTBL(R2) := ERRTBL(R2) + #1
 (7)  010516  005262  003050                  INC     ERRTBL(R2)
1727  010522                                  LET L$LUN := LUNIT
```

```
  (4)  010522  013737  002310  002074          MOV     LUNIT,L$LUN
1728   010530                                  ERRHRD 5,ERR12
  (4)  010530  104456                          TRAP    C$ERHRD
  (5)  010532  000005                          .WORD   5
  (5)  010534  011064                          .WORD   ERR12
  (5)  010536  000000                          .WORD   0
1729   010540                                LET (SP) := @END2
  (4)  010540  012716  010224                  MOV     @END2,(SP)
1730   010544                                ENDSRV
  (3)  010544                                L10007:
  (2)  010544  000002                          RTI
1731                                          ;
1732                                          ;INTERRUPT HANDLER FOR EXPECTED INTERRUPT
1733                                          ;
1734   010546                                 BGNSRV
1735                                          ;
1736   010546                                 INTHDL: LET (SP) := @END2
  (4)  010546  012716  010224                  MOV     @END2,(SP)
1737   010552                                 ENDSRV
  (3)  010552                                 L10010:
  (2)  010552  000002                          RTI
1738                                          ;
1739                                          .NLIST BEX
1740   010554  047111  042524  043122  INTFAC: .ASCIZ  /INTERFACE LOGIC TEST 1   ----   TEST COMPLETE/<12><12>
1741
1742   010634  015414  052143  044510  DFAULT: .ASCII  <14><33>/cTHIS IS THE DEFAULT POWER UP FONT./<12>
1743   010702  052111  044440  020123          .ASCII  /IT IS BASED ON SWITCHES.SET ON THE PARALLEL/
1744   010755     040  047111  042524          .ASCIZ  / INTERFACE MODULE BOARD./<12><12>
1745                                          ;
1746                                          ;ERROR MESSAGES ASSOCIATED WITH THIS TEST
1747                                          ;
1748   011010  047514  042101  047111  ERR11:  .ASCIZ  /LOADING PRINTER BUFFER DOES NOT CLEAR READY/
1749   011064  051120  047111  042524  ERR12:  .ASCIZ  /PRINTER INTERRUPTED AT SAME LEVEL AS THE PROCESSOR/
1750   011147     120  044522  052116  ERR13:  .ASCIZ  /PRINTER DID NOT INTERRUPT AT CPU PRIORITY 3/
1751          011224                          .EVEN
1752   011224                                 ENDTST
  (3)  011224                                 L10006:
  (3)  011224  104401                          TRAP    C$ETST
1753                                          .LIST BEX
1754   011226                                 ENDMOD
1755
1756
1757
1758
1759
1760
1761
1762
1763
1764
1765
1766                                          .SBTTL DATA TRANSFER PATHS
1767                                          ;MODULE         DATPAT.P11
1768
1769   011226                                 BGNMOD
1770                                          ;**
```

```
                                        ;THIS TEST CHECKS THE DATA TRANSFER
                                        ;PATHS FROM THE PROCESSOR INTERFACE
                                        ;TO THE PRINTER OUTPUT. AN ALTERNATING
                                        ;PATTERN OF ONES AND ZEROES CORRESPONDING
                                        ;TO AN ALTERNATING STRING OF "♠" AND
                                        ;"U" CHARACTERS ARE TRANSMITTED ON THE
                                        ;FULL 132 COLUMNS.  AFTER 16 LINES OF
                                        ;THIS PATTERN, THE OUTPUT PATTERN IS
                                        ;SWITCHED TO AN ALTERNATING PATTERN
                                        ;OF "?" AND "@" CHARACTERS FOR ANOTHER
                                        ;16 LINES.
                                        ;--

1784  011226                            BGNTST  2
 (3)  011226                            T2::

1787  011226                            OUTPUT #DECFIN,#5                       ; TOGGLE PAPER OFFSET
1789                                    ;PRINT TEST IDENTIFICATION
1790  011270                            OUTPUT #REINIT,#2
1791  011332                            OUTPUT #DATPTH,#34.
1792                                    ;PRINT ALTERNATING STRINGS OF CHARACTERS
1793  011374                            INCR PATTERN FROM #1 TO #2 BY #1
 (5)  011374  012737  000001  011770          MOV     #1,PATTERN
 (7)  011402  000402                          BR      50107$
 (6)  011404                        50110$:
(10)  011404  005237  v11770                 INC     PATTERN
 (7)  011410                        50107$:
 (7)  011410  023727  011770  000002         CMP     PATTERN,#2
 (9)  011416  003111                          BGT     50111$
1794  011420                            IF PATTERN EQ #1 THEN
 (6)  011420  023727  011770  000001         CMP     PATTERN,#1
(10)  011426  001004                          BNE     50112$
1795  011430                                LET CHAR :B= #'U
 (4)  011430  112737  000125  011722         MOVB    #'U,CHAR
1796  011436                                ELSE
 (4)  011436  000403                          BR      50113$
 (3)  011440                        50112$:
1797  011440                                LET CHAR :B= #'?
 (4)  011440  112737  000077  011722         MOVB    #'?,CHAR
1798  011446                            ENDIF
 (4)  011446                        50113$:
1799  011446                                LET R4 := #OUTBUF
 (4)  011446  012704  003114                  MOV     #OUTBUF,R4
1800  011452                                INCR CCNT FROM #1 TO #66. BY #1
 (5)  011452  012737  000001  002300          MOV     #1,CCNT
 (7)  011460  000402                          BR      50114$
 (6)  011462                        50115$:
(10)  011462  005237  002300                 INC     CCNT
 (7)  011466                        50114$:
 (7)  011466  023727  002300  000102         CMP     CCNT,#66.
 (9)  011474  003017                          BGT     50116$
1801  011476                                LET (R4)+ :B= CHAR
 (4)  011476  113724  011722                  MOVB    CHAR,(R4)+
1802  011502  105137  011722                COMB CHAR
1803  011506                                LET CHAR :B= CHAR CLR.BY #200
 (7)  011506  142737  000200  011722         BICB    #200,CHAR
```

```
1804  011514                                                    LET (R4)+ :B= CHAR
 (4)  011514  113724  011722                                   MOVB    CHAR,(R4)+
1805  011520  105137  011722                                       COMB CHAR
1806  011524                                                    LET CHAR :B= CHAR CLR.BY #200
 (7)  011524  142737  000200  011722                           BICB    #200,CHAR
1807  011532                                                    ENDINC
 (5)  011532  000753                                           BR      50115$
 (4)  011534                                              50116$:
1808  011534                                                    LET (R4)+ :B= #15
 (4)  011534  112724  000015                                   MOVB    #15,(R4)+
1809  011540                                                    LET (R4) :B= #12
 (4)  011540  112714  000012                                   MOVB    #12,(R4)
1810  011544                                                    INCR LINCNT FROM #1 TO #16. BY #1
 (5)  011544  012737  000001  002272                           MOV     #1,LINCNT
 (7)  011552  000402                                           BR      50117$
 (6)  011554                                              50120$:
 (10) 011554  005237  002272                                   INC     LINCNT
 (7)  011560                                              50117$:
 (7)  011560  023727  002272  000020                           CMP     LINCNT,#16.
 (9)  011566  003024                                           BGT     50121$
1811  011570                                                        OUTPUT #OUTBUF, #134.
1812  011632  004737  005306                                       JSR PC,     QUIET
1813  011636                                                    ENDINC
 (5)  011636  000746                                           BR      50120$
 (4)  011640                                              50121$:
1814  011640                                              ENDINC
 (5)  011640  000661                                           BR      50110$
 (4)  011642                                              50111$:
1815  011642                                              LET OUTBUF :B= #14
 (4)  011642  112737  000014  003114                           MOVB    #14,OUTBUF
1816  011650                                              OUTPUT  #OUTBUF, #1
1817  011712  004737  005306                                 JSR PC,QUIET
1818  011716                                                  EXIT TST
 (3)  011716  104432                                             TRAP    C$EXIT
 (3)  011720  000052                                             .WORD   L10011-.
1819                                                            .NLIST BEX
1820  011722  000000                                           CHAR:   .WORD 0
1821  011724  055433  030061  042155                           DATPTH: .ASCIZ <33>/[10mDATA TRANSFER PATHS TEST 2/ <12><12><12>
1822
1823          011770                                            .EVEN
1824  011770  000000                                          PATTERN:        .WORD 0
1825                                                                          .EVEN
1826                                                          .EVEN
1827                                                          .LIST BEX
1828
1829  011772                                                  ENDTST
 (3)  011772                                                 L10011:
 (3)  011772  104401                                             TRAP    C$ETST
1830
1831  011774                                                  ENDMOD
1832
1833
1834
1835
1836
1837
```

```
                                        .SBTTL PRINTABLE CHARACTERS
                                        ;MODULE         PRICH1.P11
                                        
011774                                  BGNMOD
                                        ;++
                                        ; THIS TEST WILL PRINT A FULL LINE OF EACH CHARACTER IN THE DEC MULTINATIONAL SET.
                                        ; IT WILL THEN SELECT PORTRAIT MODE AND DO THE SAME THING OVER AGAIN.
                                        ;--
011774                                  BGNTST  3
(3) 011774                              T3::
011774                                          OUTPUT #PRTCHR, #35.            ; PRINT TEST ID
                                        ;
                                        ; PRINT ALL CHARACTERS ON ALL UNITS
                                        ;
        000001                          $BRJMP=1
012036                                  OUTPUT #SELDEC,#5                       ; SELECT DECIPOINTS AS PARAMETER
012100                                  OUTPUT #DECFIN,#5                       ; TOGGLE PAPER OFFSET
012142                                  INCR WORK1 FROM #0 TO #1 BY #1                  ; DO THIS TWICE
(5) 012142  005037  003112                      CLR     WORK1
(7) 012146  000402                              BR      50123$
(6) 012150                              50122$:
(8) 012150  005237  003112                      INC     WORK1
(6) 012154                              50123$:
(7) 012154  023727  003112  000001            CMP     WORK1,#1
(9) 012162  003402                              BLE     50124$
(7) 012164  000137  012640                      JMP     50125$
(6) 012170                              50124$:
012170                                  INCR WORK FROM #40 TO #177 BY #1
(5) 012170  012737  000040  003110          MOV     #40,WORK
(7) 012176  000402                          BR      50127$
(6) 012200                              50126$:
(8) 012200  005237  003110                  INC     WORK
(6) 012204                              50127$:
(7) 012204  023727  003110  000177        CMP     WORK,#177
(9) 012212  003402                          BLE     50130$
(7) 012214  000137  012336                  JMP     50131$
(6) 012220                              50130$:
012220                                      LET R4 := #OUTBUF
(4) 012220  012704  003114              MOV     #OUTBUF,R4
012224                                      INCR COUNT FROM #1 TO #132. BY #1
(5) 012224  012737  000001  002276      MOV     #1,COUNT
(7) 012232  000402                      BR      50133$
(6) 012234                              50132$:
(8) 012234  005237  002276              INC     COUNT
(6) 012240                              50133$:
(7) 012240  023727  002276  000204        CMP     COUNT,#132.
(9) 012246  003402                          BLE     50134$
(7) 012250  000137  012262                  JMP     50135$
(6) 012254                              50134$:
012254                                          LET (R4)+ :B= WORK
(4) 012254  113724  003110              MOVB    WORK,(R4)+
012260                                      ENDINC
```

```
  (4)  012260  000765                          BR      50132$
  (4)  012262                            50135$:
1864   012262                                  LET (R4)+ :B= #LF
  (4)  012262  112724  000012                MOVB    #LF,(R4)+
1865   012266                                  OUTPUT #OUTBUF,#133.
1866   012330  004737  005306                  JSR PC,QUIET
1867   012334                                ENDINC
  (4)  012334  000721                        BR      50126$
  (4)  012336                            50131$:
1868   012336                                LET OUTBUF :B= #14
  (4)  012336  112737  000014  003114        MOVB    #14,OUTBUF
1869   012344                                OUTPUT #OUTBUF,#1                       ; EXECUTE TOF
1870   012406  004737  005306                JSR PC, QUIET
1871   012412                                INCR WORK FROM #240 TO #377 BY #1       ; FOR EXTENDED VERSION ONLY
  (5)  012412  012737  000240  003110        MOV     #240,WORK
  (7)  012420  000402                        BR      50137$
  (6)  012422                            50136$:
  (8)  012422  005237  003110                INC     WORK
  (6)  012426                            50137$:
  (7)  012426  023727  003110  000377        CMP     WORK,#377
  (9)  012434  003402                        BLE     50140$
  (7)  012436  000137  012560                JMP     50141$
  (6)  012442                            50140$:
1872   012442                                  LET R4 := #OUTBUF
  (4)  012442  012704  003114                MOV     #OUTBUF,R4
1873   012446                                  INCR COUNT FROM #1 TO #132. BY #1
  (5)  012446  012737  000001  002276        MOV     #1,COUNT
  (7)  012454  000402                        BR      50143$
  (6)  012456                            50142$:
  (8)  012456  005237  002276                INC     COUNT
  (6)  012462                            50143$:
  (7)  012462  023727  002276  000204        CMP     COUNT,#132.
  (9)  012470  003402                        BLE     50144$
  (7)  012472  000137  012504                JMP     50145$
  (6)  012476                            50144$:
1874   012476                                  LET (R4)+ :B= WORK
  (4)  012476  113724  003110                MOVB    WORK,(R4)+
1875   012502                                ENDINC
  (4)  012502  000765                        BR      50142$
  (4)  012504                            50145$:
1876   012504                                  LET (R4)+ :B= #LF
  (4)  012504  112724  000012                MOVB    #LF,(R4)+
1877   012510                                  OUTPUT #OUTBUF,#133.
1878   012552  004737  005306                  JSR PC,QUIET
1879   012556                                ENDINC
  (4)  012556  000721                        BR      50136$
  (4)  012560                            50141$:
1880   012560                                IF WORK1 EQ #0 THEN                     ; DO THIS ONLY THE FIRST TIME
  (6)  012560  005737  003112                TST     WORK1
  (8)  012564  001402                        BEQ     .+6
  (9)  012566  000137  012634                JMP     50146$
1881   012572                                  OUTPUT #PORSQ,#25.                    ; CHANGE TO PORTRAIT AND
1882   012634                                ENDIF
  (4)  012634                            50146$:
1883   012634                                ENDINC
  (4)  012634  000137  012150                JMP     50122$
```

```
 (4)  012640                          50125$:
1884  012640                          OUTPUT #DONE,#14.                       ; TEST DONE MESSAGE
1885  012702                          LET OUTBUF :B= #14
 (4)  012702  112737  000014  005114          MOVB    #14,OUTBUF
1886  012710                          OUTPUT #OUTBUF,#1                       ; EXECUTE TOF
1887  012752                          OUTPUT #REINIT,#2                       ; GO BACK TO DEFAULT
1888  013014                          OUTPUT #SELDEC,#5
1889  013056  004737  005306          JSR PC, QUIET
1890          177777                  $BRJMP=-1
1891  013062                          EXIT TST
 (3)  013062  104432                          TRAP    C$EXIT
 (3)  013064  000116                          .WORD   L10012-.
1892                                  .NLIST BEX
1893  013066  055433  030061  050155  PRTCHR: .ASCIZ <33>/[10mPRINTABLE CHARACTERS TEST 3/ <12><12><12>
1894  013132  042524  052123  041440  DONE:   .ASCII  /TEST COMPLETE/<12>
1895  013150     033     120     061  PORSQ:  .BYTE   33,120,61,73,61,61,175,104,105,124,151  ; SEQS TO ASSIGN AND SELECT PORT
1896  013163     164     141     156          .BYTE   164,141,156,61,60,55,122,33,134,33,133,61,61,155
1897          013202                          .EVEN
1898
1899  013202                          ENDTST
 (3)  013202                          L10012:
 (3)  013202  104401                          TRAP    C$ETST
1900                                  .LIST BEX
1901  013204                          ENDMOD
1902
1903
1904
1905
1906
1907
1908
1909
1910
1911
1912                                  .SBTTL  NON-PRINTABLE CHARACTERS
1913                                  ;MODULE         NOPRIN.P11
1914
1915  013204                          BGNMOD
1916                                  ;++
1917                                  ;THIS TEST CHECKS FOR DETECTION OF ALL NON-PRINTABLE CHARACTERS
1918                                  ;EXCEPT FOR HORIZONTAL TAB, LINE FEED, VERTICAL TAB, FORM
1919                                  ;FEED, CARRIAGE RETURN, AND ESCAPE WHICH
1920                                  ;WOULD BE INTERPRETED AS VALID CONTROL CHARACTERS BY THE LNO1. EACH
1921                                  ;CHARACTER WILL APPEAR ON THE PRINTER OUTPUT IN THE FORM OF ITS OCTAL
1922                                  ;CODE ACCOMPANIED WITH ITS MNEMONIC.
1923                                  ;122 OF THE TESTED CODE ARE THEN SENT FOLLOWED BY AN "@" CHARACTER.
1924                                  ;IF THE CONTROL CODE HAS TAKEN UP A SPACE IN THE BUFFER THE "@" CHARACTER
1925                                  ;WILL APPEAR AT THE RIGHT MARGIN OF THE PAGE. IF THE CONTROL CODE HAS NOT
1926                                  ;TAKEN UP SPACE IN THE BUFFER THE "@" WILL APPEAR IMMEDIATELY TO THE RIGHT
1927                                  ;OF THE MNEMONIC FOR THE CONTROL CODE.
1928                                  ;
1929                                  ;       "NOTE"
1930                                  ;               IF THIS TEST IS ASSEMBLED AS PART OF VERSION 1 LNO1 DIAGNOSTIC
1931                                  ;               IT WILL ALSO SEND ALL 8 BIT CONTROL CODES.  THE ASSEMBLER
1932                                  ;               WILL SEE THE CONDITIONAL STATEMENT: ".IF DF VERS.1",  AND, IF
1933                                  ;               VERS.1 IS DEFINED IN SKEL 2 THEN IT WILL ASSEMBLE THE CODE
```

```
1934                                    ;               FOR THE 8 BIT CONTROL CODES AS WELL AS THE NORMAL 7 BIT CONTROL
1935                                    ;               CODES.
1936                                    ;
1937
1938  013204                            BGNTST  4
 (3)  013204                            T4:.
1939                                    ;INDICATE TEST CURRENTLY BEING DONE
1940
1941  013204                                    OUTPUT #REINIT,#2
1942  013246                                    OUTPUT #NONCHR,#75.
1943  013310                                    LET R4 := #NONBUF
 (4)  013310  012704  014124                    MOV     #NONBUF,R4
1944  013314                                    LET WORK1 := #27.
 (4)  013314  012737  000033  003112           MOV     #27.,WORK1
1945                                    ;
1946                                    ; DO ONE LINE FOR EACH TABLE ENTRY
1947                                    ;
1948  013322                                    LET COUNT := #0
 (4)  013322  005037  002276                    CLR     COUNT
1949  013326                                    INCR LINCNT FROM #1 TO WORK1 BY #1
 (5)  013326  012737  000001  002272           MOV     #1,LINCNT
 (7)  013334  000402                           BR      50147$
 (6)  013336                            50150$:
 (10) 013336  005237  002272                    INC     LINCNT
 (7)  013342                            50147$:
 (7)  013342  023737  002272  003112           CMP     LINCNT,WORK1
 (9)  013350  003063                           BGT     50151$
1950  013352                                        LET R3 := #OUTBUF
 (4)  013352  012703  003114                    MOV     #OUTBUF,R3
1951                                    ;
1952                                    ; MOVE CODE AND MNEMONIC TO PRINT BUFFER
1953                                    ;
1954  013356                                        INCR WORK FROM #1 TO #8. BY #1
 (5)  013356  012737  000001  003110           MOV     #1,WORK
 (7)  013364  000402                           BR      50152$
 (6)  013366                            50153$:
 (10) 013366  005237  003110                    INC     WORK
 (7)  013372                            50152$:
 (7)  013372  023727  003110  000010           CMP     WORK,#8.
 (9)  013400  003002                           BGT     50154$
1955  013402                                        LET (R3)+ :B= (R4)+
 (4)  013402  112423                           MOVB    (R4)+,(R3)+
1956  013404                                    ENDINC
 (5)  013404  000770                           BR      50153$
 (4)  013406                            50154$:
1957
1958                                    ;
1959                                    ;  PUT 120 BYTES OF CODE INTO PRINT BUFFER
1960                                    ;
1961  013406                                        INCR WORK FROM #1 TO #122. BY #1
 (5)  013406  012737  000001  003110           MOV     #1,WORK
 (7)  013414  000402                           BR      50155$
 (6)  013416                            50156$:
 (10) 013416  005237  003110                    INC     WORK
 (7)  013422                            50155$:
 (7)  013422  023727  003110  000172           CMP     WORK,#122.
```

```
  (9)  013430  003002                        BGT     50157$
1962   013432                                      LET (R3)+ :B= (R4)
  (4)  013432  111423                        MOVB    (R4),(R3)+
1963   013434                                  ENDINC
  (5)  013434  000770                        BR      50156$
  (4)  013436                           50157$:
1964
1965                                        ;
1966                                        ; FOLLOWED BY AN "@" CHARACTER AND A LF
1967                                        ;
1968   013436                                   LET (R3)+ :B= #100          ;"@
  (4)  013436  112723  000100               MOVB    #100,(R3)+
1969   013442                                   LET (R3)+ :B= #12           ;LF
  (4)  013442  112723  000012               MOVB    #12,(R3)+
1970                                        ;
1971                                        ; PRINT LINE OF OCTAL CODE, MNEMONIC, 120 BYTES(NONPRINTABLE CODE), AND  @
1972                                        ;
1973   013446                                   OUTPUT  #OUTBUF,#132.
1974   013510  004737  005306                  JSR PC,     QUIET
1975   013514                                   LET R4 := R4 + #1
  (7)  013514  005204                        INC     R4
1976   013516                                  ENDINC
  (5)  013516  000707                        BR      50150$
  (4)  013520                           50151$:
1978   013520                                   LET R4 := #NONBF1
  (4)  013520  012704  014507               MOV     #NONBF1,R4
1979   013524                                   LET WORK1 := #32.
  (4)  013524  012737  000040  003112       MOV     #32.,WORK1
1980                                        ;
1981                                        ; DO ONE LINE FOR EACH TABLE ENTRY
1982                                        ;
1983   013532                                   LET COUNT := #0
  (4)  013532  005037  002276               CLR     COUNT
1984   013536                                   INCR LINCNT FROM #1 TO WORK1 BY #1
  (5)  013536  012737  000001  002272       MOV     #1,LINCNT
  (7)  013544  000402                        BR      50160$
  (6)  013546                           50161$:
 (10)  013546  005237  002272               INC     LINCNT
  (7)  013552                           50160$:
  (7)  013552  023737  002272  003112       CMP     LINCNT,WORK1
  (9)  013560  003063                        BGT     50162$
1985   013562                                   LET R3 := #OUTBUF
  (4)  013562  012703  003114               MOV     #OUTBUF,R3
1986                                        ;
1987                                        ; MOVE CODE AND MNEMONIC TO PRINT BUFFER
1988                                        ;
1989   013566                                   INCR WORK FROM #1 TO #8. BY #1
  (5)  013566  012737  000001  003110       MOV     #1,WORK
  (7)  013574  000402                        BR      50163$
  (6)  013576                           50164$:
 (10)  013576  005237  003110               INC     WORK
  (7)  013602                           50163$:
  (7)  013602  023727  003110  000010       CMP     WORK,#8.
  (9)  013610  003002                        BGT     50165$
1990   013612                                   LET (R3)+ :B= (R4)+
  (4)  013612  112423                        MOVB    (R4)+,(R3)+
```

```
1991  013614                                                ENDINC
 (5)  013614  000770                                       BR      50164$
 (4)  013616                                        50165$:
1992
1993                                                       ;
1994                                                       ;  PUT 120 BYTES OF CODE INTO PRINT BUFFER
1995                                                       ;
1996  013616                                               INCR WORK FROM #1 TO #122. BY #1
 (5)  013616  012737  000001  003110                       MOV     #1,WORK
 (7)  013624  000402                                       BR      50166$
 (6)  013626                                        50167$:
(10)  013626  005237  003110                               INC     WORK
 (7)  013632                                        50166$:
 (7)  013632  023727  003110  000172                       CMP     WORK,#122.
 (9)  013640  003002                                       BGT     50170$
1997  013642                                               LET (R3)+ :B= (R4)
 (4)  013642  111423                                       MOVB    (R4),(R3)+
1998  013644                                               ENDINC
 (5)  013644  000770                                       BR      50167$
 (4)  013646                                        50170$:
1999
2000                                                       ;
2001                                                       ; FOLLOWED BY AN "@" CHARACTER AND A LF
2002                                                       ;
2003  013646                                               LET (R3)+ :B= #100              ;"@"
 (4)  013646  112723  000100                               MOVB    #100,(R3)+
2004  013652                                               LET (R3)+ :B= #12               ;LF
 (4)  013652  112723  000012                               MOVB    #12,(R3)+
2005                                                       ;
2006                                                       ; PRINT LINE OF OCTAL CODE, MNEMONIC, 120 BYTES(NONPRINTABLE CODE), AND "@"
2007                                                       ;
2008  013656                                               OUTPUT  #OUTBUF,#132.
2009  013720  004737  005306                               JSR PC,     QUIET
2010  013724                                               LET R4 := R4 + #1
 (7)  013724  005204                                       INC     R4
2011  013726                                               ENDINC
 (5)  013726  000707                                       BR      50161$
 (4)  013730                                        50162$:
2013  013730                                               LET OUTBUF :B= #14
 (4)  013730  112737  000014  003114                       MOVB    #14,OUTBUF
2014  013736                                               OUTPUT #OUTBUF,#1
2015  014000  004737  005306                               JSR PC, QUIET
2016  014004                                               EXIT    TST                     ;AND EXIT TEST
 (3)  014004  104432                                       TRAP    C$EXIT
 (3)  014006  001144                                       .WORD   L10013-.
2017                                                       ;
2018                                                       ;CHARACTER BUFFER AND TEST HEADER MESSAGE
2019                                                       ;
2020                                                       .NLIST BEX
2021  014010  055433  030061  047155  NONCHR:  .ASCII  <33>/[10mNON-PRINTABLE CHARACTERS TEST 4/<12>
2022  014055     101  043040  046125           .ASCIZ  /A FULL LINE OF EACH CODE WILL BE SENT/<12>
2023
2024  014124  030040  030060  047040  NONBUF:  .ASCII  / 000 NUL/<0>
2025  014135     040  030060  020061           .ASCII  / 001 SOH/<1>
2026  014146  030040  031060  051440           .ASCII  / 002 STX/<2>
2027  014157     040  030060  020063           .ASCII  / 003 ETX/<3>
```

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2028  014170  030040  032060  042440          .ASCII  / 004 EOT/<4>
2029  014201     040  030060  020065          .ASCII  / 005 ENQ/<5>
2030  014212  030040  033060  040440          .ASCII  / 006 ACK/<6>
2031  014223     040  030060  020067          .ASCII  / 007 BEL/<7>
2032  014234  030040  030061  041040          .ASCII  / 010 BS /<10>
2033  014245     040  030460  020066          .ASCII  / 016 SO /<16>
2034  014256  030040  033461  051440          .ASCII  / 017 SI /<17>
2035  014267     040  031060  020060          .ASCII  / 020 DLE/<20>
2036  014300  030040  030462  054040          .ASCII  / 021 XON/<21>
2037  014311     040  031060  020062          .ASCII  / 022 DC2/<22>
2038  014322  030040  031462  054040          .ASCII  / 023 XOF/<23>
2039  014333     040  031060  020064          .ASCII  / 024 DC4/<24>
2040  014344  030040  032462  047040          .ASCII  / 025 NAK/<25>
2041  014355     040  031060  020066          .ASCII  / 026 SYN/<26>
2042  014366  030040  033462  042440          .ASCII  / 027 ETB/<27>
2043  014377     040  031460  020060          .ASCII  / 030 CAN/<30>
2044  014410  030040  030463  042440          .ASCII  / 031 EM /<31>
2045  014421     040  031460  020062          .ASCII  / 032 SUB/<32>
2046  014432  030040  032063  043040          .ASCII  / 034 FS /<34>
2047  014443     040  031460  020065          .ASCII  / 035 GS /<35>
2048  014454  030040  033063  051040          .ASCII  / 036 RS /<36>
2049  014465     040  031460  020067          .ASCII  / 037 US /<37>
2050  014476  030040  033467  042040          .ASCII  / 177 DEL/<177>
2052  014507     040  030062  020060  NONBF1:  .ASCII  / 200     /<200>
2053  014520  031040  030460  020040          .ASCII  / 201     /<201>
2054  014531     040  030062  020062          .ASCII  / 202     /<202>
2055  014542  031040  031460  020040          .ASCII  / 203     /<203>
2056  014553     040  030062  020064          .ASCII  / 204 IND/<204>
2057  014564  031040  032460  047040          .ASCII  / 205 NEL/<205>
2058  014575     040  030062  020066          .ASCII  / 206 SSA/<206>
2059  014606  031040  033460  042440          .ASCII  / 207 ESA/<207>
2060  014617     040  030462  020060          .ASCII  / 210 HTS/<210>
2061  014630  031040  030461  044040          .ASCII  / 211 HTJ/<211>
2062  014641     040  030462  020062          .ASCII  / 212 VTS/<212>
2063  014652  031040  031461  050040          .ASCII  / 213 PLD/<213>
2064  014663     040  030462  020064          .ASCII  / 214 PLU/<214>
2065  014674  031040  032461  051040          .ASCII  / 215 RI /<215>
2066  014705     040  030462  020066          .ASCII  / 216 SS2/<216>
2067  014716  031040  033461  051440          .ASCII  / 217 SS3/<217>
2068  014727     040  031062  020060          .ASCII  / 220     /<220>
2069  014740  031040  030462  050040          .ASCII  / 221 PU1/<221>
2070  014751     040  031062  020062          .ASCII  / 222 PU2/<222>
2071  014762  031040  031462  051440          .ASCII  / 223 STS/<223>
2072  014773     040  031062  020064          .ASCII  / 224 CCH/<224>
2073  015004  031040  032462  046440          .ASCII  / 225 MW /<225>
2074  015015     040  031062  020066          .ASCII  / 226 SPA/<226>
2075  015026  031040  033462  042440          .ASCII  / 227 EPA/<227>
2076  015037     040  031462  020060          .ASCII  / 230     /<230>
2077  015050  031040  030463  020040          .ASCII  / 231     /<231>
2078  015061     040  031462  020062          .ASCII  / 232     /<232>
2079  015072  031040  031463  041440          .ASCII  / 233 CSI/<233>
2080  015103     040  031462  020064          .ASCII  / 234 ST /<234>
2081  015114  031040  032463  047440          .ASCII  / 235 OSC/<235>
2082  015125     040  031462  020066          .ASCII  / 236 PM /<236>
2083  015136  031040  033463  040440          .ASCII  / 237 APC/<237>
2085          015150                          .EVEN
```

```
2086  015150  000000                    NUM:    .WORD 0
2087
2088                                    .LIST BEX
2089  015152                            ENDTST
 (3)  015152                            L10013:
 (3)  015152  104401                            TRAP    C$ETST
2090
2091  015154                            ENDMOD
2092
2093
2094
2095
2096
2097
2098
2099
2100
2101
2102                                    .SBTTL PRINT CONTROL
2103                                    ;MODULE         PRNCON.P11
2104
2105  015154                            BGNMOD
2106                                    ;++
2107                                    ;THIS TEST CHECKS THE PRINT CONTROL BY SENDING MORE THAN 132 CHARACTERS
2108                                    ;BEFORE SENDING A CARRIAGE RETURN AND LINE FEED. ALL CHARACTERS IN EXCESS
2109                                    ;OF 132 CHARACTERS SHOULD BE DISREGARDED.
2110                                    ;
2111                                    ;THREE LINES ARE PRINTED PER ITERATION. THESE LINES WILL IDENTIFY THE
2112                                    ;COLUMN NUMBERS ACROSS THE PAGE. EXAMPLE :
2113                                    ;         0         0         0...................          1
2114                                    ;         1         2         3...................          3
2115                                    ;12345678901234567890123456789O...................          012
2116                                    ;
2117                                    ;NOTICE THAT THE PRINTOUT SHOULD IDENTIFY 132 COLUMNS ACROSS THE PAGE.
2118                                    ;
2119                                    ;THIS OUTPUT IS REPEATED 13 TIMES.
2120                                    ;--
2121  015154                            BGNTST  5
 (3)  015154                            T5::
2123  015154                            OUTPUT #DECFIN,#5                       ; TOGGLE PAPER OFFSET
2125  015216                            OUTPUT #REINIT,#2
2126  015260                            LET R1 := L$UNIT - #1
 (5)  015260  013701  002012                    MOV     L$UNIT,R1
 (7)  015264  005301                            DEC     R1
2127          000001                    $BRJMP=1
2128  015266                            INCR LUNIT FROM #0 TO R1 BY #1
 (5)  015266  005037  002310                    CLR     LUNIT
 (7)  015272  000402                            BR      50172$
 (6)  015274                            50171$:
 (8)  015274  005237  002310                    INC     LUNIT
 (6)  015300                            50172$:
 (7)  015300  023701  002310                    CMP     LUNIT,R1
 (9)  015304  003402                            BLE     50173$
 (7)  015306  000137  016144                    JMP     50174$
 (6)  015312                            50173$:
2129  015312                                    LET R2 := LUNIT SHIFT 1
```

```
 (5)  015312  013702  002310                MOV     LUNIT,R2
 (8)  015316  006302                        ASL     R2
2130  015320                                OUTPUI #PRTCTL,#61.,,LUNIT
2131  015362                                LET COUNT := #13.
 (4)  015362  012737  000015  002276        MOV     #13.,COUNT
2132  015370                                1$:
2133  015370                                LET R5 := #TABLE1
 (4)  015370  012705  016424                MOV     #TABLE1,R5
2134  015374                                WHILE (R5) NE #0 DO
 (4)  015374                          50175$:
 (6)  015374  005715                        TST     (R5)
 (8)  015376  001002                        BNE     .+6
 (9)  015400  000137  015446                JMP     50176$
2135  015404                                    OUTPUI (R5)+,#10.,,LUNIT
2136  015444                                ENDDO
 (3)  015444  000753                        BR      50175$
 (3)  015446                          50176$:
2137  015446                                LET OUTBUF :B= #12
 (4)  015446  112737  000012  003114        MOVB    #12,OUTBUF
2138  015454                                OUTPUI #OUTBUF,#1,,LUNIT
2139
2140  015516                                LET R5 := #TABLE2
 (4)  015516  012705  016460                MOV     #TABLE2,R5
2141  015522                                WHILE (R5) NE #0 DO
 (4)  015522                          50177$:
 (6)  015522  005715                        TST     (R5)
 (8)  015524  001002                        BNE     .+6
 (9)  015526  000137  015574                JMP     50200$
2142  015532                                    OUTPUI (R5)+,#10.,,LUNIT
2143  015572                                ENDDO
 (3)  015572  000753                        BR      50177$
 (3)  015574                          50200$:
2144  015574                                OUTPUI #OUTBUF,#1,,LUNIT
2145
2146  015636                                DECR LINCNT FROM #14. TO #1 BY #1
 (5)  015636  012737  000016  002272        MOV     #14.,LINCNT
 (7)  015644  000402                        BR      50202$
 (6)  015646                          50201$:
 (8)  015646  005337  002272                DEC     LINCNT
 (6)  015652                          50202$:
 (7)  015652  023727  002272  000001        CMP     LINCNT,#1
 (9)  015660  002002                        BGE     50203$
 (7)  015662  000137  015732                JMP     50204$
 (6)  015666                          50203$:
2147  015666                                    OUTPUI #X11,#10.,,LUNIT
2148  015730                                ENDDECR
 (4)  015730  000746                        BR      50201$
 (4)  015732                          50204$:
2149  015732                                OUTPUI #OUTBUF,#1,,LUNIT
2150  015774                                OUTPUI #OUTBUF,#1,,LUNIT
2151  016036                                LET COUNT := COUNT - #1
 (7)  016036  005337  002276                DEC     COUNT
2152  016042                                IF COUNT GT #0 THEN
 (6)  016042  005737  002276                TST     COUNT
 (8)  016046  003002                        BGT     .+6
 (9)  016050  000137  016060                JMP     50205$
```

```
2153  016054  000137  015370                                  JMP 1$
2154  016060                                              ENDIF
 (4)  016060                                  50205$:
2155  016060  004737  005306                              JSR PC, QUIET
2156  016064                                              LET OUTBUF :B= #14
 (4)  016064  112737  000014  003114          MOVB        #14,OUTBUF
2157  016072                                              OUTPUT  #OUTBUF,#1,,LUNIT
2158  016134  004737  005306                              JSR PC,QUIET
2159  016140                                  ENDINCR
 (4)  016140  000137  015274                  JMP         50171$
 (4)  016144                                  50174$:
2160          177777                         $BRJMP=-1
2161  016144                                  EXIT TST
 (3)  016144  104432                          TRAP        C$EXIT
 (3)  016146  000346                          .WORD       [10014-.
2162                                          .NLIST BEX
2163  016150  055433  030061  050155  PRTCTL: .ASCII <33>/[10mPRINT CONTROL TEST  5/ <12>
2164  016203     123  047510  046125          .ASCIZ  /SHOULD SHOW 132 COLUMNS PRINTED/<12><12><15>
2165
2166  016246  020040  020040  020040  X0:     .ASCII  /         0/
2167  016260  020040  020040  020040  X1:     .ASCII  /         1/
2168  016272  020040  020040  020040  X2:     .ASCII  /         2/
2169  016304  020040  020040  020040  X3:     .ASCII  /         3/
2170  016316  020040  020040  020040  X4:     .ASCII  /         4/
2171  016330  020040  020040  020040  X5:     .ASCII  /         5/
2172  016342  020040  020040  020040  X6:     .ASCII  /         6/
2173  016354  020040  020040  020040  X7:     .ASCII  /         7/
2174  016366  020040  020040  020040  X8:     .ASCII  /         8/
2175  016400  020040  020040  020040  X9:     .ASCII  /         9/
2176
2177  016412  031061  032063  033065  X11:    .ASCII  /1234567890/
2178
2179                                          .EVEN
2180  016424  016246  016246  016246  TABLE1: .WORD   X0,X0,X0,X0,X0,X0,X0,X0,X0,X1,X1,X1,X1,0
2181  016460  016260  016272  016304  TABLE2: .WORD   X1,X2,X3,X4,X5,X6,X7,X8,X9,X0,X1,X2,X3,0
2182                                          .EVEN
2183
2184                                          .LIST BEX
2185  016514                                  ENDTST
 (3)  016514                                  L10014:
 (3)  016514  104401                          TRAP    C$ETST
2186  016516                                  ENDMOD
2187
2188
2189
2190
2191
2192
2193
2194
2195
2196
2197                                          .SBTTL  MULTIPLE LINE ADVANCE
2198                                          ;MODULE         MULTLI.P11
2199
2200  016516                                  BGNMOD
```

```
2201                                    ;++
2202                                    ;THIS TEST CHECKS THE MULTIPLE LINE ADVANCE OF THE LNO1. A LINE OF
2203                                    ;NUMBERS IS SENT AND THEN A NUMBER OF LINE FEEDS ARE SENT. THUS THE
2204                                    ;NUMBER PRINTED WILL INDICATE THE NUMBER OF BLANK LINES FOLLOWING THAT
2205                                    ;LINE. THE NUMBER OF LINES IS VARIED BETWEEN 2 AND 7 AND A LINE OF
2206                                    ;ALL 0'S WILL INDICATE THE END OF THE TEST  SEQUENCE.
2207                                    ;-
2208
2209
2210  016516                            BGNTST  6
 (3)  016516                            T6::
2211
2212                                    ;PRINT TEST IDENTIFICATION
2213
2215  016516                            OUTPUT #DECFIN,#5                   ; TOGGLE PAPER OFFSET
2217  016560                            OUTPUT #REINIT,#2
2218  016622                            OUTPUT #MULINE,#91.
2219
2220  016664                            LET STACHR := #TABSTR               ;OUTPUT CHARACTERS
 (4)  016664  012737  017142  017140          MOV     #TABSTR,STACHR
2221
2222  016672                            REPEAT
 (3)  016672                            50206$:
2223  016672                                LET LINCNT :B= @STACHR                  ;GET A CHARACTER TO OUTPUT
 (4)  016672  117737  000242  002272          MOVB    @STACHR,LINCNT
2224  016700                                LET LINCNT := LINCNT AND #7 ;MAKE THE ASCII TO OCTAL
 (7)  016700  013746  002272                  MOV     LINCNT,-(SP)
 (7)  016704  042716  000007                  BIC     #7,(SP)
 (7)  016710  042637  002272                  BIC     (SP)+,LINCNT
2225  016714                                LET R3 := #OUTBUF                   ;SET UP OUTPUT BUFFER
 (4)  016714  012703  003114                  MOV     #OUTBUF,R3
2226  016720                                INCR CCNT FROM #1 TO #132. BY #1
 (5)  016720  012737  000001  002300          MOV     #1,CCNT
 (7)  016726  000402                          BR      50207$
 (6)  016730                            50210$:
 (10) 016730  005237  002300                  INC     CCNT
 (7)  016734                            50207$:
 (7)  016734  023727  002300  000204          CMP     CCNT,#132.
 (9)  016742  003003                          BGT     50211$
2227  016744                                    LET (R3)+ :B= @STACHR           ;PUT CHARACTER  IN OUTPUT BUFFER
 (4)  016744  117723  000170                  MOVB    @STACHR,(R3)+
2228  016750                                ENDINC
 (5)  016750  000767                          BR      50210$
 (4)  016752                            50211$:
2229  016752                                LET R4 := #0
 (4)  016752  005004                          CLR     R4
2230  016754                                WHILE R4 NE LINCNT DO
 (4)  016754                            50212$:
 (6)  016754  020437  002272                  CMP     R4,LINCNT
 (10) 016760  001404                          BEQ     50213$
2231  016762                                    LET (R3)+ :B= #12               ;FILL WITH LINE FEEDS
 (4)  016762  112723  000012                  MOVB    #12,(R3)+
2232  016766                                    LET R4 := R4 + #1
 (7)  016766  005204                          INC     R4
2233  016770                                ENDDO
 (4)  016770  000771                          BR      50212$
```

```
 (3)  016772                          50213$:
2234
2235                                 ;NOW OUTPUT THE ACTUAL LINE
2236
2237  016772                             LET R4 := LINCNT + #132.          ;NUMBER OF CHARACTERS TO OUTPUT
 (5)  016772  013704  002272                 MOV     LINCNT,R4
 (7)  016776  062704  000204                 ADD     #132.,R4
2238  017002                             LET STACHR := STACHR + #1         ; UPDATE CHARACTER COUNT
 (7)  017002  005237  017140                 INC     STACHR
2239  017006                             OUTPUT #OUTBUF,R4                 ;OUTPUT THE LINE
2240  017046  004737  005306             JSR PC,     QUIET
2241
2242  017052                             UNTIL LINCNT EQ #0
 (3)  017052  005737  002272                 TST     LINCNT
 (7)  017056  001305                         BNE     50206$
2243  017060                             LET OUTBUF :B= #14
 (4)  017060  112737  000014  003114         MOVB    #14,OUTBUF
2244  017066                             OUTPUT #OUTBUF,#1
2245  017130  004737  005306             JSR PC,QUIET
2246  017134                             EXIT TST
 (3)  017134  104432                         TRAP    C$EXIT
 (3)  017136  000156                         .WORD   L10015-.
2247
2248
2249  017140  000000                     STACHR: .WORD 0
2250                                     .NLIST BEX
2251  017142  033462  033062  033463     TABSTR: .ASCIZ  /272637463540/
2252  017157     033  030533  066460     MULINE: .ASCII  <33>/[10mMULTIPLE LINE ADVANCE TEST  6/<12>
2253  017222  052516  041115  051105             .ASCIZ  /NUMBERS PRINTED REPRESENT # LINES TO NEXT LINE PRINTED/<12><12>
2254
2255
2256
2257          017314                     .EVEN
2258                                     .LIST BEX
2259
2260  017314                             ENDTST
 (3)  017314                             L10015:
 (3)  017314  104401                             TRAP    C$ETST
2261  017316                             ENDMOD
2262
2263
2264
2265
2266
2267
2268
2269
2270
2271
2272                                     .SBTTL DVSTRIKE
2273  017316                             BGNMOD
2274                                     ;++
2275                                     ;THIS TEST WILL VERIFY CORRECT OPERATION OF THE PRINTER WHILE OPERATING
2276                                     ;JUST WITHIN OVERSTRIKE, LINE BUFFER AND PAGE BUFFER LIMITS.
2277                                     ;
2278                                     ;IN LANDSCAPE, UP TO 142 PRINTABLE CHARS/LINE ARE PERMITTED, WITH
```

```
2279                                    ;A MAXIMUM OF FIVE CARRIAGE RETURNS/LINE. IN PORTRAIT, UP TO 150
2280                                    ;CHARS/LINE WITH A MAXIMUM OF TWO CARRIAGE RETURNS/LINE ARE ALLOWED.
2281                                    ;
2282                                    ;       NOTE:
2283                                    ;               THIS TEST IN A SOMEWHAT MODIFIED FORM IS BEING USED ALSO FOR
2284                                    ;               THE VAX VERSION OF THE LNO1 EXTENDED DIAGNOSTIC.
2285                                    ;
2286                                    ;
2287
2288  017316                            BGNTST 7
 (3)  017316                            T7::
2289
2291  017316                            OUTPUT #DECFIN,#5                               ; TOGGLE PAPER OFFSET
2293  017360                                    OUTPUT #REINIT,#2
2294  017422                                    OUTPUT #VPA,#6                          ; SET VERTICAL POSITION
2295  017464                                    OUTPUT #PORSEL,#5                       ; SELECT PORTRAIT MODE
2296  017526                                    OUTPUT #OVTEST,#19.                     ; IDENTIFY TEST
2297                                    ;
2298                                    ; OVERLAY TWO LINES OF SEVENTY-FIVE CHARS
2299                                    ;
2300  017570                                    INCR R1 FROM #1 TO #50. BY #1           ; 50 LINES
 (5)  017570  012701  000001                    MOV     #1,R1
 (7)  017574  000401                            BR      50214$
 (6)  017576                            50215$:
 (10) 017576  005201                            INC     R1
 (7)  017600                            50214$:
 (7)  017600  020127  000062                    CMP     R1,#50.
 (9)  017604  003105                            BGT     50216$
2301  017606                                       LET R4 := #OUTBUF
 (4)  017606  012704  003114                    MOV     #OUTBUF,R4
2302  017612                                       INCR R2 FROM #1 TO #75. BY #1
 (5)  017612  012702  000001                    MOV     #1,R2
 (7)  017616  000401                            BR      50217$
 (6)  017620                            50220$:
 (10) 017620  005202                            INC     R2
 (7)  017622                            50217$:
 (7)  017622  020227  000113                    CMP     R2,#75.
 (9)  017626  003003                            BGT     50221$
2303  017630                                       LET (R4)+ :B= #57
 (4)  017630  112724  000057                    MOVB    #57,(R4)+
2304  017634                                       ENDINC
 (5)  017634  000771                            BR      50220$
 (4)  017636                            50221$:
2305  017636                                       LET (R4)+ :B= #15
 (4)  017636  112724  000015                    MOVB    #15,(R4)+
2306  017642                                       OUTPUT #OUTBUF,#76.
2307  017704  004737  005306                      JSR PC, QUIET
2308  017710                                       LET R4 := #OUTBUF
 (4)  017710  012704  003114                    MOV     #OUTBUF,R4
2309  017714                                       INCR R2 FROM #1 TO #75. BY #1
 (5)  017714  012702  000001                    MOV     #1,R2
 (7)  017720  000401                            BR      50222$
 (6)  017722                            50223$:
 (10) 017722  005202                            INC     R2
 (7)  017724                            50222$:
 (7)  017724  020227  000113                    CMP     R2,#75.
```

```
 (9)  017730  003003                        BGT     50224$
                                                LET (R4)+ :B= #134
2310  017732
 (4)  017732  112724  000134                MOVB    #134,(R4)+
                                               ENDINC
2311  017736
 (5)  017736  000771                        BR      50223$
 (4)  017740                             50224$:
                                               LET (R4)+ :B= #15
2312  017740
 (4)  017740  112724  000015                MOVB    #15,(R4)+
                                               LET (R4)+ :B= #12
2313  017744
 (4)  017744  112724  000012                MOVB    #12,(R4)+
                                               OUTPUT #OUTBUF,#77.
2314  017750
2315  020012  004737  005306                JSR PC, QUIET
2316  020016                                 ENDINC
 (5)  020016  000667                        BR      50215$
 (4)  020020                             50216$:
2317  020020                                 LET OUTBUF :B= #14
 (4)  020020  112737  000014  003114        MOVB    #14,OUTBUF
2318  020026                                 OUTPUT #OUTBUF,#1
2319  020070  004737  005306                JSR PC, QUIET
2320                                    ;
2321                                    ; OVERLAY TWO LINES OF SEVENTY-ONE CHARS
2322                                    ;
2323  020074                                 OUTPUT #LANSEL,#5                       ; SELECT LANDSCAPE MODE
2324  020136                                 INCR R3 FROM #1 TO #66. BY #1           ; 66 LINES OF OVERPRINTING
 (5)  020136  012703  000001                MOV     #1,R3
 (7)  020142  000401                        BR      50225$
 (6)  020144                             50226$:
 (10) 020144  005203                        INC     R3
 (7)  020146                             50225$:
 (7)  020146  020327  000102                CMP     R3,#66.
 (9)  020152  003105                        BGT     50227$
2325  020154                                 LET R4 := #OUTBUF
 (4)  020154  012704  003114                MOV     #OUTBUF,R4
2326  020160                                 INCR R2 FROM #1 TO #71. BY #1
 (5)  020160  012702  000001                MOV     #1,R2
 (7)  020164  000401                        BR      50230$
 (6)  020166                             50231$:
 (10) 020166  005202                        INC     R2
 (7)  020170                             50230$:
 (7)  020170  020227  000107                CMP     R2,#71.
 (9)  020174  003003                        BGT     50232$
2327  020176                                     LET (R4)+ :B= #57
 (4)  020176  112724  000057                MOVB    #57,(R4)+
2328  020202                                   ENDINC
 (5)  020202  000771                        BR      50231$
 (4)  020204                             50232$:
2329  020204                                 LET (R4)+ :B= #15
 (4)  020204  112724  000015                MOVB    #15,(R4)+
2330  020210                                 OUTPUT #OUTBUF,#72.
2331  020252  004737  005306                JSR PC, QUIET
2332  020256                                 LET R4 := #OUTBUF
 (4)  020256  012704  003114                MOV     #OUTBUF,R4
2333  020262                                 INCR R2 FROM #1 TO #71. BY #1
 (5)  020262  012702  000001                MOV     #1,R2
 (7)  020266  000401                        BR      50233$
 (6)  020270                             50234$:
```

M5


```
 (10) 020270  005202                        INC     R2
  (7) 020272                          50233$:
  (7) 020272  020227  000107                CMP     R2,#71.
  (9) 020276  003003                        BGT     50235$
2334  020300                                  LET (R4)+ :B= #134
  (4) 020300  112724  000134                MOVB    #134,(R4)+
2335  020304                                  ENDINC
  (5) 020304  000771                        BR      50234$
  (4) 020306                          50235$:
2336  020306                                  LET (R4)+ :B= #15
  (4) 020306  112724  000015                MOVB    #15,(R4)+
2337  020312                                  LET (R4)+ :B= #12
  (4) 020312  112724  000012                MOVB    #12,(R4)+
2338  020316                                  OUTPUT #OUTBUF,#73.
2339  020360  004737  005306                  JSR PC, QUIET
2340  020364                                  ENDINC
  (5) 020364  000667                        BR      50226$
  (4) 020366                          50227$:
2341  020366                          EXIT TST
  (3) 020366  104432                        TRAP    C$EXIT
  (3) 020370  000046                        .WORD   L10016-.
2342                                .NLIST BEX
2343  020372  053117  051105  052123  OVTEST: .ASCIZ  /OVERSTRIKE TEST 7/<12><12>
2344  020416     033     133     061  LANSEL: .BYTE 33,133,61,60,155
2345  020423     033     133     061  PORSEL: .BYTE 33,133,61,61,155
2346  020430     033     133     063  VPA:    .BYTE 33,133,63,60,60,104
2347                                .EVEN
2348  020436                          ENDTST
  (3) 020436                          L10016:
  (3) 020436  104401                        TRAP    C$ETST
2349                                .LIST BEX
2350  020440                          ENDMOD
2351                                .SBTTL  READY LINE INTERLOCKS   TEST 8
2352                                ;MODULE         OLDLCK.P11
2353
2354  020440                          BGNMOD
2355                                ;++
2356                                ;THIS TEST CHECKS THE OPERATION OF THE
2357                                ;PRINTER READY INTERLOCK SWITCHES.
2358                                ;MANUAL INTERVENTION IS USED TO
2359                                ;OPEN THE INTERLOCKS TO PRODUCE FAULTS
2360                                ;IN THE PRINTER AFTER WHICH THE RESULTANT ERROR
2361                                ;INDICATION IS VERIFIED.
2362                                ;--
2363
2364  020440                          BGNTST  8.
  (3) 020440                          T8::
2365                                ;DETERMINE IF MANUAL INTERVENTION IS ALLOWED
2366  020440                                  MANUAL
  (3) 020440  104450                        TRAP    C$MANI
2367  020442                                  BCOMPLETE 11$
  (2) 020442  103402                        BCS     11$
2368  020444                                  EXIT TST
  (3) 020444  104432                        TRAP    C$EXIT
  (3) 020446  003026                        .WORD   L10017-.
2369                                ;EXIT TEST IF MANUAL INTERVENTION TESTS ARE NOT SPECIFIED
```

```
2370  020450                          11$:    IF INHINT EQ #0 THEN
 (6)  020450  005737  002264                  TST     INHINT
 (10) 020454  001002                          BNE     50236$
2371  020456                                  EXIT TST
 (3)  020456  104432                          TRAP    C$EXIT
 (3)  020460  003014                          .WORD   L10017-.
2372  020462                                  ENDIF
 (4)  020462                          50236$:
2373  020462                                  LET FLAG := #0
 (4)  020462  005037  002270                  CLR     FLAG
2374  020466                                  LET R1 := L$UNIT - #1
 (5)  020466  013701  002012                  MOV     L$UNIT,R1
 (7)  020472  005301                          DEC     R1
2375
2376                                    ;CHECK FOR ERROR IN EACH PRINTER UNDER TEST
2377  020474                                INCR LUNIT FROM #0 TO R1 BY #1
 (5)  020474  005037  002310                  CLR     LUNIT
 (7)  020500  000402                          BR      50237$
 (6)  020502                          50240$:
 (10) 020502  005237  002310                  INC     LUNIT
 (7)  020506                          50237$:
 (7)  020506  023701  002310                  CMP     LUNIT,R1
 (9)  020512  003020                          BGT     50241$
2378  020514                                  LET R2 := LUNIT SHIFT 1
 (5)  020514  013702  002310                  MOV     LUNIT,R2
 (8)  020520  006302                          ASL     R2
2379  020522                                  IF #BIT15 SETIN @LPCSR(R2) THEN
 (6)  020522  032772  100000  002352           BIT     #BIT15,@LPCSR(R2)
 (10) 020530  001410                          BEQ     50242$
2380  020532                                          LET ERRTBL(R2) := ERRTBL(R2) + #1
 (7)  020532  005262  003050                          INC     ERRTBL(R2)
2381  020536                                          ERRHRD 6, CSRERR
 (4)  020536  104456                                  TRAP    C$ERHRD
 (5)  020540  000006                                  .WORD   6
 (5)  020542  003342                                  .WORD   CSRERR
 (5)  020544  000000                                  .WORD   0
2382  020546                                          LET @LPCSR(R2) := #0
 (4)  020546  005072  002352                          CLR     @LPCSR(R2)
2383  020552                                  ENDIF
 (4)  020552                          50242$:
2384  020552                              ENDINC
 (5)  020552  000753                          BR      50240$
 (4)  020554                          50241$:
2385                                    ;
2386                                    ; PRINT TEST NAME
2387                                    ;
2388  020554                                OUTPUT #INTLK,#28.
2389  020616                                OUTPUT #BLANK,#44.
2390                                    ;VERIFY OPERATION OF PAPER OUT INTERLOCK SWITCH
2391                                    ;HARD CODED INCREMENT LOOP
2392                                    ;
2393  020660                                  LET ERRFLG := #0
 (4)  020660  005037  002334                  CLR     ERRFLG
2394  020664  005037  002310              CLR LUNIT
2395  020670  000405                      BR  1$
2396  020672                          2$:
```

```
 2397  020672  005237  002310              INC LUNIT
 2398  020676                              LET R2 := LUNIT SHIFT 1
  (5)  020676  013702  002310                  MOV     LUNIT,R2
  (8)  020702  006302                          ASL     R2
 2399  020704                          1$:
 2400  020704  023701  002310              CMP LUNIT,R1
 2401  020710  003402                      BLE 3$
 2402  020712  000137  021444              JMP 4$
 2403  020716                          3$:
 2404  020716                              LET FLAG := #0
  (4)  020716  005037  002270                  CLR     FLAG
 2405  020722                              PRINTF #PAPRSW
  (7)  020722  012746  022356                  MOV     #PAPRSW,-(SP)
  (6)  020726  012746  000001                  MOV     #1,-(SP)
  (3)  020732  010600                          MOV     SP,R0
  (4)  020734  104417                          TRAP    C$PNTF
  (4)  020736  062706  000004                  ADD     #4,SP
 2406  020742                              PRINTF #PAPSW1,LUNIT
  (8)  020742  013746  002310                  MOV     LUNIT,-(SP)
  (7)  020746  012746  022462                  MOV     #PAPSW1,-(SP)
  (6)  020752  012746  000002                  MOV     #2,-(SP)
  (3)  020756  010600                          MOV     SP,R0
  (4)  020760  104417                          TRAP    C$PNTF
  (4)  020762  062706  000006                  ADD     #6,SP
 2407  020766                              PRINTF #PAPSW2
  (7)  020766  012746  022542                  MOV     #PAPSW2,-(SP)
  (6)  020772  012746  000001                  MOV     #1,-(SP)
  (3)  020776  010600                          MOV     SP,R0
  (4)  021000  104417                          TRAP    C$PNTF
  (4)  021002  062706  000004                  ADD     #4,SP
 2408  021006                              GMANIL READY, FLAG, 100000, YES
  (3)  021006  104443                          TRAP    C$GMAN
  (3)  021010  000404                          BR      10000$
  (4)  021012  002270                          .WORD   FLAG
  (5)  021014  000130                          .WORD   T$CODE
  (5)  021016  007006                          .WORD   READY
  (5)  021020  100000                          .WORD   100000
  (3)  021022                         10000$:
 2409  021022                              LET LINCNT := #2        ; LINE COUNT WILL ALLOW FOR 3 PAGES OF PAPER
  (4)  021022  012737  000002  002272          MOV     #2,LINCNT
 2410  021030                              LET ERRFLG := #0
  (4)  021030  005037  002334                  CLR     ERRFLG
 2411  021034                              REPEAT
  (3)  021034                         50243$:
 2412  021034                                  OUTPUI #PAPTST,#2,#5$,LUNIT
 2413  021076                                  LET LINCNT := LINCNT + #1
  (7)  021076  005237  002272              INC     LINCNT
 2414  021102                                  IF LINCNT EQ #65. OR LINCNT EQ #130. OR LINCNT EQ #195. THEN
  (6)  021102  023727  002272  000101          CMP     LINCNT,#65.
  (8)  021110  001410                          BEQ     50244$
  (6)  021112  023727  002272  000202          CMP     LINCNT,#130.
  (8)  021120  001404                          BEQ     50244$
  (6)  021122  023727  002272  000303          CMP     LINCNT,#195.
 (10)  021130  001024                          BNE     50245$
  (6)  021132                         50244$:
 2415  021132                                      LET OUTBUF := #14                   ; FORM FEED
```

```
  (4)  021132  012737  000014  003114          MOV     #14,OUTBUF
2416   021140                                      CJTPUI #OUTBUF,#1,5$,LUNIT              ; OUTPUT THE FORM FEED
2417   021202                                  ENDIF
  (4)  021202                              50245$:
2418   021202                                  UNTIL LINCNT EQ #260. OR ERRFLG NE #0       ; UNTIL FOUR PAGES PRINTED OR IN
  (4)  021202  023727  002272  000404          CMP     LINCNT,#260.
  (6)  021210  001403                          BEQ     50246$
  (4)  021212  005737  002334                  TST     ERRFLG
  (8)  021216  001706                          BEQ     50243$
  (4)  021220                              50246$:
2419   021220                                  IF ERRFLG EQ #0 THEN
  (6)  021220  005737  002334                  TST     ERRFLG
  (10) 021224  001035                          BNE     50247$
2420   021226                                      LET OUTBUF := #14                       ; FORM FEED
  (4)  021226  012737  000014  003114          MOV     #14,OUTBUF
2421   021234                                      OUTPUI #OUTBUF,#1,5$,LUNIT              ; OUTPUT THE FF
2422   021276                                      ERRHRD 8,PAPSWI
  (4)  021276  104456                          TRAP    C$ERHRD
  (5)  021300  000010                          .WORD   8
  (5)  021302  003402                          .WORD   PAPSWI
  (5)  021304  000000                          .WORD   0
2423   021306                                      LET ERRTBL(R2) := ERRTBL(R2) + #1
  (7)  021306  005262  003050                  INC     ERRTBL(R2)
2424   021312                                      INLINE      <JMP    11002$>
  (2)  021312  000137  021324                  JMP     11002$
2425   021316                                  ELSE
  (4)  021316  000402                          BR      50250$
  (3)  021320                              50247$:
2426   021320                                      LET ERRFLG := #0
  (4)  021320  005037  002334                  CLR     ERRFLG
2427   021324                                  ENDIF
  (4)  021324                              50250$:
2428   021324                              11002$: PRINTF #PAPRDY,LUNIT
  (8)  021324  013746  002310                  MOV     LUNIT,-(SP)
  (7)  021330  012746  022604                  MOV     #PAPRDY,-(SP)
  (6)  021334  012746  000002                  MOV     #2,-(SP)
  (3)  021340  010600                          MOV     SP,R0
  (4)  021342  104417                          TRAP    C$PNTF
  (4)  021344  062706  000006                  ADD     #6,SP
2429   021350                                  LET FLAG := #0
  (4)  021350  005037  002270                  CLR     FLAG
2430   021354                                  GMANIL READY,FLAG,100000,YES
  (3)  021354  104443                          TRAP    C$GMAN
  (3)  021356  000404                          BR      10001$
  (4)  021360  002270                          .WORD   FLAG
  (5)  021362  000130                          .WORD   T$CODE
  (5)  021364  007006                          .WORD   READY
  (5)  021366  100000                          .WORD   100000
  (3)  021370                              10001$:
2431   021370                                  LET R2 := LUNIT SHIFT 1
  (5)  021370  013702  002310                  MOV     LUNIT,R2
  (8)  021374  006302                          ASL     R2
2432   021376                                  LET @LPCSR(R2) := #0                        ; RESET THE LP CSR
  (4)  021376  005072  002352                  CLR     @LPCSR(R2)
2433   021402  000137  020672                  JMP 2$
2434                                       ;EXPECTED ERROR HANDLER.
```

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2435                                        ;JUST SET EXPECTED ERROR INDICATOR.
2436                                        ;
2437  021406                                5$:     LET ERRFLG := #1
 (4)  021406  012737  000001  002334              MOV     #1,ERRFLG
2438  021414                                      LET ERRCOD := #0
 (4)  021414  005037  002332                      CLR     ERRCOD
2439  021420                                      LET STATUS(R2) := STATUS(R2) CLR.BY #ERROR!ACTIVE
 (7)  021420  042762  120000  002506              BIC     #ERROR!ACTIVE,STATUS(R2)
2440  021426                                      LET CURCNT(R2) := #0    ; CLEAN UP THE DRIVER PARAMETERS
 (4)  021426  005062  002746                      CLR     CURCNT(R2)
2441  021432                                      LET CURADD(R2) := #0
 (4)  021432  005062  002546                      CLR     CURADD(R2)
2442  021436                                      LET REPCNT(R2) := #0
 (4)  021436  005062  002646                      CLR     REPCNT(R2)
2443  021442  000207                              RTS PC                          ;AND RETURN
2444                                        ;VERIFY OPERATION OF PAPER TRAY HANDLE INTERLOCK SWITCH.
2445  021444                                4$:   INCR LUNIT FROM #0 TO R1 BY #1
 (5)  021444  005037  002310                      CLR     LUNIT
 (7)  021450  000402                              BR      50251$
 (6)  021452                                50252$:
 (10) 021452  005237  002310                      INC     LUNIT
 (7)  021456                                50251$:
 (7)  021456  023701  002310                      CMP     LUNIT,R1
 (9)  021462  003117                              BGT     50253$
2446  021464                                      LET R2 := LUNIT SHIFT 1
 (5)  021464  013702  002310                      MOV     LUNIT,R2
 (8)  021470  006302                              ASL     R2
2447  021472                                      LET L$LUN := LUNIT
 (4)  021472  013737  002310  002074              MOV     LUNIT,L$LUN
2448  021500                                      LET FLAG := #0
 (4)  021500  005037  002270                      CLR     FLAG
2449  021504                                      PRINTF #HANRSW
 (7)  021504  012746  022675                      MOV     #HANRSW,-(SP)
 (6)  021510  012746  000001                      MOV     #1,-(SP)
 (3)  021514  010600                              MOV     SP,R0
 (4)  021516  104417                              TRAP    C$PNTF
 (4)  021520  062706  000004                      ADD     #4,SP
2450  021524                                      PRINTF #HANSW1,LUNIT
 (8)  021524  013746  002310                      MOV     LUNIT,-(SP)
 (7)  021530  012746  023006                      MOV     #HANSW1,-(SP)
 (6)  021534  012746  000002                      MOV     #2,-(SP)
 (3)  021540  010600                              MOV     SP,R0
 (4)  021542  104417                              TRAP    C$PNTF
 (4)  021544  062706  000006                      ADD     #6,SP
2451  021550                                      PRINTF #HANSW2
 (7)  021550  012746  023073                      MOV     #HANSW2,-(SP)
 (6)  021554  012746  000001                      MOV     #1,-(SP)
 (3)  021560  010600                              MOV     SP,R0
 (4)  021562  104417                              TRAP    C$PNTF
 (4)  021564  062706  000004                      ADD     #4,SP
2452  021570                                      GMANIL READY, FLAG, 100000, YES
 (3)  021570  104443                              TRAP    C$GMAN
 (3)  021572  000404                              BR      10002$
 (4)  021574  002270                              .WORD   FLAG
 (5)  021576  000130                              .WORD   T$CODE
 (5)  021600  007006                              .WORD   READY
```

```
  (5)  021602  100000                          .WORD   100000
  (3)  021604                               10002$:
 2453  021604                                       IF @BIT15 SETIN @LPCSR(R2) THEN
  (6)  021604  032772  100000  002352              BIT     @BIT15,@LPCSR(R2)
  (10) 021612  001431                              BEQ     50254$
 2454  021614                                       PRINTF @HANRDY
  (7)  021614  012746  023132                      MOV     @HANRDY,-(SP)
  (6)  021620  012746  000001                      MOV     @1,-(SP)
  (3)  021624  010600                              MOV     SP,R0
  (4)  021626  104417                              TRAP    C$PNTF
  (4)  021630  062706  000004                      ADD     @4,SP
 2455  021634                                       PRINTF @HANRD1,LUNIT
  (8)  021634  013746  002310                      MOV     LUNIT,-(SP)
  (7)  021640  012746  023217                      MOV     @HANRD1,-(SP)
  (6)  021644  012746  000002                      MOV     @2,-(SP)
  (3)  021650  010600                              MOV     SP,R0
  (4)  021652  104417                              TRAP    C$PNTF
  (4)  021654  062706  000006                      ADD     @6,SP
 2456  021660                                       GMANIL READY, FLAG, 100000, YES
  (3)  021660  104443                              TRAP    C$GMAN
  (3)  021662  000404                              BR      10003$
  (4)  021664  002270                              .WORD   FLAG
  (5)  021666  000130                              .WORD   T$CODE
  (5)  021670  007006                              .WORD   READY
  (5)  021672  100000                              .WORD   100000
  (3)  021674                               10003$:
 2457  021674                                       ELSE
  (4)  021674  000411                              BR      50255$
  (3)  021676                               50254$:
 2458  021676                                       LET ERRTBL(R2) := ERRTBL(R2) + @1
  (7)  021676  005262  003050                      INC     ERRTBL(R2)
 2459  021702                                       LET L$LUN := LUNIT
  (4)  021702  013737  002310  002074              MOV     LUNIT,L$LUN
 2460  021710                                       ERRHRD 9,HANSWI
  (4)  021710  104456                              TRAP    C$ERHRD
  (5)  021712  000011                              .WORD   9
  (5)  021714  003503                              .WORD   HANSWI
  (5)  021716  000000                              .WORD   0
 2461  021720                                       ENDIF
  (4)  021720                               50255$:
 2462  021720                                   ENDINC
  (5)  021720  000654                              BR      50252$
  (4)  021722                               50253$:
 2463                                       ;VERIFY OPERATION OF FRONT DOOR INTERLOCK SWITCH.
 2464  021722                                   INCR LUNIT FROM @0 TO R1 BY @1
  (5)  021722  005037  002310                      CLR     LUNIT
  (7)  021726  000402                              BR      50256$
  (6)  021730                               50257$:
  (10) 021730  005237  002310                      INC     LUNIT
  (7)  021734                               50256$:
  (7)  021734  023701  002310                      CMP     LUNIT,R1
  (9)  021740  003107                              BGT     50260$
 2465  021742                                       LET R2 := LUNIT SHIFT 1
  (5)  021742  013702  002310                      MOV     LUNIT,R2
  (8)  021746  006302                              ASL     R2
 2466  021750                                       LET FLAG := @0
```

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  (4)  021750  005037  002270                    CLR     FLAG
 2467  021754                                    PRINTF  #DOORSW,LUNIT
  (8)  021754  013746  002310                    MOV     LUNIT, (SP)
  (7)  021760  012746  023265                    MOV     #DOORSW,-(SP)
  (6)  021764  012746  000002                    MOV     #2,-(SP)
  (3)  021770  010600                            MOV     SP,R0
  (4)  021772  104417                            TRAP    C$PNTF
  (4)  021774  062706  000006                    ADD     #6,SP
 2468  022000                                    PRINTF  #DOOSW1
  (7)  022000  012746  023342                    MOV     #DOOSW1,-(SP)
  (6)  022004  012746  000001                    MOV     #1,-(SP)
  (3)  022010  010600                            MOV     SP,R0
  (4)  022012  104417                            TRAP    C$PNTF
  (4)  022014  062706  000004                    ADD     #4,SP
 2469  022020                                    GMANIL READY, FLAG, 100000, YES
  (3)  022020  104443                            TRAP    C$GMAN
  (3)  022022  000404                            BR      10004$
  (4)  022024  002270                            .WORD   FLAG
  (5)  022026  000130                            .WORD   T$CODE
  (5)  022030  007006                            .WORD   READY
  (5)  022032  100000                            .WORD   100000
  (3)  022034                          10004$:
 2470  022034                                    IF #BIT15 SETIN @LPCSR(R2) THEN
  (6)  022034  032772  100000  002352            BIT     #BIT15,@LPCSR(R2)
  (10) 022042  001431                            BEQ     50261$
 2471  022044                                    PRINTF  #DOORDY,LUNIT
  (8)  022044  013746  002310                    MOV     LUNIT,-(SP)
  (7)  022050  012746  023372                    MOV     #DOORDY,-(SP)
  (6)  022054  012746  000002                    MOV     #2,-(SP)
  (3)  022060  010600                            MOV     SP,R0
  (4)  022062  104417                            TRAP    C$PNTF
  (4)  022064  062706  000006                    ADD     #6,SP
 2472  022070                                    PRINTF  #DOORD1
  (7)  022070  012746  023441                    MOV     #DOORD1,-(SP)
  (6)  022074  012746  000001                    MOV     #1,-(SP)
  (3)  022100  010600                            MOV     SP,R0
  (4)  022102  104417                            TRAP    C$PNTF
  (4)  022104  062706  000004                    ADD     #4,SP
 2473  022110                                    GMANIL READY, FLAG, 100000, YES
  (3)  022110  104443                            TRAP    C$GMAN
  (3)  022112  000404                            BR      10005$
  (4)  022114  002270                            .WORD   FLAG
  (5)  022116  000130                            .WORD   T$CODE
  (5)  022120  007006                            .WORD   READY
  (5)  022122  100000                            .WORD   100000
  (3)  022124                          10005$:
 2474  022124                                    ELSE
  (4)  022124  000411                            BR      50262$
  (3)  022126                          50261$:
 2475  022126                                    LET ERRTBL(R2) := ERRTBL(R2) + #1
  (7)  022126  005262  003050                    INC     ERRTBL(R2)
 2476  022132                                    LET L$LUN := LUNIT
  (4)  022132  013737  002310  002074            MOV     LUNIT,L$LUN
 2477  022140                                    ERRHRD 10, DOOSWI
  (4)  022140  104456                            TRAP    C$ERHRD
  (5)  022142  000012                            .WORD   10
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 (5)  022144  003556                          .WORD   DOOSWI
 (5)  022146  000000                          .WORD   0
2478  022150                                  ENDIF
 (4)  022150                            50262$:
2479  022150                                  LET &LPCSR(R2) := #00
 (4)  022150  012772  000000  002352          MOV     #00,&LPCSR(R2)
2480  022156                              ENDINC
 (5)  022156  000664                          BR      50257$
 (4)  022160                            50260$:
2481  022160                              LET CURCNT(R2) := #0
 (4)  022160  005062  002746                  CLR     CURCNT(R2)
2482  022164                              LET OUTBUF := #14
 (4)  022164  012737  000014  003114          MOV     #14,OUTBUF
2483  022172                              OUTPUT #OUTBUF,#1
2484  022234  004737  005306                JSR PC,QUIET
2485  022240                              EXIT TST
 (3)  022240  104432                          TRAP    C$EXIT
 (3)  022242  001232                          .WORD   L10017-.
2486
2487                                    .NLIST BEX
2488
2489  022244  042522  042101  020131  INTLK:  .ASCIZ  /READY LINE INTERLOCK TEST 8/<12>
2490  022301     124  044510  020123  BLANK:  .ASCIZ  /THIS PAGE WILL BE FOLLOWED BY 3 BLANK PAGES/<12>
2491  022356  047045  040445  043101  PAPRSW: .ASCIZ  /%N%AAFTER PRINTING STOPS - REMOVE ALL PAPER FROM BOTH PAPER TRAYS%N/
2492  022462  040445  044527  044124  PAPSW1: .ASCIZ  /%AWITH EXCEPTION OF ONE PER TRAY ON LUNIT %D2%N/
2493  022542  040445  047524  041440  PAPSW2: .ASCIZ  /%ATO CHECK PAPER OUT INTERLOCK.%N/
2494  022604  047045  040445  042522  PAPRDY: .ASCIZ  /%N%ARESTORE PAPER, CLEAR, PLACE LUNIT %D2%A ON LINE.%N/
2495  022673     040     012          PAPTST: .BYTE   40,12
2496  022675     045  022516  040501  HANRSW: .ASCIZ  /%N%AAFTER PRINTING STOPS - TURN PAPER TRAY HANDLE COUNTER CLOCKWISE TO%
2497  023006  040445  047510  044522  HANSW1: .ASCIZ  /%AHORIZONTAL POSITION UNTIL IT STOPS, ON LUNIT %D2%N/
2498  023073     045  052101  020117  HANSW2: .ASCIZ  /%ATO CHECK INTERLOCK SWITCH.%N/
2499  023132  047045  040445  042522  HANRDY: .ASCIZ  /%N%ARETURN PAPER TRAY HANDLE TO VERTICAL POSITION,%N/
2500  023217     045  041501  042514  HANRD1: .ASCIZ  /%ACLEAR, PLACE LUNIT %D2%A ON LINE.%N/
2501  023265     045  022516  047501  DOORSW: .ASCIZ  /%N%AOPEN FRONT DOOR ON LUNIT %D2%A TO CHECK /
2502  023342  047045  040445  047111  DOOSW1: .ASCIZ  /%N%AINTERLOCK SWITCH.%N/
2503  023372  047045  040445  046103  DOORDY: .ASCIZ  /%N%ACLOSE FRONT DOOR ON LUNIT %D2%A,%N/
2504  023441     045  041501  042514  DOORD1: .ASCIZ  /%ACLEAR, PLACE ON LINE.%N/
2505        023474                          .EVEN
2506
2507                                    .LIST BEX
2508  023474                            ENDTST
 (3)  023474                            L10017:
 (3)  023474  104401                          TRAP    C$ETST
2509
2510  023476                            ENDMOD
2511                                    .SBTTL  ABSOLUTE AND RELATIVE POSITIONING
2512                                    ;MODULE ABREL.P11
2513  023476                            BGNMOD
2514
2515                                    ;**
2516                                    ;       THE OBJECT OF THIS TEST IS TO VERIFY THE CORRECT OPERATION OF
2517                                    ;THE FUNCTIONS CALLED VERTICAL AND HORIZONTAL POSITION ABSOLUTE AND
2518                                    ;RELATIVE.  THE TEST WILL DO THIS BY DRAWING A RECTANGULAR GRID USING
2519                                    ;BOTH HORIZONTAL AND VERTICAL POSITIONING ESCAPE SEQUENCES.  IF THE
2520                                    ;MACHINE HANDLES THE SEQUENCES PROPERLY THE GRID SHOULD HAVE THE FOL
2521                                    ;LOWING CHARACTERISTICS:
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2522                                    ;       THE GRID'S UPPERMOST LEFT CORNER SHOULD BEGIN TWO INCHES FROM
2523                                    ;       THE TOP AND LEFT EDGES OF THE PAPER.
2524                                    ;       THE DIMENSIONS OF THE GRID SHOULD BE FOUR INCHES IN HEIGHT
2525                                    ;       BY SEVEN INCHES IN LENGTH.
2526                                    ;       EACH BLOCK CONTAINED WITHIN THE GRID SHOULD BE ONE INCH SQUARE.
2527                                    ;THE MARGINS WILL BE SET AS FOLLOWS:
2528                                    ;       TOP = 2 INCHES
2529                                    ;       BOTTOM = 6 INCHES
2530                                    ;       LEFT = 2 INCHES
2531                                    ;       RIGHT = 9 INCHES
2532                                    ;
2533                                    ;THE GRID ITSELF WILL BE DRAWN USING THE "X" CHARACTER.  ALL "X"S WILL
2534                                    ;BE INSIDE THE MARGIN BOUNDARIES.
2535                                    ;
2536                                    ;OUTSIDE THE MARGIN BOUNDARIES THE TEST WILL ATTEMPT TO PRINT THE "O"
2537                                    ;CHARACTER 1/2 INCH OUTSIDE THE OUTER EDGES OF THE RECTANGLE.  IF THE
2538                                    ;MARGINS ARE "HARD" THEN THE "O" SHOULD SUPERIMPOSE ALL THE "X"S ON
2539                                    ;THE OUTER EDGES OF THE GRID.  IF THE MARGINS ARE "SOFT" THEN THE
2540                                    ;"O"S WILL BE PRINTED 1/2 INCH OUTSIDE THE OUTER EDGES OF THE GRID.
2541                                    ;THIS IS TRUE FOR TOP, BOTTOM AND LEFT MARGINS ONLY.  THE RIGHT MARGIN
2542                                    ;FUNCTIONS DIFFERENTLY AND, THEREFORE, IS HANDLED DIFFERENTLY.  THE
2543                                    ;RIGHT MARGIN WILL BE OVERPRINTED SO AS TO BE UNIFORM WITH THE OTHERS.
2544                                    ;HOWEVER, IT IS NOT DONE IN THE SAME MANNER.
2545                                    ;--
2546
2547
2548                                    ;       GLOBALS REFERENCED:
2549
2550  000000                            .REPT   0
2551                                    BEGIN TEST
2552                                    :       SELECT DECIPOINTS AS SIZE UNIT
2553                                    :       PRINT TEST ID
2554                                    :       PRINT OPERATOR INSRUCTIONS ON PRINTER
2555                                    :       SET TOP, BOTTOM, LEFT AND RIGHT MARGINS
2556                                    :       WHILE VERTBL NE TO #0 DO                        ;DO FOR EACH ROW OF GRID
2557                                    :               MOVE TO CORRECT VERTICAL POSITION
2558                                    :               PRINT ONE LINE OF THE GRID
2559                                    :       ENDDO
2560                                    :       MOVE VERTICALLY TO 6 1/2 INCH SPOT
2561                                    :       PRINT ROW OF "O"S BELOW BOTTOM MARGIN
2562                                    :       MOVE VERTICALLY TO 1 1/2 INCH SPOT
2563                                    :       PRINT ROW OF "O"S ABOVE TOP MARGIN
2564                                    :       RESET DEFAULT PRINTER CONDITIONS
2565                                    :       SELECT DECIPOINTS AS SIZE UNIT
2566                                    :       DO FORM FEED
2567                                    :       EXIT TEST
2568                                    END TEST
2569                                    .ENDR
2570
2571
2572
2573
2574
2575
2576
2577
```

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2578
2579
2580
2581  023476                                  BGNTST  9.
 (3)  023476                            T9::
2582
2583  023476                                  OUTPUT #REINIT,#2
2584  023540                                  OUTPUT #SELDEC,#5                ; DECIPOINTS AS SIZE UNIT
2585  023602                                  OUTPUT #ABREL,#59.               ; TEST ID WITH CRLF
2586  023644                                  OUTPUT #INSTRC,#119.
2587  023706                                  OUTPUT #INSTR1,#110.             ; DESCRIPTIONS OF GRID
2588  023750                                  OUTPUT #TOPBOT,#12.              ; SET TOP AND BOTOM MARGINS
2589  024012                                  OUTPUT #LEFRI,#12.               ; SET LEFT AND RIGHT MARGINS
2590  024054                                  LET R4 := #VERTBL                ; SET UP TABLE OF VERTICAL SEQUENCES
 (4)  024054  012704  024642                MOV     #VERTBL,R4
2591  024060                                  WHILE (R4) NE #0 DO              ; DO FOR EACH ENTRY IN TABLE
 (4)  024060                            50263$:
 (6)  024060  005714                        TST     (R4)
 (10) 024062  001471                        BEQ     50264$
2592  024064                                        OUTPUT (R4), #7.           ; MOVE TO CORRECT VERTICAL POS.
2593  024124                                        OUTPUT #GRID,#101.         ; PART 1 OF ONE LINE OF GRID
2594  024166  004737  005306                      JSR PC,QUIET
2595  024172                                        OUTPUT #GRID1,#37.         ; PART 2
2596  024234  004737  005306                      JSR PC,QUIET
2597  024240                                        LET R4 := R4 + #2
 (7)  024240  062704  000002                ADD     #2,R4
2598  024244                                  ENDDO
 (4)  024244  000705                        BR      50263$
 (3)  024246                            50264$:
2599  024246                                  OUTPUT #VSIXHF,#7                ; MOVE VERTICALLY TO 6 1/2 INCH SPOT
2600  024310                                  OUTPUT #HILOSQ,#48.              ; PRINT "O"S BELOW BOTTOM MARGIN
2601  024352                                  OUTPUT #VONEHF,#7                ; MOVE VERTICALLY TO 1 1/2 INCH SPOT
2602  024414                                  OUTPUT #HILOSQ,#48.              ; PRINT "O"S ABOVE TOP MARGIN
2603  024456                                  LET OUTBUF :B= #14               ; FORM FEED
 (4)  024456  112737  000014  003114        MOVB    #14,OUTBUF
2604  024464                                  OUTPUT #OUTBUF,#1                ; DO THE FORM FEED
2605  024526                                  OUTPUT #REINIT,#2                ; GLOBAL, RESET DEFAULT STATE
2606  024570                                  OUTPUT #SELDEC,#5                ; DECIPOINTS AS SIZE UNIT
2607  024632  004737  005306                  JSR PC,QUIET                     ; GUARANTEE THE FORM FEED
2608  024636                                  EXIT TST
 (3)  024636  104432                        TRAP    C$EXIT
 (3)  024640  001062                        .WORD   L10020-.
2609                                  ;       DATA TABLES, MESSAGES, SEQUENCES, ETC.
2610
2611                                  .NLIST BEX
2612  024642  025364  025355  025411  VERTBL: .WORD   VTHREE,VTWO,VSIX,VFOUR,VFIVE,0
2613  024656  055433  030061  044155  ABREL:  .ASCII  <33>/[10mHORIZONTAL AND VERTICAL ABSOLUTE AND RELATIVE TEST 9/<15><12>
2614  024751     012  044124  020105  INSTRC: .ASCII  <12>/THE RECTANGULAR GRID WILL BEGIN APPROXIMATELY TWO INCHES FROM THE '
2615  025057     040  047101  020104          .ASCII  / AND TWO INCHES FROM THE LEFT EDGES OF THE PAPER/<12>
2616  025140  044124  020105  044504  INSTR1: .ASCII  /THE DIMENSIONS OF THE GRID WILL BE 4 INCHES HIGH/
2617  025220  040440  042116  033440          .ASCII  / AND 7 INCHES WIDE.  EACH BLOCK WITHIN WILL BE 1 INCH SQUARE./<12>
2618  025316     033     133     061  TOPBOT: .BYTE   33,133,61,64,64,60,73,64,63,62,60,162          ; SET TOP AND BOTTOM MAR
2619  025332     033     133     061  LEFRI:  .BYTE   33,133,61,64,64,60,73,66,70,64,60,163          ; SET LEFT AND RIGHT MAR
2620  025346     033     133     061  VONEHF: .BYTE   33,133,61,60,70,60,144                        ; VERTICAL MOVE TO 1 1 2
2621  025355     033     133     061  VTWO:   .BYTE   33,133,61,64,64,60,144                        ; VERTICAL MOVE TO 2 INC
2622  025364     033     133     062  VTHREE: .BYTE   33,133,62,61,66,60,144                        ; VERTICAL MOVE TO 3 INC
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2623  025373  033  133  062  VFOUR:  .BYTE  33,133,62,70,70,60,144                                  ; VERTICAL MOVE TO 4 INC
2624  025402  033  133  063  VFIVE:  .BYTE  33,133,63,66,60,60,144                                  ; VERTICAL MOVE TO 5 INC
2625  025411  033  133  064  VSIX:   .BYTE  33,133,64,63,62,60,144                                  ; VERTICAL MOVE TO 6 INC
2626  025420  033  133  064  VSIXHF: .BYTE  33,133,64,66,71,60,144                                  ; VERTICAL MOVE TO 6 1/2
2627  025427  033  133  062  HILOSQ: .BYTE  33,133,62,61,66,60,140,117,33,133,62,70,70,60,140,117   ; PRINTS "0"S FO
2628  025447  033  133  063         .BYTE  33,133,63,66,60,60,140,117,33,133,64,63,62,60,140,117
2629  025467  033  133  065         .BYTE  33,133,65,60,64,60,140,117,33,133,65,67,66,60,140,117
2630  025507  040  033  133  GRID:   .BYTE  40,33,133,61,60,70,60,140,117,33,133,66,64,70,60,140,130
2631  025530  033  133  061         .BYTE  33,133,61,64,64,60,140,33,133,65,60,64,60,141,117
2632  025547  033  133  066         .BYTE  33,133,66,70,64,60,140,152                  ; THIS HAS BEEN ADDED TO TEST AB
2633  025557  033  133  065         .BYTE  33,133,65,60,64,60,140,130,33,133,63,66,60,60,140
2634  025576  033  133  060         .BYTE  33,133,60,60,60,60,141,130,33,133,63,66,60,60,140
2635  025615  033  133  060         .BYTE  33,133,60,67,62,60,141,130,33,133,65,67,66,60,140,130
2636  025635  033  133  061         .BYTE  33,133,61,64,64,60,140,33,133,60,60,60,60,141,130
2637  025654  033  133  061  GRID1:  .BYTE  33,133,61,64,64,60,140,33,133,60,63,66,60,141
2638  025672  033  133  060         .BYTE  33,133,60,63,66,60,141,130,33,133,62,67,60,60,140,33,133,60,61,70,60,141
2639          025722               .EVEN
2640                               .LIST BEX
2641  025722                             ENDTST
 (3)  025722                       L10020:
 (3)  025722  104401                     TRAP    C$ETST
2642  025724                             ENDMOD
2643
2644
2645
2646
2647
2648
2649
2650
2651
2652
2655                               .SBTTL  NEWLINE MODE ENABLE-DISABLE TEST
2656                               ; MODULE LFNLMD.P11
2657
2658  025724                       BGNMOD
2659
2660
2661                          ;**
2662                          ; THIS TEST IS AN ALTERED VERSION OF LNMODE.P11 WHICH IS PART OF
2663                          ; THE TML LIBRARY.  THE ORIGINAL VERSION OF THIS TEST IS LOCATED
2664                          ; IN THE <TML.TESTS>  SUBDIRECTORY OF THE MILL20 DEVELOPMENT SYSTEM.
2665                          ; THIS VERSION IS ALTERED FOR USE ON THE LN01 ELECTRONIC PRINTER.
2666                          ; THIS IS A TEST OF THE TERMINALS ABILITY TO RECOGNIZE THE ESCAPE
2667                          ; SEQUENCES THAT ENABLE AND DISABLE NEWLINE MODE OF OPERATION.
2668                          ; OUTPUT WITH NEWLINE DISABLED SHOULD APPEAR AS:
2669                          ;       AAAAAAAAAA
2670                          ;                 AAAAAAAAAA
2671                          ;                           AAAAAAAAAA
2672                          ; OUTPUT WITH NEWLINE MODE ENABLED SHOULD APPEAR AS:
2673                          ;       AAAAAAAAAA
2674                          ;       AAAAAAAAAA
2675                          ;       AAAAAAAAAA
2676                          ;
2677
2678          000000
```

```
                                BEGIN NLMODE
                                :   SELECT SIZE UNIT AS DECIPOINTS
                                :   SEND THE TEST NAME TO ALL TERMINALS
                                :   SKIP 2 LINES
                                :   SEND 'NEWLINE MODE BEING DISABLED' MESSAGE
                                :   SEND RMANL TO DISABLE NEWLINE MODE
                                :   REPEAT 3 TIMES
                                :   :   SEND 10 A'S
                                :   :   SEND A LINEFEED
                                :   ENDREPEAT
                                :   SKIP 2 LINES
                                :   SEND 'NEW LINE BEING ENABLED' MESSAGE
                                :   SEND SMANL TO ENABLE NEWLINE MODE
                                :   REPEAT 3 TIMES
                                :   :   SEND 10 A'S
                                :   :   SEND A LINEFEED
                                :   ENDREPEAT
                                :   SEND RMANL TO DISABLE NEWLINE MODE
                                :   DO FORM FEED
                                :   RESET THE PRINTER
                                :   SELECT SIZE UNIT AS DECIPOINTS
                                END TEST


 2712  025724                           BGNTST  10.
  (3)  025724                   T10::
 2713
 2714  025724                           OUTPUT #REINIT,#2
 2715  025766                           OUTPUT #SELDEC,#5              ; DECIPOINTS AS SIZE UNIT
 2716  026030                           OUTPUT #NLMODE,#42.            ; IDENTIFY TEST
 2717  026072                           OUTPUT #ACRLF,#2,,#2           ; SKIP 2 LINES
 2718  026134                           OUTPUT #DISANL,#40.            ; DISABLING NL MESSAGE
 2719  026176                           OUTPUT #RMANL,#5               ; TURN T OFF NOW
 2720  026240                           LET R5 := #OUTBUF
  (4)  026240  012705  003114           MOV     #OUTBUF,R5
 2721  026244                           LET (R5)+ :B= #101             ; PUT AN "A" IN BUFFER
  (4)  026244  112725  000101           MOVB    #101,(R5)+
 2722  026250                           LET (R5)+ :B= #12              ; PUT "LF" IN BUFFER
  (4)  026250  112725  000012           MOVB    #12,(R5)+
 2723  026254                           LET (R5)+ :B= #14              ; FORM FEED
  (4)  026254  112725  000014           MOVB    #14,(R5)+
 2724  026260                           DECR WORK FROM #2 TO #0 BY #1
  (5)  026260  012737  000002  003110     MOV     #2,WORK
  (7)  026266  000402                     BR      50265$
  (6)  026270                   50266$:
  (10) 026270  005337  003110             DEC     WORK
  (7)  026274                   50265$:
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  (7)  026274  005737  003110                    TST     WORK
  (9)  026300  002443                            BLT     50267$
2725   026302                                       OUTPUT #OUTBUF,#1,,#10.      ; SEND TEN A'S
2726   026344                                       OUTPUT #OUTBUF+1,#1          ; THEN A LINEFEED
2727   026406                                    ENDDEC
  (5)  026406  000730                            BR      50266$
  (4)  026410                              50267$:
2728   026410                                    OUTPUT #ACRLF,#2,,#2            ; SKIP 2 LINES
2729   026452                                    OUTPUT #ENABNL,#52.             ; ENABLING NL MESSAGE
2730   026514                                    OUTPUT #SMANL,#5                ; TURN IT ON NOW
2731   026556                                    DECR WORK FROM #2 TO #0 BY #1
  (5)  026556  012737  000002  003110            MOV     #2,WORK
  (7)  026564  000402                            BR      50270$
  (6)  026566                              50271$:
  (10) 026566  005337  003110                    DEC     WORK
  (7)  026572                              50270$:
  (7)  026572  005737  003110                    TST     WORK
  (9)  026576  002443                            BLT     50272$
2732   026600                                       OUTPUT #OUTBUF,#1,,#10.      ; SEND TEN A'S
2733   026642                                       OUTPUT #OUTBUF+1,#1          ; THEN A LINEFEED
2734   026704                                    ENDDEC
  (5)  026704  000730                            BR      50271$
  (4)  026706                              50272$:
2735   026706                                    OUTPUT #RMANL,#5                ; TURN IT OFF
2736   026750                                    OUTPUT #OUTBUF+2,#1             ; DO FORM FEED
2737   027012                                    OUTPUT #REINIT,#2               ; RESET TO DEFAULT CONDITIONS
2738   027054                                    OUTPUT #SELDEC,#5               ; DECIPOINTS AS SIZE UNIT
2739   027116  004737  005306                    JSR PC,QUIET
2740   027122                                    EXIT TST
  (3)  027122  104432                            TRAP    C$EXIT
  (3)  027124  000230                            .WORD   L10021-.
2741
2742                                       .NLIST BEX
2743   027126  042516  020127  044514    DISANL: .ASCIZ  /NEW LINE MODE DISABLED, LINEFEEDS ONLY/<15><12>
2744   027177     116  053505  046040    ENABNL: .ASCIZ  /NEW LINE MODE ENABLED, LINEFEED CAUSES RETURN ALSO/<15><12>
2745   027264  055433  030061  047155    NLMODE: .ASCIZ  <33>/[10mNEWLINE MODE ENABLE DISABLE TEST 10/<15><12>
2746   027337     033     133     062    RMANL:  .BYTE   33,133,62,60,154,0
2747   027345     033     133     062    SMANL:  .BYTE   33,133,62,60,150,0
2748          027354                           .EVEN
2749                                       .LIST BEX
2750   027354                                    ENDTST
  (3)  027354                              L10021:
  (3)  027354  104401                            TRAP    C$ETST
2751   027356                                    ENDMOD
2752
2753
2754
2755
2756
2757
2758
2759
2760
2761
2763                                              .SBTTL  POWER UP DEFAULT TEST
2764                                              ;MODULE PUD.P11
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2765  027356                          BGNMOD
2766
2767                          ;**
2768                          ;                    FUNCTIONAL DESCRIPTION
2769                          ;
2770                          ;       THIS TEST VERIFIES THE SPECIFIED POWER UP DEFAULT
2771                          ;       CONDITIONS OF THE LN01 ELECTRONIC PRINTER.
2772                          ;       THE TEST IS DIVIDED INTO 3 BASIC PARTS.
2773                          ;       ONE OF THE BASIC PARTS IS SUBDIVIDED INTO 2 SECTIONS.
2774                          ;       THE BASIC PARTS AND SECTIONS THEREOF ARE AS FOLLOWS:
2775                          ;
2776                          ;       PART 1-         HORIZONTAL TAB DEFAULT
2777                          ;       PART 2-         VERTICAL TAB DEFAULT SECTION 1
2778                          ;                       VERTICAL TAB DEFAULT SECTION 2
2779                          ;       PART 3-         DEFAULT MARGINS
2780                          ;
2781                          ;
2782                          ;
2783                          ;       PART 1-         HORIZONTAL TAB SECTION
2784                          ;       PART 1 TESTS THE HORIZONTAL TAB DEFAULTS BY MEASURING THE DISTANCE ,IN CHARACTER
2785                          ;       BETWEEN EACH TAB.  THE TEST FIRST DOES 16 TABS AND PRINTS A "T" AT EACH TAB STOP
2786                          ;       THE NEXT LINE PRINTS A SCALE BY WHICH TO MEASURE THE DISTANCE BETWEEN THE "T"s.
2787                          ;       THE SCALE IS A PRINTING OF THE NUMBERS 1 THRU 8 REPEATEDLY ACROSS THE PAGE.
2788                          ;       THE "T"S IN THE ROW ABOVE SHOULD LINE UP OVER THE "8"S FOR THE FIRST 16 TABS.
2789                          ;       THE FINAL 2 "T"S SHOULD BE SIDE BY SIDE BECAUSE OF EXCEEDING THE RIGHT MOST TAB
2790                          ;       AFTER SKIPPING TWO LINES. PART 1 CONTINUES ON BY PRINTING 3 DIAMOND SHAPED PATTE
2791                          ;       WHICH WILL THOROUGHLY EXERCISE THE TAB FUNCTION IN DEFAULT MODE.  ANY THING PRIN
2792                          ;       OUTSIDE THE DIAMONDS WILL CONSTITUTE AN ERROR.  ANYTHING THAT APPEARS OUT OF THE
2793                          ;       ORDINARY INSIDE THE DIAMONDS WILL ALSO CONSTITUTE AN ERROR.
2794                          ;
2795                          ;       PART 2-         VERTICAL TAB SECTION 1
2796                          ;       PART 2, SECTION 1 VERIFIES THAT THE DEFAULT VERTICAL TAB IS SET FOR ONE TAB
2797                          ;       TO MOVE THE DISTANCE EQUIVALENT TO THAT OF A LINE FEED.  THIS IS ACCOMPLISHED BY
2798                          ;       AFTER PRINTING THE SECTION ID ON LINE #1, DOING 65 VERTICAL TABS AND PRINTING
2799                          ;       THE SECTION ID FOR EACH ONE.  THE RESULT SHOULD BE 66 LINES OF THE SECTION ID.
2800                          ;       THE REASON WHY THIS WILL WORK DESPITE THE FACT THAT THE MACHINE ONLY CAN
2801                          ;       HANDLE A TOTAL OF 32 TAB STOPS IS BECAUSE WHEN YOU EXCEED THE LIMIT OF 32
2802                          ;       THE MACHINE IS SUPPOSED TO TREAT EVERY EXTRA VERTICAL TAB AS THOUGH IT WAS
2803                          ;       A LINE FEED CHARACTER.  SO, BECAUSE THE DEFAULT VERTICAL TAB IS EQUAL TO
2804                          ;       A LINE FEED IN DISTANCE, THE RESULT SHOULD BE THE SAME.  THIS IS ACTUALLY
2805                          ;       A GOOD WAY TO TEST THE DISTANCE OF THE DEFAULT TAB AS COMPARED TO THE
2806                          ;       NORMAL LINE FEED CHARACTER.
2807                          ;       THIS SECTION ALSO VERIFIES THAT WHEN A VERTICAL TAB IS SENT WHEN THE MACHINE
2808                          ;       IS ALREADY AT LINE 66 THE MACHINE WILL RESPOND BY BRINGING YOU TO THE TOP MARGIN
2809                          ;       ON THE FOLLOWING PAGE, WHICH IN DEFAULT CONDITION SHOULD BE LINE #1.  THIS SETS
2810                          ;       UP THE FOLLOWING SECTION TO BEGIN ON LINE #1.
2811                          ;
2812                          ;                       VERTICAL TAB SECTION 2
2813                          ;       PART 2, SECTION 2 VERIFIES THE USE OF MULTIPLE VERTICAL TABS.  THIS IS ACCOM
2814                          ;       PLISHED BY ,FIRST, PRINTING THE SECTION ID ON LINE #1 AND, THEN, DOING 5
2815                          ;       VERTICAL TABS THEN PRINTING THE SECTION ID AGAIN.  THIS IS REPEATED 6 TIMES.
2816                          ;       THE RESULT IS THE SECTION ID BEING PRINTED ON EVERY 5TH LINE BEGINNING WITH
2817                          ;       LINE #6 AND ENDING WITH LINE #31 (TTOTAL OF 30 TAB STOPS).  HOWEVER, EACH
2818                          ;       SUCCESSIVE PRINTING OF THE ID WILL BEGIN IN THE COLUMN FOLLOWING THE COLUMN
2819                          ;       IN WHICH THE PREVIOUS ONE ENDED.  THIS WILL VERIFY THAT THE USE OF VERTICAL
2820                          ;       TABS DOES NOT CHANGE THE ACTIVE COLUMN.(in effect it does not perform a carriage
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2821                            ;       return automatically).
2822                            ;
2823                            ;       PART 3-         MARGIN SECTION
2824                            ;       THE MARGIN SECTION VERIFIES THAT THE TOP, BOTTOM, LEFT AND RIGHT MARGIN
2825                            ;       DEFAULT SETTINGS ARE AS SPECIFIED.  IT ACCOMPLISHES THIS BY IDENTIFYING
2826                            ;       LINE #1 AND PRINTING THE CORRECT DISTANCE THIS SHOULD BE FROM THE TOP
2827                            ;       EDGE OF THE PAGE FOR OPERATOR VERIFICATION.  THE FOLLOWING LINE(#2) WILL
2828                            ;       PRINT A MESSAGE WHICH IDENTIFIES THE CORRECT DISTANCE FROM THE LEFT
2829                            ;       EDGE OF THE PAGE THAT THE FIRST CHARACTER ON EACH OF THE FOLLOWING 63 LINES
2830                            ;       SHOULD BE PRINTED AS WELL AS IDENTIFYING THE CORRECT DISTANCE FROM THE
2831                            ;       LEFT EDGE THAT THE LAST CHARACTER OF THE FOLLOWING 63 LINES SHOULD BE PRINTED.
2832                            ;       THE SECTION CONCLUDES BY IDENTIFYING LINE #66 AND PRINTING THE CORRECT
2833                            ;       DISTANCE THAT THE LINE SHOULD BE FROM THE TOP EDGE OF THE PAPER.
2834                            ;--
2835
2836                            ;                                       GLOBALS REFERENCED
2837                            ;       REINIT,
2838
2839            000000          .REPT 0
2840                            BEGINROUTINE    POWER UP DEFAULT TEST
2841                            :       RESET THE PRINTER
2842                            :       SELECT SIZE UNIT AS DECIPOINTS
2843                            :       TOGGLE THE PAPER OFFSET
2844                            :       PRINT THE TEST ID
2845                            :                       "HORIZONTAL TAB DEFAULT SECTION"
2846                            :       PRINT SECTION ID
2847                            :       INCREMENT COUNT FROM #1 TO #18. BY #1
2848                            :               DO HORIZONTAL TAB
2849                            :               PRINT "T"                                       ; 18 HOR. TABS   D A 'T"
2850                            :       ENDINCREMENT
2851                            :       DO A LINE FEED
2852                            :       INCR COUNT FROM #1 TO #17. BY #1                        ; PRINTS 1-8 17 TIMES AC
2853                            :       :       PRINT 1-8                                       ; MEASURES DEFAULT TAB S
2854                            :       ENDINC
2855                            :       SKIP 2 LINES
2856                            :       INCREMENT FROM ONE TO THREE B\ 1                        ; REPEAT THREE TIMES
2857                            :       :       PRINT TOTAL PATTERN                             ; DIAMOND SHAPED PATTERN
2858                            :       ENDINCREMENT
2859                            :       DO FORM FEED                                            ; END OF HORIZONTAL SECT
2860                            :                       "VERTICAL DEFAULT TAB SECTION"
2861                            :                       "FIRST PAGE OF VERTICAL SECTION"
2862                            :       PRINT SECTION 1 ID                                      ; PRINT ID ON LINE 1
2863                            :       INCR COUNT FROM #1 TO #65. BY #1                        ; PRINT ID ON LINES 2 TH
2864                            :       :       DO VERTICAL TAB
2865                            :       :       PRINT SECTION ID
2866                            :       ENDINC
2867                            :       DO VERTICAL TAB                                         ; SHOULD BRING YOU TO TO
2868                            :                       "SECOND PAGE OF VERTICAL SECTION"
2869                            :       PRINT SECTION 2 ID                                      ; PRINT SECTION ID ON LI
2870                            :       INCR COUNT FROM #1 TO #6. BY #1                         ; PRINT ID ON EVERY 5TH
2871                            :       :       OUTPUT 5 VERTICAL TABS                          ; FROM LINE 6 TO LINE 31
2872                            :       :       PRINT SECTION ID                                ; TESTS MULTIPLE VER. TA
2873                            :       ENDINC
2874                            :       DO FORM FEED
2875                            :                               "MARGIN SECTION"
2876                            :       PRINT SECTION ID AND TOP EDGE MESSAGE(TEM)              ; IDENTIFIES FIRST LINE
```

```
2877                                    :       PRINT LEFT RIGHT MESSAGE(LFM)                   ; DEFINES LEFT AND RIGHT
2878                                    :       INCR COUNT FROM #1 TO #63. BY #1                ; REPEAT FOLLOWING 63. T
2879                                    :       :       PRINT FULL LINE OF "M"                  ; PRINT 132 "M"s
2880                                    :       :       DO LINE FEED
2881                                    :       ENDINCREMENT
2882                                    :       PRINT BOTTOM EDGE MESSAGE(BEM)                  ; IDENTIFY LINE 66 AS BO
2883                                    :       DO FORM FEED
2884                                    :
2885                                    ENDROUTINE
2886                                    .ENDR
2887
2888
2889
2890
2891
2892
2893
2894
2895
2896
2897  027356                                    BGNTST 11.
 (3)  027356                            T11::
2898
2899  027356                                    OUTPUT #REINIT,#2                               ;RESET PRINTER TO DEFAUL
2900  027420                                    OUTPUT #SELDEC,#5                               ; DECIPOINTS AS SIZE UNI
2901  027462                                    OUTPUT #DECFIN,#5                               ; TOGGLE THE OFFSET
2902  027524                                    OUTPUT #PUD,#31.                                ;PRINT TEST ID
2903  027566                                    LET OUTBUF :B= #11                              ;HORIZONTAL TAB
 (4)  027566  112737  000011  003114           MOVB    #11,OUTBUF
2904  027574                                    LET OUTBUF+1 :B= #12                            ;LINE FEED
 (4)  027574  112737  000012  003115           MOVB    #12,OUTBUF+1
2905  027602                                    LET OUTBUF+2 :B= #13                            ;VERTICAL TAB
 (4)  027602  112737  000013  003116           MOVB    #13,OUTBUF+2
2906  027610                                    LET OUTBUF+3 :B= #14                            ;FORMFEED
 (4)  027610  112737  000014  003117           MOVB    #14,OUTBUF+3
2907  027616                                    LET OUTBUF+4 :B= #15                            ;CARRIAGE RETURN
 (4)  027616  112737  000015  003120           MOVB    #15,OUTBUF+4
2908  027624                                    LET OUTBUF+5 :B= #115                           ;'M' CHARACTER
 (4)  027624  112737  000115  003121           MOVB    #115,OUTBUF+5
2909  027632                                    LET OUTBUF+6 :B= #115                           ;"M  CHARACTER
 (4)  027632  112737  000115  003122           MOVB    #115,OUTBUF+6
2910  027640                                    LET OUTBUF+7 :B= #124                           ; T
 (4)  027640  112737  000124  003123           MOVB    #124,OUTBUF+7
2911                                    ;                                       "HORIZONTAL TAB DEFAULT SECTION"
2912  027646                                    OUTPUT #HORDEF,#32.
2913  027710                                    INCR COUNT FROM #1 TO #18. BY #1                ;DO 18 HOR TABS AND PRIN
 (5)  027710  012737  000001  002276           MOV     #1,COUNT
 (7)  027716  000402                           BR      50273$
 (6)  027720                            50274$:
(10)  027720  005237  002276                   INC     COUNT
 (7)  027724                            50273$:
 (7)  027724  023727  002276  000022           CMP     COUNT,#18.
 (9)  027732  003043                           BGT     50275$
2914  027734                                    OUTPUT #OUTBUF,#1                               ;DO HOR TAB
2915  027776                                    OUTPUT #OUTBUF+7                                ;PRINT A
2916  030040                                    ENDINC
```

```
 (5)  030040  000724                            BR      50274$
 (4)  030042                            50275$:
2917  030042                                    OUTPUT #OUTBUF+1,#1                                 ;DO A LINE FEED
2918  030104                                    INCR COUNT FROM #1 TO #17. BY #1                    ;PRINT 1-8 17 TIMES ACRO
 (5)  030104  012737  000001  002276            MOV     #1,COUNT
 (7)  030112  000402                            BR      50276$
 (6)  030114                            50277$:
(10)  030114  005237  002276                    INC     COUNT
 (7)  030120                            50276$:
 (7)  030120  023727  002276  000021            CMP     COUNT,#17.
 (9)  030126  003022                            BGT     50300$
2919  030130                                            OUTPUT #SCALE,#8.
2920  030172                                    ENDINC
 (5)  030172  000750                            BR      50277$
 (4)  030174                            50300$:
2921  030174                                    OUTPUT #OUTBUF+1,#1,,#3                             ;DO A LINE FEED AND THEN
2922          000001                    $BRJMP=1
2923  030236                                    INCR LOOP FROM #1 TO #3 BY #1                       ;REPEAT PATTERNS 1 AND 2
 (5)  030236  012737  000001  033350            MOV     #1,LOOP
 (7)  030244  000402                            BR      50302$
 (6)  030246                            50301$:
 (8)  030246  005237  033350                    INC     LOOP
 (6)  030252                            50302$:
 (7)  030252  023727  033350  000003            CMP     LOOP,#3
 (9)  030260  003402                            BLE     50303$
 (7)  030262  000137  031372                    JMP     50304$
 (6)  030266                            50303$:
2924  030266                                            LET WORK1 := #0                             ;USED DURING PATTERN GEN
 (4)  030266  005037  003112                    CLR     WORK1
2925  030272                                            DECR WORK FROM #8. TO #1 BY #1
 (5)  030272  012737  000010  003110            MOV     #8.,WORK
 (7)  030300  000402                            BR      50306$
 (6)  030302                            50305$:
 (8)  030302  005337  003110                    DEC     WORK
 (6)  030306                            50306$:
 (7)  030306  023727  003110  000001            CMP     WORK,#1
 (9)  030314  002002                            BGE     50307$
 (7)  030316  000137  030634                    JMP     50310$
 (6)  030322                            50307$:
2926  030322                                                    OUTPUT #OUTBUF,#1,,WORK             ;DO CORRECT NUMBER OF TA
2927  030364                                                    OUTPUT #OUTBUF+7,#1                 ;PRINT A "T"
2928  030426                                                    INCR COUNT FROM #1 TO WORK1 BY #1
 (5)  030426  012737  000001  002276            MOV     #1,COUNT
 (7)  030434  000402                            BR      50312$
 (6)  030436                            50311$:
 (8)  030436  005237  002276                    INC     COUNT
 (6)  030442                            50312$:
 (7)  030442  023737  002276  003112            CMP     COUNT,WORK1
 (9)  030450  003402                            BLE     50313$
 (7)  030452  000137  030564                    JMP     50314$
 (6)  030456                            50313$:
2929  030456                                                            OUTPUT #OUTBUF,#1,,#2       ;DO TWO HOR. TABS
2930  030520                                                            OUTPUT #OUTBUF+7,#1         ;PRINT A "T"
2931  030562                                                    ENDINC
 (4)  030562  000725                            BR      50311$
 (4)  030564                            50314$:
```

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2932  030564                                                    LET WORK1 := WORK1 + #1
 (7)  030564  005237  003112          INC     WORK1
2933  030570                                                    OUTPUT #OUTBUF+1,#1                    ;DO LINE FEED
2934  030632                                                    ENDDEC
 (4)  030632  000623                  BR      50305$
 (4)  030634                      50310$:
2935  030634                                                    LET WORK1 := #6                        ;USED DURING PATTERN GEN
 (4)  030634  012737  000006  003112  MOV     #6,WORK1
2936  030642                                                    INCR WORK FROM #2 TO ^7. BY #1         ;PATTERN GENERATION LOOP
 (5)  030642  012737  000002  003110  MOV     #2,WORK
 (7)  030650  000402                  BR      50316$
 (6)  030652                      50315$:
 (8)  030652  005237  003110          INC     WORK
 (6)  030656                      50316$:
 (7)  030656  023727  003110  000007  CMP     WORK,#7.
 (9)  030664  003402                  BLE     50317$
 (7)  030666  000137  031204          JMP     50320$
 (6)  030672                      50317$:
2937  030672                                                    OUTPUT #OUTBUF,#1,,WORK                ;DO CORRECT NUMBER OF HO
2938  030734                                                    OUTPUT #CJTBUF+7,#1                    ;PRINT FIRST "T"
2939  030776                                                    INCR COUNT FROM #1 TO WORK1 BY #1
 (5)  030776  012737  000001  002276  MOV     #1,COUNT
 (7)  031004  000402                  BR      50322$
 (6)  031006                      50321$:
 (8)  031006  005237  002276          INC     COUNT
 (6)  031012                      50322$:
 (7)  031012  023737  002276  003112  CMP     COUNT,WORK1
 (9)  031020  003402                  BLE     50323$
 (7)  031022  000137  031134          JMP     50324$
 (6)  031026                      50323$:
2940  031026                                                            OUTPUT #OUTBUF,#1,,#2          ;DO TWO HOR. TABS
2941  031070                                                            OUTPUT #OUTBUF+7,#1            ;PRINT A "T"
2942  031132                                                    ENDINC
 (4)  031132  000725                  BR      50321$
 (4)  031134                      50324$:
2943  031134                                                    OUTPUT #OUTBUF+1,#1                    ;DO A LINE FEED
2944  031176                                                    LET WORK1 := WORK1   #1                ;REGULATES PATTERN GENER
 (7)  031176  005337  003112          DEC     WORK1
2945  031202                                                    ENDINC                                 ;FIRST PATTERN COMPLETE
 (4)  031202  000623                  BR      50315$
 (4)  031204                      50320$:
2946  031204                                                    IF LOOP EQ #3 THEN
 (6)  031204  023727  033350  000003  CMP     LOOP,#3
 (8)  031212  001402                  BEQ     .+6
 (9)  031214  000137  031366          JMP     50325$
2947  031220                                                    OUTPUT #OUTBUF,#1,,#8.                 ;DO 8 TABS
2948  031262                                                    OUTPUT #OUTBUF+7,#1                    ;PRINT LAST "T" IN PATTE
2949  031324                                                    OUTPUT #OUTBUF+1,#1                    ;LINE FEED
2950  031366                                                    ENDIF
 (4)  031366                      50325$:
2951  031366                              ENDINC
 (4)  031366  000137  030246          JMP     50301$
 (4)  031372                      50304$:
2952          000000                  $BRJMP=0
2953  031372                              OUTPUT #OUTBUF+3,#1                                            ;DO FORM FEED
2954
```

```
                                ;                                   "VERTICAL DEFAULT TAB SECTION" (FIRST PAGE)

                                        OUTPUT @VERDEF,@31.                                 ;VERTICAL SECTION 1 ID
                                        INCR COUNT FROM @1 TO @65. BY @1                    ;PRINT SECTION ID ON LIN
 (5) 031476 012737 000001 002276        MOV     @1,COUNT
 (7) 031504 000402                      BR      50327$
 (6) 031506                     50326$:
 (8) 031506 005237 002276               INC     COUNT
 (6) 031512                     50327$:
 (7) 031512 023727 002276 000101        CMP     COUNT,@65.
 (9) 031520 003402                      BLE     50330$
 (7) 031522 000137 031634               JMP     50331$
 (6) 031526                     50330$:
                                        OUTPUT @OUTBUF+2,@1                                 ;DO VERTICAL TAB
                                        OUTPUT @VERDEF,@31.                                 ;PRINT SECTION ID
                                        ENDINC
 (4) 031632 000725                      BR      50326$
 (4) 031634                     50331$:
                                        OUTPUT @OUTBUF+2,@1                                 ;DO VERTICAL TO TOP OF N

                                ;                                   "VERTICAL DEFAULT TAB SECTION" (SECOND PAGE)

                                        OUTPUT @VERDE2,@9.                                  ; SECTION 2 ID
                                        INCR COUNT FROM @1 TO @13. BY @1                    ; PRINT ID ON EVERY 5TH
 (5) 031740 012737 000001 002276        MOV     @1,COUNT
 (7) 031746 000402                      BR      50333$
 (6) 031750                     50332$:
 (8) 031750 005237 002276               INC     COUNT
 (6) 031754                     50333$:
 (7) 031754 023727 002276 000015        CMP     COUNT,@13.
 (9) 031762 003402                      BLE     50334$
 (7) 031764 000137 032076               JMP     50335$
 (6) 031770                     50334$:
                                        OUTPUT @OUTBUF+2,@1,,@5.                            ; DO 5 VERTICAL TABS
                                        OUTPUT @VERDE2,@9.                                  ; PRINT SECTION 2 ID
                                        ENDINC
 (4) 032074 000725                      BR      50332$
 (4) 032076                     50335$:
                                        OUTPUT @OUTBUF+3,@1                                 ; DO FORM FEED AND END S

                                ;                                       "MARGIN SECTION"

                                        OUTPUT @MARDEF,@102.                                ; SECTION ID PLUS TOP ED
                                        OUTPUT @LFM,@113.                                   ; IDENTIFIES LEFT AND RI
                                        INCR COUNT FROM @1 TO @63. BY @1                    ; REPEAT THE FOLLOWING 6
 (5) 032244 012737 000001 002276        MOV     @1,COUNT
 (7) 032252 000402                      BR      50337$
 (6) 032254                     50336$:
 (8) 032254 005237 002276               INC     COUNT
 (6) 032260                     50337$:
 (7) 032260 023727 002276 000077        CMP     COUNT,@63.
 (9) 032266 003402                      BLE     50340$
 (7) 032270 000137 032406               JMP     50341$
 (6) 032274                     50340$:
                                        OUTPUT @OUTBUF+5,@2,,@66.                           ; PRINT FULL LINE OF  M
                                        OUTPUT @OUTBUF+1,@1                                 ; DO LINE FEED
```

```
 2980  032400  004737  005306                          JSR PC, QUIET
 2981  032404                                  ENDINC
  (4)  032404  000723                          BR      50336$
  (4)  032406                              50341$:
 2982  032406                                  OUTPUT #BEM,#79.                        ; IDENTIFIES LINE 66 AS
 2983  032450                                  OUTPUT #OUTBUF+3,#1                     ; DO FORM AND END TEST
 2984  032512  004737  005306                  JSR PC, QUIET
 2985  032516                                  EXIT TST
  (3)  032516  104432                          TRAP    C$EXIT
  (3)  032520  000632                          .WORD   L10022-.
 2986                                     ;            LOCAL VARIABLES, MESSAGES, TABLES
 2987
 2988                                     .NLIST BEX
 2989  032522  055433  030061  050155      PUD:    .ASCIZ  <33>/[10mPOWER UP DEFAULT TEST 11/<12><12>
 2990  032562  047510  044522  047532      HORDEF: .ASCII  /HORIZONTAL TAB DEFAULT SECTION/<12><12>        ;32 CHAR
 2991  032622  042526  052122  041511      VERDEF: .ASCII  /VERTICAL DEFAULT TAB SECTION 1/<15>            ;32 CHAR
 2992  032661     123  041505  044524      VERDE2: .ASCII  /SECTION 2/                                     ; 9 CHAR
 2993  032672  042504  040506  046125      MARDEF: .ASCII  /DEFAULT MARGIN SECTION    /
 2994  032724  044514  042516  021440      TEM:    .ASCII  /LINE #1___THIS LINE SHOULD BE APPROXIMATELY .4 INCH FROM TOP EDGE OF PA
 2995  033040  044124  020105  047506      LFM:    .ASCII  /THE FOLLOWING 63 LINES SHOULD BEGIN APPROXIMATELY .66 INCH FROM THE LEF
 2996  033221     114  047111  020105      BEM:    .ASCII  /LINE #66___THIS LINE SHOULD BE APPROXIMATELY 8.10 INCHES FROM TOP EDGE
 2997  03334C  031061  032063  033065      SCALE:  .ASCII  /12345678/                                      ;PROVIDE
 2998                                     .EVEN
 2999                                     .LIST BEX
 3000  033350  000000                      LOOP:   .WORD   0
 3001  033352                                  ENDTST
  (3)  033352                             L10022:
  (3)  033352  104401                          TRAP    C$ETST
 3002
 3003
 3004
 3005
 3006
 3007
 3008
 3009
 3010
 3011
 3014  033354                                  ENDMOD
 3015                                     .SBTTL  TABS TEST
 3016                                     ;MODULE TABS.P11
 3017  033354                                  BGNMOD
 3018
 3019                                     ;**                     FUNCTIONAL DESCRIPTION
 3020                                     ;
 3021                                     ;       THE TABS TEST IS A COMPREHENSIVE TEST OF ALL HORIZONTAL AND VERTICAL
 3022                                     ; TAB FUNCTIONS ON THE LN01 ELECTRONIC PRINTER.
 3023                                     ; IT TESTS THE HORIZONTAL AND VERTICAL SETTING AND CLEARING OF TABS AS WELL
 3024                                     ; AS THE ABILITY TO USE THE TAB FUNCTION ITSELF. IT ASSURES THAT ALL TABS
 3025                                     ; CAN BE SET OR CLEARED INDEPENDENT OF ONE ANOTHER.  IT ALSO ASSURES THAT
 3026                                     ; TABS CAN BE SET OR CLEARED REGARDLESS OF MARGIN SETTINGS.  IT FURTHER
 3027                                     ; ASSURES THAT A TOTAL OF 32 VERTICAL AND 32 HORIZONTAL TAB SETTINGS CAN
 3028                                     ; BE USED AND THAT IF ANY ARE SET OVER AND ABOVE THE 32 LIMIT THAT THE HIGHEST
 3029                                     ; ORDER SETTING WILL BE ELIMINATED IN FAVOR OF THE LOWER SETTING.
 3030                                     ;
 3031                                     ;       THE TEST ACCOMPLISHES THESE RESULTS BY DRAWING A RECTANGLE 6 1/2 INCHES
```

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3032                            ; IN HEIGHT AND 9 INCHES WIDE, WITH AN ASTERISK IN THE CENTER OF THE RECTANGLE
3033                            ; WHICH WILL ALSO BE THE CENTER OF THE PAGE.
3034                            ; THE RECTANGLE WILL BEGIN 1 INCH FROM THE TOP EDGE OF THE PAPER AND 1 INCH
3035                            ; FROM THE LEFT EDGE OF THE PAPER.  IT WILL END 1 INCH FROM THE BOTTOM EDGE
3036                            ; OF THE PAPER (7 1/2 INCHES FROM TOP EDGE OF PAPER) AND 1 INCH FROM THE RIGHT
3037                            ; EDGE OF THE PAPER (10 INCHES FROM THE LEFT EDGE OF PAPER).
3038                            ; THE EDGES OF THE RECTANGLE WILL BE IDENTIFIED BY ASTERISKS BEING PRINTED AT
3039                            ; FIXED INTERVALS.  THE INTERVALS WILL BE 1/2 INCH FOR BOTH HORIZONTAL AND
3040                            ; VERTICAL BOUNDARIES.  THE ONLY THING APPEARING INSIDE THE RECTANGLE WILL BE
3041                            ; THE ASTERISK PRINTED IN THE CENTER.  THE CENTER ASTERISK SHOULD BE LOCATED
3042                            ; 4 1/4 INCHES FROM THE TOP EDGE OF THE PAPER (NOT THE EDGE OF THE RECTANGLE)
3043                            ; AND 5 1/2 INCHES FROM THE LEFT EDGE OF THE PAPER (NOT THE LEFT EDGE OF THE
3044                            ; RECTANGLE).  THIS WILL PLACE THE CENTER OF THE ASTERISK AT THE CENTER OF THE
3045                            ; PAPER AS WELL AS THE CENTER OF THE RECTANGLE.
3046                            ;
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3048                            ;       ANY OTHER MARKINGS ON THE PAGE EXCEPT THE TEST ID WHICH WILL BE PRINTED
3049                            ;       ABOVE THE RECTANGLE WILL CONSTITUTE AN ERROR.
3050                            ;
3051                            ;       THE FOLLOWING IS A NON SCALE REPRESENTATION OF THE RECTANGLE'S APPEARANCE.
3052                            ;
3053                            ;       *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
3054                            ;
3055                            ;       *                                                       *
3056                            ;
3057                            ;       *                                                       *
3058                            ;
3059                            ;       *                                                       *
3060                            ;
3061                            ;       *                                                       *
3062                            ;
3063                            ;       *                                                       *
3064                            ;
3065                            ;       *                                                       *
3066                            ;                               *
3067                            ;       *                                                       *
3068                            ;
3069                            ;       *                                                       *
3070                            ;
3071                            ;       *                                                       *
3072                            ;
3073                            ;       *                                                       *
3074                            ;
3075                            ;       *                                                       *
3076                            ;
3077                            ;       *                                                       *
3078                            ;
3079                            ;       *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
3080                            ;
3081                            ;-
3082
3083
3084
3085
3086
3087
3088
3089
3090
3091
3092
3093    000000                  .REPT 0
3094
3095                            ;                                       GLOBALS REFERENCED
3096                            ;       REINIT,
3097
3098                            BEGIN ROUTINE
3099                            :       PRINT TEST ID
3100                            :       SEND RESET SEQUENCE
3101                            :       CLEAR ALL TABS
3102                            :       SET MARGINS                             ; TO TEST SETTING TABS OUTSIDE MARGINS
3103                            :       SET 16 VERTICAL TAB STOPS
```

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3104                                    :       SET 16 MORE VERTICAL TAB STOPS          ; CHECKS ABILITY TO SET INDEPENDENTLY
3105                                    :       SET EXTRA VERTICAL TAB STOP             ; CHECKS FOR ELIMINATION OF HIGHEST ORDE
3106                                    :       SET 16 HORIZONTAL TAB STOPS
3107                                    :       SET 16 MORE HORIZONTAL TAB STOPS        ; CHECKS ABILITY TO SET INDEPENDENTLY
3108                                    :       SET EXTRA HORIZONTAL TAB STOP           ; CHECKS FOR ELIMINATION OF HIGHEST ORDE
3109                                    :       SET MARGINS BACK TO DEFAULT SETTINGS    ; ALLOWS YOU TO USE ALL TAB STOPS
3110                                    :       PRINT TOP LINE OF RECTANGLE
3111                                    :       CLEAR ALL HORIZONTAL TABS               ; CHECKS ABILITY TO CLEAR HORIZONTAL TAB
3112                                    :       SET HORIZONTAL TABS                     ; 3 STOPS ONLY
3113                                    :       PRINT TOP SECTION OF RECTANGLE          ; STOP AT CENTER LINE
3114                                    :       PRINT CENTER LINE
3115                                    :       PRINT BOTTOM SECTION OF RECTANGLE       ; EXCEPT BOTTOM LINE
3116                                    :       SET HORIZONTAL TABS                     ; SET TABS FOR BOTTOM LINE (SAME AS TOP
3117                                    :       PRINT BOTTOM LINE OF RECTANGLE          ; RECTANGLE COMPLETE
3118                                    :       SEND RESET SEQUENCE                     ; RETURN TO DEFAULT SETTINGS
3119                                    :       DO FORM FEED
3120                                    END ROUTINE
3121                                    .ENDR
3122
3123
3124
3125
3126
3127
3128
3129
3130
3131
3132
3133
3134  033354                                    BGNTST  12.
 (3)  033354                                    T12::
3135  033354                                    LET OUTBUF :B= #13                      ; VERTICAL TAB CODE
 (4)  033354  112737  000013  003114                MOVB    #13,OUTBUF
3136  033362                                    LET OUTBUF+1 :B= #13                    ;       "
 (4)  033362  112737  000013  003115                MOVB    #13,OUTBUF+1
3137  033370                                    LET OUTBUF+2 :B= #14                    ; FORM FEED CODE
 (4)  033370  112737  000014  003116                MOVB    #14,OUTBUF+2
3138  033376                                    LET OUTBUF+3 :B= #11                    ; CODE FOR HORIZONTAL TAB
 (4)  033376  112737  000011  003117                MOVB    #11,OUTBUF+3
3139  033404                                    LET OUTBUF+4 :B= #11                    ;       "
 (4)  033404  112737  000011  003120                MOVB    #11,OUTBUF+4
3140  033412                                    LET OUTBUF+5 :B= #52                    ; CODE FOR ASTERISK
 (4)  033412  112737  000052  003121                MOVB    #52,OUTBUF+5
3141  033420                                    LET OUTBUF+6 :B= #15                    ; CARRIAGE RETURN
 (4)  033420  112737  000015  003122                MOVB    #15,OUTBUF+6
3142  033426                                    OUTPUT #REINIT,#2
3143  033470                                    OUTPUT #SELDEC,#5                       ; DECIPOINTS
3144  033532                                    OUTPUT #TABTST,#20.                     ; TEST ID
3145  033574                                    OUTPUT #CLRVER,#4                       ; CLEAR ALL VERTICAL TABS
3146  033636                                    OUTPUT #CLRHOR,#4                       ; CLEAR ALL HORIZONTAL TABS
3147  033700                                    OUTPUT #TBMAR1,#8.                      ; SET MARGINS TO TEST LN01 ABILI
3148  033742                                    OUTPUT #LRMAR1,#12.                     ;       "
3149  034004                                    OUTPUT #VERTB1,#82.                     ; SET FIRST 16 VERTICAL TAB STOP
3150  034046                                    OUTPUT #VERTB2,#84.                     ; SET SECOND 16 VERTICAL TAB STO
3151  034110                                    OUTPUT #XVER,#7                         ; SET EXTRA VERTICAL STOP
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 3152  034152                             OUTPUT #HORTB1,#82.                 ; SET FIRST 16 HORIZONTAL TAB ST
 3153  034214                             OUTPUT #HORTB2,#84.                 ; SET SECOND 16 HORIZONTAL TAB S
 3154  034256                             OUTPUT #XHOR,#7                     ; SET EXTRA HORIZONTAL STOP
 3155  034320                             OUTPUT #DEFMR1,#8.                  ; SET DEFAULT TOP BOTTOM MARGINS
 3156  034362                             OUTPUT #DEFMR2,#11.                 ; "       "    LEFT RIGHT
 3157  034424                             OUTPUT #OUTBUF,#1                   ; MOVE VERTICALLY TO TOP LINE (O
 3158  034466                             OUTPUT #OUTBUF+6,#1                 ; CARRIAGE RETURN
 3159  034530                             OUTPUT #OUTBUF+4,#2                 ; DO HORIZONTAL TAB AND PRINT AS
 3160  034572                             INCR COUNT FROM #1 TO #13. BY #1    ; PRINT TOP LINE OF ASTERISKS
  (5)  034572  012737  000001  002276             MOV     #1,COUNT
  (7)  034600  000402                             BR      50343$
  (6)  034602                             50342$:
  (8)  034602  005237  002276                     INC     COUNT
  (6)  034606                             50343$:
  (7)  034606  023727  002276  000015             CMP     COUNT,#13.
  (9)  034614  003402                             BLE     50344$
  (7)  034616  000137  034666                     JMP     50345$
  (6)  034622                             50344$:
 3161  034622                                     OUTPUT #OUTBUF+3,#3         ; TWO HOR TABS AND AN ASTERISK
 3162  034664                             ENDINC
  (4)  034664  000746                             BR      50342$
  (4)  034666                             50345$:
 3163  034666                             INCR COUNT FROM #1 TO #5 BY #1      ; PRINT REST OF TOP LINE OF ASTE
  (5)  034666  012737  000001  002276             MOV     #1,COUNT
  (7)  034674  000402                             BR      50347$
  (6)  034676                             50346$:
  (8)  034676  005237  002276                     INC     COUNT
  (6)  034702                             50347$:
  (7)  034702  023727  002276  000005             CMP     COUNT,#5
  (9)  034710  003402                             BLE     50350$
  (7)  034712  000137  034762                     JMP     50351$
  (6)  034716                             50350$:
 3164  034716                                     OUTPUT #OUTBUF+4,#2         ; ONE HOR TAB AND AN ASTERISK
 3165  034760                             ENDINC
  (4)  034760  000746                             BR      50346$
  (4)  034762                             50351$:
 3166  034762                             OUTPUT #OUTBUF+6,#1                 ; DO CARRIAGE RETURN
 3167  035024                             OUTPUT #CLRHOR,#4                   ; CLEAR HORIZONTAL TABS
 3168  035066                             OUTPUT #STOPS3,#16.                 ; SET THREE HORIZONTAL TAB STOPS
 3169  035130                             INCR COUNT FROM #1 TO #6 BY #1      ; PRINT TOP SECTION OF RECTANGLE
  (5)  035130  012737  000001  002276             MOV     #1,COUNT
  (7)  035136  000402                             BR      50353$
  (6)  035140                             50352$:
  (8)  035140  005237  002276                     INC     COUNT
  (6)  035144                             50353$:
  (7)  035144  023727  002276  000006             CMP     COUNT,#6
  (9)  035152  003402                             BLE     50354$
  (7)  035154  000137  035266                     JMP     50355$
  (6)  035160                             50354$:
 3170  035160                                     OUTPUT #OUTBUF,#2           ; DO TWO VERTICAL TABS
 3171  035222                                     OUTPUT #TOPSEC,#6           ; DO THREE TABS AND PRINT 2 ASTE
 3172  035264                             ENDINCR
  (4)  035264  000725                             BR      50352$
  (4)  035266                             50355$:
 3173  035266                             OUTPUT #OUTBUF,#1                   ; MOVE VERTICALLY TO CENTER LINE
 3174  035330                             OUTPUT #MIDSEC,#4                   ; DO TWO TABS AND 1 ASTERISK (CE
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 3175  035372                          OUTPUT #OUTBUF,#1                       ; MOVE VERTICALLY TO NEXT PRINTA
 3176  035434                          OUTPUT #BOTSEC,#6                       ; FIRST LINE OF BOTTOM SECTION
 3177  035476                          INCR COUNT FROM #1 TO #5 BY #1          ; PRINT REST OF BOTTOM SECTION (
  (5)  035476  012737  000001  002276          MOV     #1,COUNT
  (7)  035504  000402                          BR      50357$
  (6)  035506                      50356$:
  (8)  035506  005237  002276                  INC     COUNT
  (6)  035512                      50357$:
  (7)  035512  023727  002276  000005          CMP     COUNT,#5
  (9)  035520  003402                          BLE     50360$
  (7)  035522  000137  035634                  JMP     50361$
  (6)  035526                      50360$:
 3178  035526                          OUTPUT #OUTBUF,#2                       ; DO TWO VERTICAL TABS
 3179  035570                          OUTPUT #BOTSEC,#6                       ; THREE TABS, TWO ASTERISKS AND
 3180  035632                      ENDINC
  (4)  035632  000725                          BR      50356$
  (4)  035634                      50361$:
 3181  035634                          OUTPUT #OUTBUF,#1,,#7                   ; MOVE VERTICALLY TO BOTTOM LINE
 3182  035676                          OUTPUT #HORTB1,#82.                     ; SET FIRST 16 HORIZONTAL TAB ST
 3183  035740                          OUTPUT #HORTB2,#84.                     ; SET SECOND 16 HORIZONTAL TAB S
 3184  036002                          OUTPUT #XHOR,#7                         ; SET EXTRA HORIZONTAL STOP
 3185  036044                          OUTPUT #OUTBUF+4,#2                     ; DO HORIZONTAL TAB AND PRINT AS
 3186  036106                          INCR COUNT FROM #1 TO #13. BY #1        ; PRINT BOTTOM LINE OF ASTERISKS
  (5)  036106  012737  000001  002276          MOV     #1,COUNT
  (7)  036114  000402                          BR      50363$
  (6)  036116                      50362$:
  (8)  036116  005237  002276                  INC     COUNT
  (6)  036122                      50363$:
  (7)  036122  023727  002276  000015          CMP     COUNT,#13.
  (9)  036130  003402                          BLE     50364$
  (7)  036132  000137  036202                  JMP     50365$
  (6)  036136                      50364$:
 3187  036136                          OUTPUT #OUTBUF+3,#3                     ; TWO HOR TABS AND AN ASTERISK
 3188  036200                      ENDINC
  (4)  036200  000746                          BR      50362$
  (4)  036202                      50365$:
 3189  036202                          INCR COUNT FROM #1 TO #5 BY #1          ; PRINT REST OF BOTTOM LINE OF A
  (5)  036202  012737  000001  002276          MOV     #1,COUNT
  (7)  036210  000402                          BR      50367$
  (6)  036212                      50366$:
  (8)  036212  005237  002276                  INC     COUNT
  (6)  036216                      50367$:
  (7)  036216  023727  002276  000005          CMP     COUNT,#5
  (9)  036224  003402                          BLE     50370$
  (7)  036226  000137  036276                  JMP     50371$
  (6)  036232                      50370$:
 3190  036232                          OUTPUT #OUTBUF+4,#2                     ; ONE HOR TAB AND AN ASTERISK
 3191  036274                      ENDINC
  (4)  036274  000746                          BR      50366$
  (4)  036276                      50371$:
 3192  036276                          OUTPUT #OUTBUF+6,#1                     ; DO CARRIAGE RETURN
 3193  036340                          OUTPUT #DECFIN,#5                       ; TOGGLE THE OFFSET
 3194  036402                          OUTPUT #OUTBUF+2,#1                     ; FORM FEED
 3195  036444                          OUTPUT #REINIT,#2                       ; RESET DEFAULT CONDITIONS
 3196  036506                          OUTPUT #SELDEC,#5                       ; DECIPOINTS
 3197  036550  004737  005306          JSR PC,QUIET                            ; GUARANTEE THE FORM FEED
```

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3198
3199
3200
3201  036554                                  EXIT TST
 (3)  036554  104432                         TRAP    C$EXIT
 (3)  036556  000700                         .WORD   L10023-.
3202
3203                                  ;                              LOCAL VARIABLES, MESSAGES AND DATA TABLES
3204
3205                                  .NLIST BEX
3206  036560  006412  055433  030061  TABTST: .ASCII  <12><15><33>/[10mTABS TEST 12/<15>
3207  036604     033     133     064  CLRVER: .BYTE   33,133,64,147
3208  036610     033     133     063  CLRHOR: .BYTE   33,133,63,147
3209  036614     033     133     073  TBMAR1: .BYTE   33,133,73,63,66,60,60,162                                  ; SET 80
3210  036624     033     133     063  LRMAR1: .BYTE   33,133,63,66,60,60,73,64,63,62,60,163
3211  036640     033     133     067  VERTB1: .BYTE   33,133,67,62,60,73,71,60,60,73,61,60,70,60,73,61,62,66,60,73
3212  036664     061     064     064          .BYTE   61,64,64,60,73,61,66,62,60,73,61,70,60,60,73,61,71,70,60,166
3213  036710     033     133     062          .BYTE   33,133,62,61,66,60,73,62,63,64,60,73,62,65,62,60,73,62,67,60,60
3214  036735     073     062     070          .BYTE   73,62,70,70,60,73,63,60,66,60,73,63,62,64,60,73,63,64,62,60,166
3215  036762     033     133     063  VERTB2: .BYTE   33,133,63,66,60,60,73,63,67,70,60,73,63,71,66,60,73,64,61,64,60,73
3216  037010     064     063     062          .BYTE   64,63,62,60,73,64,65,60,60,73,64,66,70,60,73,64,70,66,60,166
3217  037034     033     133     065          .BYTE   33,133,65,60,64,60,73,65,61,65,60,73,65,62,60,60,73,65,62,65,60,73
3218  037062     065     063     060          .BYTE   65,63,60,60,73,65,63,65,60,73,65,64,60,60,73,65,67,66,60,166
3219  037106     033     133     065  XVER:   .BYTE   33,133,65,62,62,65,166
3220  037115     033     133     067  HORTB1: .BYTE   33,133,67,62,60,73,71,60,60,73,61,60,70,60,73,61,62,66,60,73
3221  037141     061     064     064          .BYTE   61,64,64,60,73,61,66,62,60,73,61,70,60,60,73,61,71,70,60,165
3222  037165     033     133     062          .BYTE   33,133,62,61,66,60,73,62,63,64,60,73,62,65,62,60,73,62,67,60,60
3223  037212     073     062     070          .BYTE   73,62,70,70,60,73,63,60,66,60,73,63,62,64,60,73,63,64,62,60,165
3224  037237     033     133     063  HORTB2: .BYTE   33,133,63,66,60,60,73,63,67,70,60,73,63,71,66,60,73,64,61,64,60,73
3225  037265     064     063     062          .BYTE   64,63,62,60,73,64,65,60,60,73,64,66,70,60,73,64,70,66,60,165
3226  037311     033     133     065          .BYTE   33,133,65,60,64,60,73,65,62,62,60,73,65,67,66,60,73,66,61,62,60,73
3227  037337     066     064     070          .BYTE   66,64,70,60,73,66,70,64,60,73,67,62,60,60,73,67,63,70,60,165
3228  037363     033     133     065  XHOR:   .BYTE   33,133,65,64,60,60,165
3229  037372     033     133     073  DEFMR1: .BYTE   33,133,73,65,70,63,62,162                                  ; DEFAUL
3230  037402     033     133     064  DEFMR2: .BYTE   33,133,64,67,65,73,67,64,64,65,163
3231  037415     033     133     067  STOPS3: .BYTE   33,133,67,62,60,73,63,71,66,60,73,67,62,60,60,165
3232  037435     011     052     011  TOPSEC: .BYTE   11,52,11,11,52,12                                          ; LINE USED FOR TOP SECT
3233  037443     011     011     052  MIDSEC: .BYTE   11,11,52,12
3234  037447     011     052     011  BOTSEC: .BYTE   11,52,11,11,52,12                                          ; LINE USED FOR BOTTOM S
3235          037456                          .EVEN
3236                                  .LIST BEX
3237  037456                                  ENDTST
 (3)  037456                          L10023:
 (3)  037456  104401                         TRAP    C$ETST
3238
3239  037460                                  ENDMOD
3240                                  .SBTTL  MARGINS TEST
3241                                  ;MODULE TSTMAR.P11
3242
3243  037460                                  BGNMOD
3244
3245                                  ;**
3246                                  ;
3247                                  ;                              FUNCTIONAL DESCRIPTION
3248                                  ;
3249                                  ;       THE MARGINS TEST IS DESIGNED TO TEST ALL STATED FUNCTIONS OF BOTH TOP AND
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3250                                    ;       BOTTOM MARGIN ESCAPE SEQUENCES AND LEFT AND RIGHT MARGIN SEQUENCES.  IT
3251                                    ;       WILL VERIFY THE ABILITY TO SET MARGINS TO THE DESIRED PARAMETERS AND ALSO
3252                                    ;       WILL VERIFY THAT THE PRINTER WILL RESPOND BY OPERATING WITHIN THE MARGINS
3253                                    ;       SPECIFIED EXCEPT UNDER SPECIFIED CIRCUMSTANCES, SUCH AS WHEN USING THE DRAW
3254                                    ;       RULE COMMAND.
3255                                    ;       THE FUNCTIONS STATED IN THE LN01 FUNCTIONAL SPECIFICATION ARE AS FOLLOWS:
3256                                    ;               1:      SET TOP AND BOTTOM MARGINS
3257                                    ;                               A: SET BOTH TOP AND BOTTOM MARGINS
3258                                    ;                               B: SET TOP AND DO NOT CHANGE BOTTOM
3259                                    ;                               C: SET BOTTOM AND DO NOT CHANGE TOP
3260                                    ;                               D: BOTH PARAMETERS LEFT OUT CAUSES NO CHANGE IN MARGINS
3261                                    ;                               E: BOTH PARAMETERS EQUAL TO ZERO CAUSES NO CHANGE IN MAR
3262                                    ;                               F: REPOSITIONING ACTIVE LINE WHEN CURRENT ACTIVE LINE IS
3263                                    ;                               G: ESCAPE SEQUENCES IGNORED IF PARAMETERS DO NOT CONFORM
3264                                    ;
3265                                    ;               2:      SET LEFT AND RIGHT MARGINS
3266                                    ;                               A: SET BOTH LEFT AND RIGHT MARGINS
3267                                    ;                               B: SET LEFT AND DO NOT CHANGE RIGHT
3268                                    ;                               C: SET RIGHT AND DO NOT CHANGE LEFT
3269                                    ;                               D: BOTH PARAMETERS LEFT OUT CAUSES NO CHANGE IN MARGINS
3270                                    ;                               E: BOTH PARAMETERS EQUAL TO ZERO CAUSES NO CHANGE IN MAR
3271                                    ;                               F: REPOSITIONING OF ACTIVE COLUMN TO EQUAL NEW LEFT MARG
3272                                    ;                               G: ESCAPE SEQUENCES IGNORED IF PARAMETERS DO NOT CONFORM
3273                                    ;
3274                                    ;               3:      SET PHYSICAL LINES PER PAGE
3275                                    ;                               A: SETTING PHYSICAL LINES PER PAGE CHANGES TOP MARGIN TO
3276                                    ;                               B: SETTING PHYSICAL LINES PER PAGE CHANGES BOTTOM MARGIN
3277
3278                                    ;--
3279
3280                                    ;               GLOBALS REFERENCED:
3281                                    ;       REINIT.COUNT
3282
3283  000000                            .REPT   0
3284
3285
3286                                            "STEP BY STEP BREAKDOWN OF EACH SECTION OF THE TEST"
3287
3288
3289                                    BEGIN ROUTINE
3290                                    :                                       LEFT RIGHT MARGIN SECTION
3291                                    :
3292                                    :       SELECT SIZE UNIT AS DECIPOINTS
3293                                    :       TOGGLE PAPER OFFSET
3294                                    :       PRINT TEST ID
3295                                    :       SKIP A LINE
3296                                    :       PRINT REFERENCE LINE OF "M"S                                    ; FROM ONE INCH TO TENTH
3297                                    :       DO A LINE FEED
3298                                    :       REPEAT 7 TIMES
3299                                    :       :       SET LRMARGINS AT "A" AND "B"                            ; "A" STARTS AT '1' (INC
3300                                    :       :       OUTPUT 100 ASTERISKS                                    ; ONLY 13 SHOULD BE PRIN
3301                                    :       :       DO A LINE FEED
3302                                    :       :       ADD 1 TO "A" AND TO "B"                                 ; MOVES MARGINS ONE INCH
3303                                    :       END REPEAT
3304                                    :       LET R3 EQUAL ATBL                                               ; 1ST TABLE OF SEQUENCES
3305                                    :       LET R4 EQUAL APTBL                                              ; TABLE OF BYTE COUNTS F
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3306                    :       WHILE (R3) NE #0 DO                             ; DO FOR ALL ENTRIES IN
3307                    :       :       OUTPUT (R3)+,(R4)+                      ; OUTPUT THE ENTRY
3308                    :       ENDDO
3309                    :       LET R3 EQUAL BTBL                               ; 2ND TABLE OF SEQS AND
3310                    :       LET R4 EQUAL BPTBL                              ;       "       BYTE COUN
3311                    :       WHILE (R3) NE TO #0 DO                          ; DO FOR ALL ENTRIES
3312                    :       :       OUTPUT (R3)+,(R4)+                      ; OUTPUT ENTRY
3313                    :       ENDDO
3314                    :       SET LEFT AND RIGHT MARGIN TO 1 AND 10 INCHES RESPECTIVELY
3315                    :       DO A LINE FEED
3316                    :       PRINT LINE OF ASTERISKS
3317                    :       DO A LINE FEED
3318                    :       LET R3 EQUAL IGTBL                              ; TABLE OF IGNORED SEQUE
3319                    :       LET R4 EQUAL IGTBLP                             ; BYTE COUNTS
3320                    :       WHILE (R3) NE #0 DO                             ; DO FOR EACH ENTRY
3321                    :       :       OUTPUT (R3)+,(R4)+                      ; OUTPUT THE ENTRY
3322                    :       :       DO CARRIAGE RETURN
3323                    :       :       PRINT LINE OF ASTERISKS
3324                    :       :       DO A LINE FEED
3325                    :       ENDDO
3326                    :       DO A LINE FEED
3327                    :
3328                    :                               TOP BOTTOM MARGIN SECTION
3329                    :
3330                    :       LET R3 EQUAL CTBL                               ; TABLE OF SEQUENCES AND
3331                    :       LET R4 EQUAL CPTBL                              ; BYTE COUNTS
3332                    :       WHILE (R3) NE #0 DO                             ; DO ALL ENTRIES
3333                    :       :       OUTPUT (R3)+,(R4)+                      ; OUTPUT THE ENTRY
3334                    :       ENDDO
3335                    :       LET R3 EQUAL DTBL                               ; MORE TOP BOTTOM SEQS A
3336                    :       LET R4 EQUAL DPTBL                              ; TABLE OF BYTE COUNTS
3337                    :       WHILE (R3) NE #0 DO                             ; DO FOR ALL ENTRIES
3338                    :       :       OUTPUT (R3)+,(R4)+                      ; OUTPUT THE ENTRY
3339                    :       ENDDO
3340                    :
3341                    :                               PHYSICAL LINES PER PAGE SECTION
3342                    :
3343                    :       SET PHYSICAL LINES PER PAGE TO 8 INCHES
3344                    :       DO FORM FEED
3345                    :       INCREMENT COUNT FROM 1 TO 69 BY 1
3346                    :       :       PRINT PLP MESSAGE
3347                    :       :       DO LINE FEED
3348                    :       END INCREMENT
3349                    :       PRINT END OF SECTION MESSAGE
3350                    :
3351                    :                               IGNORED SEQUENCE SECTION
3352                    :
3353                    :       SET TOP AND BOTTOM MARGINS AT 1 AND 7 INCHES
3354                    :       DO FORM FEED
3355                    :       LET R3 EQUAL IGNTBL                             ; IGNORED SEQUENCE TABLE
3356                    :       LET R4 EQUAL IGNTBP                             ; BYTE COUNTS
3357                    :       WHILE (R3) NE #0 DO                             ; DO FOR ALL ENTRIES
3358                    :       :       OUTPUT (R3)+,(R4)+                      ; OUTPUT THE ENTRY
3359                    :       ENDDO
3360                    :       INCREMENT COUNT FROM 1 TO 52 BY 1
3361                    :       :       OUTPUT IGNORED SECTION MESSAGE
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3362                                    ;       END INCREMENT
3363                                    ;       OUTPUT END OF SECTION MESSAGE
3364                                    ;       OUTPUT END OF TEST MESSAGE
3365                                    ;       DO A FORM FEED
3366                                    ;       DO RESET                        ; RETURN TO ALL DEFAULT
3367                                    ;       SELECT SIZE UNIT AS DECIPOINTS
3368                                    ;       EXIT TEST
3369                                    END ROUTINE
3370                                    .ENDR
3371
3372
3373
3374
3375
3376
3377
3378
3379
3380
3381
3382
3383
3384
3385
3386
3387                                    ;               SOURCE CODE IN SPMACJ
3388  037460                                    BGNTST  13.
 (3)  037460                            T13::
3389
3390  037460                            LET OUTBUF :B= #11                    ; CODE FOR HOR. TAB
 (4)  037460  112737  000011  003114          MOVB    #11,OUTBUF
3391  037466                            LET OUTBUF+1 :B= #115                 ; UPPER CASE 'M
 (4)  037466  112737  000115  003115          MOVB    #115,OUTBUF+1
3392  037474                            LET OUTBUF+2 :B= #12                  ; LINE FEED
 (4)  037474  112737  000012  003116          MOVB    #12,OUTBUF+2
3393  037502                            LET OUTBUF+3 :B= #15                  ; CARRIAGE RETURN
 (4)  037502  112737  000015  003117          MOVB    #15,OUTBUF+3
3394  037510                            LET OUTBUF+4 :B= #13                  ; VERTICAL TAB
 (4)  037510  112737  000013  003120          MOVB    #13,OUTBUF+4
3395  037516                            LET OUTBUF+5 :B= #14                  ; FORM FEED
 (4)  037516  112737  000014  003121          MOVB    #14,OUTBUF+5
3396  037524                            LET OUTBUF+6 :B= #73                  ; SEMI COLON FOR SEPARAT
 (4)  037524  112737  000073  003122          MOVB    #73,OUTBUF+6
3397  037532                            LET OUTBUF+7 :B= #52                  ; CODE FOR ASTERISK
 (4)  037532  112737  000052  003123          MOVB    #52,OUTBUF+7
3398  037540                            LET OUTBUF+10 :B= #40                 ; SPACE
 (4)  037540  112737  000040  003124          MOVB    #40,OUTBUF+10
3399  037546                            LET OUTBUF+11 :B= #77                 ; QUESTION MARK CHARACTE
 (4)  037546  112737  000077  003125          MOVB    #77,OUTBUF+11
3400  037554                            LET OUTBUF+12 :B= #137                ; UNDERLINE
 (4)  037554  112737  000137  003126          MOVB    #137,OUTBUF+12
3401  037562                            LET OUTBUF+13 :B= #41                 ; EXCLAMATION
 (4)  037562  112737  000041  003127          MOVB    #41,OUTBUF+13
3402  037570                            LET OUTBUF+14 :B= #53                 ; PLUS SIGN
 (4)  037570  112737  000053  003130          MOVB    #53,OUTBUF+14
3403  037576                            LET OUTBUF+15 :B= #75                 ; EQUAL
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 (4)  037576  112737  000075  003131          MOVB    #75,OUTBUF+15
3404  037604                          LET OUTBUF+16 :B= #133                  ; LEFT SQUARE BRACKET
 (4)  037604  112737  000133  003132          MOVB    #133,OUTBUF+16
3405  037612                          LET OUTBUF+17 :B= #135                  ; RIGHT  "       '
 (4)  037612  112737  000135  003133          MOVB    #135,OUTBUF+17
3406
3407                                ;                       LEFT RIGHT MARGIN SECTION
3408  037620                        OUTPUT #REINIT,#2
3409  037662                        OUTPUT #SELDEC,#5                         ; DECIPOINTS
3410  037724                        OUTPUT #DECFIN,#5                         ; TOGGLE PAPER OFFSET
3411  037766                        OUTPUT #TSTMRA,#30.                       ; TEST ID ON LINE 1 (DEF
3412  040030                        OUTPUT #TABMS,#48.                        ; CLEAR DEFAULT TABS THE
3413  040072                        INCR COUNT FROM #1 TO #8. BY #1           ; DO TEN TIMES
 (5)  040072  012737  000001  002276          MOV     #1,COUNT
 (7)  040100  000402                          BR      50373$
 (6)  040102                        50372$:
 (8)  040102  005237  002276                  INC     COUNT
 (6)  040106                        50373$:
 (7)  040106  023727  002276  000010          CMP     COUNT,#8.
 (9)  040114  003402                          BLE     50374$
 (7)  040116  000137  040230                  JMP     50375$
 (6)  040122                        50374$:
3414  040122                                OUTPUT #OUTBUF,#1                 ; DO A HORIZONTAL TAB
3415  040164                                OUTPUT #OUTBUF+1,#1               ; PRINT AN "M"
3416  040226                        ENDINC                                    ; REFERENCE LINE OF 'M S
 (4)  040226  000725                          BR      50372$
 (4)  040230                        50375$:
3417  040230                        OUTPUT #OUTBUF+2,#1                       ; DO LINE FEED
3418  040272                        LET R3 := #PARTBL                         ; SETUP R3 AS INDEX TO T
 (4)  040272  012703  044140                  MOV     #PARTBL,R3
3419  040276                        WHILE (R3) NE #0 DO                       ; DO FOR EACH ENTRY IN T
 (4)  040276                        50376$:
 (6)  040276  005713                          TST     (R3)
 (8)  040300  001002                          BNE     .+6
 (9)  040302  000137  040454                  JMP     50377$
3420  040306                                OUTPUT (R3)+,#12.
3421  040346                                OUTPUT #OUTBUF+7,#1,,#100.        ; TRY AND PRINT 100 ASTE
3422                                                                          ; THE LEFT AND RIGHT MAR
3423  040410                                OUTPUT #OUTBUF+2,#1               ; DO A LINE FEED
3424  040452                        ENDDO
 (3)  040452  000711                          BR      50376$
 (3)  040454                        50377$:
3425  040454                        LET R3 := #ATBL                           ; FIRST TABLE OF SEQUENC
 (4)  040454  012703  044160                  MOV     #ATBL,R3
3426  040460                        LET R4 := #APTBL                          ; FIRST TABLE OF BYTE CO
 (4)  040460  012704  044254                  MOV     #APTBL,R4
3427  040464                        WHILE (R3) NE #0 DO
 (4)  040464                        50400$:
 (6)  040464  005713                          TST     (R3)
 (8)  040466  001002                          BNE     .+6
 (9)  040470  000137  040534                  JMP     50401$
3428  040474                                OUTPUT (R3)+,(R4)+                ; DO FOR ALL ENTRIES
3429  040532                        ENDDO
 (3)  040532  000754                          BR      50400$
 (3)  040534                        50401$:
3430  040534  004737  005306        JSR PC,QUIET
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3431  040540                        LET R3 :* #BTBL
 (4)  040540  012703  044346                MOV     #BTBL,R3
3432  040544                        LET R4 :* #BPTBL
 (4)  040544  012704  044422                MOV     #BPTBL,R4
3433  040550                        WHILE (R3) NE #0 DO                     ; DO FOR EACH ENTRY IN T
 (4)  040550                        50402$:
 (6)  040550  005713                        TST     (R3)
 (8)  040552  001002                        BNE     .+6
 (9)  040554  000137  040620                JMP     50403$
3434  040560                                OUTPUT (R3)+,(R4)+              ; OUTPUT THE ENTRY
3435  040616                        ENDDO
 (3)  040616  000754                        BR      50402$
 (3)  040620                        50403$:
3436  040620  004737  005306        JSR PC,QUIET
3437  040624                        OUTPUT #ONETEN,#12.                     ; SETS LRMAR TO 1 AND 10
3438  040666                        OUTPUT #OUTBUF+2,#1                     ; LINE FEED
3439  040730                        OUTPUT #OUTBUF+7,#1,,#150.              ; PRINT ASTERISKS ACROSS
3440  040772                        OUTPUT #OUTBUF+2,#1                     ; LINE FEED
3441  041034                        LET R3 :* #IGTBL                        ; TABLE OF IGNORE SEQS
 (4)  041034  012703  044474                MOV     #IGTBL,R3
3442  041040                        LET R4 :* #IGTBLP                       ;       "  PARAMETERS
 (4)  041040  012704  044514                MOV     #IGTBLP,R4
3443  041044                        WHILE (R3) NE #0 DO                     ; DO FOR EACH ENTRY
 (4)  041044                        50404$:
 (6)  041044  005713                        TST     (R3)
 (8)  041046  001002                        BNE     .+6
 (9)  041050  000137  041320                JMP     50405$
3444  041054                                OUTPUT (R3)+,(R4)+              ; OUTPUT THE ENTRY
3445  041112                                OUTPUT #OUTBUF+3,#1             ; CARRIAGE RETURN
3446  041154                                INCR COUNT FROM #1 TO #150. BY #1
 (5)  041154  012737  000001  002276        MOV     #1,COUNT
 (7)  041162  000402                        BR      50407$
 (6)  041164                        50406$:
 (8)  041164  005237  002276                INC     COUNT
 (6)  041170                        50407$:
 (7)  041170  023727  002276  000226        CMP     COUNT,#150.
 (9)  041176  003402                        BLE     50410$
 (7)  041200  000137  041250                JMP     50411$
 (6)  041204                        50410$:
3447  041204                                OUTPUT #OUTBUF+7,#1                     ; PRINT ACROSS PAGE
3448  041246                                ENDINC
 (4)  041246  000746                        BR      50406$
 (4)  041250                        50411$:
3449  041250  004737  005306                JSR PC, QUIET
3450  041254                                OUTPUT #OUTBUF+2,#1                     ; LINE FEED
3451  041316                        ENDDO
 (3)  041316  000652                        BR      50404$
 (3)  041320                        50405$:
3452  041320                        LET R3 :* #CTBL
 (4)  041320  012703  044554                MOV     #CTBL,R3
3453  041324                        LET R4 :* #CPTBL
 (4)  041324  012704  044646                MOV     #CPTBL,R4
3454  041330                        WHILE (R3) NE #0 DO                     ; DO FOR EACH ENTRY IN T
 (4)  041330                        50412$:
 (6)  041330  005713                        TST     (R3)
 (8)  041332  001002                        BNE     .+6
```

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 (9)  041334  000137  041400            JMP     50413$
3455  041340                            OUTPUT (R3)+,(R4)+                    ; ALL ENTRIES HANDLED NO
3456  041376                        ENDDO
 (3)  041376  000754                    BR      50412$
 (3)  041400                        50413$:
3457  041400  004737  005306        JSR PC,QUIET
3458  041404                        LET R3 := #DTBL
 (4)  041404  012703  044740            MOV     #DTBL,R3
3459  041410                        LET R4 := #DPTBL
 (4)  041410  012704  045010            MOV     #DPTBL,R4
3460  041414                        WHILE (R3) NE #0 DO                       ; DO FOR EACH ENTRY IN 4
 (4)  041414                        50414$:
 (6)  041414  005713                    TST     (R3)
 (8)  041416  001002                    BNE     .+6
 (9)  041420  000137  041464            JMP     50415$
3461  041424                            OUTPUT (R3)+,(R4)+                    ; ALL ENTRIES HANDLED NO
3462  041462                        ENDDO
 (3)  041462  000754                    BR      50414$
 (3)  041464                        50415$:
3463
3464                                ;                       PHYSICAL LINES PER PAGE SECTION
3465
3466  041464                        OUTPUT #PLP8,#7                           ; PLP SEQUENCE TO 8 INCHES
3467  041526                        OUTPUT #OUTBUF+5,#1                       ; FORM FEED
3468  041570                        OUTPUT #PLP,#32...,#69.                   ; PLP MESSAGE 69 TIMES
3469  041632  004737  005306        JSR PC, QUIET
3470  041636                        OUTPUT #EOPLP,#60.                        ; END OF PLP SECTION MESSAGE
3471
3472                                ;                       IGNORE SEQUENCE SECTION
3473
3474  041700                        OUTPUT #ONESVN,#12.                       ; SET TBMAR AT ONE AND SE/EN
3475  041742                        OUTPUT #OUTBUF+5,#1                       ; FORM FEED
3476  042004                        LET R3 := #IGNTBL                         ; TABLE OF IGNOR SEQUENCES
 (4)  042004  012703  044532            MOV     #IGNTBL,R3
3477  042010                        LET R4 := #IGNTBP
 (4)  042010  012704  044544            MOV     #IGNTBP,R4
3478  042014                        WHILE (R3) NE #0 DO
 (4)  042014                        50416$:
 (6)  042014  005713                    TST     (R3)
 (8)  042016  001002                    BNE     .+6
 (9)  042020  000137  042126            JMP     50417$
3479  042024                            OUTPUT (R3)+,(R4)+                    ; SEND IGNORE SEQ
3480  042062                            OUTPUT #ENDTBM,#1                     ; FINAL CHAR FOR TBMAR
3481  042124                        ENDDO
 (3)  042124  000733                    BR      50416$
 (3)  042126                        50417$:
3482  042126  004737  005306        JSR PC, QUIET
3483  042132                        INCR COUNT FROM #1 TO #52. BY #1
 (5)  042132  012737  000001  002276        MOV     #1,COUNT
 (7)  042140  000402                    BR      50421$
 (6)  042142                        50420$:
 (8)  042142  005237  002276            INC     COUNT
 (6)  042146                        50421$:
 (7)  042146  023727  002276  000064        CMP     COUNT,#52.
 (9)  042154  003402                    BLE     50422$
 (7)  042156  000137  042226            JMP     50423$
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 (6)  042162                                504221:
3484  042162                                          OUTPUT #IGSEC,#25.                     ; SECTION MESSAGE
3485  042224                                ENDINC
 (4)  042224  000746                                  BR       504201
 (4)  042226                                504231:
3486  042226  004737  005306                JSR PC, QUIET
3487  042232                                OUTPUT #EOIGN,#73.                               ; END OF IGNORE SECTION
3488  042274                                OUTPUT #ENDTS,#12.                               ; END OF TEST MESSAGE
3489  042336                                OUTPUT #OUTBUF+5,#1                              ; FORM FEED
3490  042400                                OUTPUT #REINIT,#2
3491  042442                                OUTPUT #SELDEC,#5                                ; DECIPOINTS
3492  042504  004737  005306                JSR PC, QUIET
3493  042510                                          EXIT TST
 (3)  042510  104432                                  TRAP     C$EXIT
 (3)  042512  002360                                  .WORD    L10024-.
3494
3495                                        ;                  LOCAL VARIABLES, TABLES, MESSAGES
3496
3497                                        .NLIST BEX
3498  042514  055433  030061  046555  TSTMRA: .ASCII  <33>/[10mMARGINS TEST 13  PAGE 1/<12><12>              ; TEST I
3499  042552  044124  051511  051440  TSTMRB: .ASCII  /THIS SHOULD BE AT APPROX. 1 INCH MARK OF SECOND PAGE/
3500  042636  044120  051531  041511  PLP:    .ASCII  /PHYSICAL LINES PER PAGE SECTION/<12>
3501  042676  044124  051511  051440  EOPLP:  .ASCII  /THIS SHOULD BE 2ND LINE OF 2ND PAGE AND END OF PLP SECTION./<12>
3502  042772  044124  051511  051440  EOIGN:  .ASCII  /THIS SHOULD BE 2ND LINE OF 2ND PAGE AND END OF IGNORED SEQUENCE SECTION
3503  043103     111  047107  051117  IGSEC:  .ASCII  /IGNORED SEQUENCE SECTION/<12>
3504  043134     033     133     062  PLP3:   .BYTE   33,133,62,61,66,60,164
3505  043143     033     133     063  PLP5:   .BYTE   33,133,63,66,60,60,164
3506  043152     033     133     065  PLP8:   .BYTE   33,133,65,67,66,60,164
3507  043161     033     133     066  PLP9:   .BYTE   33,133,66,64,70,60,164
3508  043170     033     133     063  CLRTAB: .BYTE   33,133,63,147                                              ; CLEAR
3509  043174     033     133     063  TABHS:  .BYTE   33,133,63,147,33,133,61,64,64,60,73,62,61,66,60,73      ; CLEARS HTABS A
3510  043214     062     070     070          .BYTE   62,70,70,60,73,63,66,60.60,73,64,63,62,60,73,65,60,64,60,165
3511  043240     033     133     065          .BYTE   33,133,65,67,66,60,73,66,64,70,60,165
3512  043254     033     133          BGNSEQ: .BYTE   33,133                                                     ; BEGINS
3513  043256     033     133     060  PARAM1: .BYTE   33,133,60,67,62,60,73,61,64,64,60,163                      ; LEFT -
3514  043272     033     133     061  PARAM2: .BYTE   33,133,61,64,64,60,73,62,61,66,60,163                      ;
3515  043306     033     133     062  PARAM3: .BYTE   33,133,62,61,66,60,73,62,70,70,60,163                      ;
3516  043322     033     133     062  PARAM4: .BYTE   33,133,62,70,70,60,73,63,66,60,60,163                      ;
3517  043336     033     133     063  PARAM5: .BYTE   33,133,63,66,60,60,73,64,63,62,60,163                      ;
3518  043352     033     133     064  PARAM6: .BYTE   33,133,64,63,62,60,73,65,60,64,60,163                      ;
3519  043366     033     133     065  PARAM7: .BYTE   33,133,65,60,64,60,73,65,67,66,60,163                      ;
3520  043402     033     133     065  PARAM8: .BYTE   33,133,65,67,66,60,73,66,64,70,60,163                      ;
3521  043416     033     133     066  PARAM9: .BYTE   33,133,66,64,70,60,73,67,62,60,60,163                      ;
3522  043432     033     133     067  PRAM10: .BYTE   33,133,67,62,60,60,73,67,65,66,60,163                      ;
3523  043446     033     133     067  PARM10: .BYTE   33,133,67,62,60,60                                         ; 10  IN
3524  043454     033     133     061  PAR2:   .BYTE   33,133,61,64,64,60,73,62,61,66,60,163                      ;
3525  043470     033     133     062  PAR3:   .BYTE   33,133,62,61,66,60,73,63,66,60,60,163                      ;
3526  043504     033     133     063  PAR5:   .BYTE   33,133,63,66,60,60,73,66,64,70,60,163                      ;
3527  043520     033     133     060  ONETEN: .BYTE   33,133,60,67,62,60,73,67,62,60,60,163
3528  043534     033     133     060  ONESVN: .BYTE   33,133,60,67,62,60,73,65,60,64,60,162
3529  043550     033     133     073  EXRMAR: .BYTE   33,133,73,61,60,70,60,60,163                               ; SETS R
3530  043561     073                  MIDSEQ: .BYTE   73                                                         ; SEMI C
3531  043562     163                  ENDLRM: .BYTE   163                                                        ; FINAL
3532  043563     162                  ENDTBM: .BYTE   162                                                        ; FINAL
3533  043564     165                  ENDHT:  .BYTE   165                                                        ; FINAL
3534  043565     141                  ENDHR:  .BYTE   141                                                        ; FINAL
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045566  140                      ENDHAB:  .BYTE   140                                          ; FINAL
043567  144                      ENDVAB:  .BYTE   144                                          ; FINAL
043570  164                      ENDPLP:  .BYTE   164                                          ; FINAL
043571  033     133     163      IGNOR1:  .BYTE   33,133,163,33,133,73,163,33,133,60,73,60,163  ; THESE SEQUENCE
043606  033     133     163      IGNORA:  .BYTE   33,133,163
043611  033     133     073      IGNORB:  .BYTE   33,133,73,163
043615  033     133     060      IGNORC:  .BYTE   33,133,60,73,60,163
043623  033     133     065      IGNOR2:  .BYTE   33,133,65,60,64,60,73,64,63,62,60             ; SETS M
043636  033     133     061      DRULE1:  .BYTE   33,133,61,73,61,62,67,65,73,63,60,60,73,62,67,60,60,73,63,65,41,174
                                                                                               ; AND 1
043664  033     133     060      DRULE2:  .BYTE   33,133,60,73,61,62,67,65,73,61,66,65,60,73,61,62,60,60,73,63,65,41,174
                                                                                               ; INCHES
043713  033     133     073      DEFMAR:  .BYTE   33,133,73,65,70,63,62,162,33,133,64,67,65,73,67,64,64,65,163  ; SEQ TO
043736  047524  020120  040515   TOPMAR:  .ASCII  /TOP MARGIN. INCHES FROM THE TOP SHOULD EQUAL APPROX. /
044023  102     052117  047524   BOTMAR:  .ASCII  /BOTTOM MARGIN. INCHES FROM THE TOP SHOULD EQUAL APPROX. /
044113  105     042116  047440   ENDTS:   .ASCII  /END OF TEST/<12>
044127  066     031061  032463   TOPNUM:  .ASCII  /612357/                                     ; TABLE
044135  067     070              BOTNUM:  .ASCII  /78/                                         ;
        044140                   .EVEN
044140  043272  043306  043322   PARTBL:  .WORD   PARAM2,PARAM3,PARAM4,PARAM5,PARAM6,PARAM7,PARAM8,0  ; TABLE OF PARAM
044160  043272  003124  043256   ATBL:    .WORD   PARAM2,OUTBUF+10,PARAM1,ENDHAB,OUTBUF+7,PARAM3,ENDHAB,OUTBUF+12,OUTBUF+2
044202  043306  003123  043272            .WORD   PARAM3,OUTBUF+7,PARAM2,ENDHR,OUTBUF+12,OUTBUF+2,PARAM4,OUTBUF+7,PARAM5,E
044232  043336  043366  043566            .WORD   PARAM5,PARAM7,ENDHAB,OUTBUF+14,PARAM5,ENDHAB,OUTBUF+7,OUTBUF+2,0
044254  000014  000001  000006   APTBL:   .WORD   12.,1.6,1.1.6,1.1.1.12.,1.6,1.1.1.12.,1.6         ; FIRST TABLE OF
044320  000001  000001  000001            .WORD   1.1.1.12.,6.1.1.6.1.1.1
044346  043352  003123  003116   BTBL:    .WORD   PARAM6,OUTBUF+7,OUTBUF+2,PARAM7,OUTBUF+7,PARM10,ENDHAB  ; 2ND TABLE OF S
044364  003123  043366  003123            .WORD   OUTBUF+7,PARAM7,OUTBUF+7,OUTBUF+2,PARAM8,OUTBUF+7,OUTBUF+2,PARAM9,OUTBUF
044410  043336  004036  043636            .WORD   PARAM5,SELPIX,DRULE1,SELDEC,0
044422  000014  000001  000001   BPTBL:   .WORD   12.,1.1.12.,1.6.1.1.12.,1.1.12.,1.1.12.,1.1.12.,5.22.,5   ; 2ND TA
044474  043520  043606  043520   IGTBL:   .WORD   ONETEN,IGNORA,ONETEN,IGNORB,ONETEN,EXRMAR,ONETEN,0        ; IGNORE
044514  000014  000003  000014   IGTBLP:  .WORD   12.,3.12.,4.12.,9.,12.
044532  043606  043611  043615   IGNTBL:  .WORD   IGNORA,IGNORB,IGNORC,EXRMAR,0
044544  000002  000003  000005   IGNTBP:  .WORD   2,3,5,8.                                   ; BYTE C
044554  043713  043352  043563   CTBL:    .WORD   DEFMAR,PARAM6,ENDTBM,BGNSEQ,MIDSEQ,PARAM6+7,ENDTBM,TOPMAR,TOPNUM
044576  003117  004036  043664            .WORD   OUTBUF+3,SELPIX,DRULE2,SELDEC,PARAM1,ENDTBM,PARAM7,ENDVAB,BOTMAR,BOTNUM
044622  003116  042552  003116            .WORD   OUTBUF+2,TSTMRB,OUTBUF+2,DEFMAR,PARAM2,ENDTBM
044636  043736  044131  003116            .WORD   TOPMAR,TOPNUM+2,OUTBUF+2,0
044646  000023  000006  000001   CPTBL:   .WORD   19.,6.1.2.1.4.1.53.,1.1.5.23.,5.6.1.6.1.56.,1.1.52.,1.8.,6
044726  000001  000065  000001            .WORD   1.53.,1.1.0
044740  043306  043563  043736   DTBL:    .WORD   PARAM3,ENDTBM,TOPMAR,TOPNUM+3,OUTBUF+2,PARAM5,ENDTBM TOPMAR   ; 4TH TA
044760  044133  003116  043366            .WORD   TOPNUM+4,OUTBUF+2,PARAM7,ENDTBM,TOPMAR,TOPNUM+5,OUTBUF+2
044776  043402  043567  044023            .WORD   PARAM8,ENDVAB,BOTMAR,BOTNUM+1,0
045010  000006  000001  000065   DPTBL:   .WORD   6,1,53.,1,1,6,1,53.,1,1,6,1,53.,1,1,6,1,56.,1,0
045060  043134  043143  043152   PLPTBL:  .WORD   PLP3,PLP5,PLP8,PLP9,0
                                 .EVEN
                                 .LIST BEX
045072                                    ENDTST
(3)  045072                      L10024:
(3)  045072  104401                       TRAP    C$ETST
045074                                    ENDMOD
```

```
3589
3590
3591
3592
3594                                    .SBTTL  AUTO-UNDERLINE MODE TEST
3595                                            ;MODULE NAME: UNDLIN.P11 6/20/82
3596  045074                                    BGNMOD
3597
3598                                    ;               GLOBALS REFERENCED
3599                                    ;       REINIT,ACRLF
3600
3601                                    ;**
3602                                    ; THIS VERSION OF THE AUTO-UNDERLINE TEST HAS BEEN ALTERED FOR USE IN LNO1 DIAGNOSTIC.
3603                                    ; THE ORIGINAL VERSION WAS WRITTEN FOR HARD COPY TERMINALS USING SERIAL INTERFACE(DZ11)
3604                                    ; THE ORIGINAL VERSION STILL EXISTS IN THE TML LIBRARY AND IS CALLED AUTUND.NEW.
3605                                    ; THE LNO1 DIAGNOSTIC HAS DRIVERS FOR A PARALLEL INTERFACE(LP11,M7258).
3606                                    ; THIS TEST IS DESIGNED TO EXERCISE THE LNO1'S AUTO-UNDERLINING CAPABILITY.
3607                                    ; MESSAGES ARE PRINTED WITH UNDERLINING AND WITHOUT.
3608                                    ;--
3609          000000                    .REPT 0
3610
3611                                    BEGINTEST
3612
3613                                            :   SEND "OFF" ESCAPE SEQUENCE (CLRUND)
3614                                            :   PRINT "AUTO UNDERLINE MODE TEST" (UNDTTL)
3615                                            :   SKIP TWO LINES ((ACRLF)X2)
3616                                            :   PRINT "THIS MESSAGE SHOULD NOT BE UNDERLINED  (NOTUND)
3617
3618
3619                                            :   SEND "ON" ESCAPE SEQUENCE (UNDON)
3620                                            :   PRINT "THIS MESSAGE SHOULD BE UNDERLINED' (UNDMSG)
3621                                            :   PRINT CHARACTER SET (ATHRUZ)
3622
3623
3624                                            :   PRINT "TABS:    "               (TABS)
3625                                            :   CLR TABS
3626                                            :   SET TABS
3627                                            :   INCREMENT COUNT FROM 1 TO 8 BY 1
3628                                            :   :    DO A TAB
3629                                            :   :   PRINT A "T"
3630                                            :   ENDINCREMENT
3631                                            :   SKIP 2 LINES
3632
3633
3634                                            :   PRINT "SPACES:    "             (SPACES)
3635                                            :   PRINT A "S"
3636                                            :   INCREMENT COUNT FROM 1 TO 14 BY 1
3637                                            :   :    SEND A SPACE "COUNT" TIMES
3638                                            :   :   PRINT A "S"
3639                                            :   ENDINCREMENT
3640
3641
3642                                            :   SEND UNDERLINE OF UNDERLINE CHARACTER MESSAGE (UNDUND)
3643                                            :   PRINT A LINE OF ' '
3644                                            :   SKIP 2 LINES (ACRLF X 2)
3645
```

```
3646
3647                                        :   INCREMENT COUNT FROM 1 TO 16 BY 1    ; NOTE: CURRENT CODE ONLY DOES 11 DUE TO
3648                                        :   :   TURN ON UNDERLINE
3649                                        :   :   PRINT "ON" AND A SPACE
3650                                        :   :   TURN OFF UNDERLINE
3651                                        :   :   PRINT "OFF" AND A SPACE
3652                                        :   END INCREMENT
3653                                        :   SKIP 2 LINES
3654
3655
3656                                        :   SEND "OFF" ESCAPE SEQUENCE (CLRUND)
3657                                        :   PRINT "THIS MESSAGE SHOULD NOT BE UNDERLINED" (NOTUND)
3658                                        :   DO A RESET OF PRINTER DEFAULT CONDITIONS
3659                                        :   DO A FORM FEED
3660
3661                                    ENDTEST
3662                                    .ENDR
3663
3664
3665
3666
3667
3668
3669
3670
3671
3672
3673  045074                                BGNTST 14.
 (3)  045074                            T14::
3674  045074                                LET OUTBUF :B= #11                          ; HOR TAB CODE
 (4)  045074  112737  000011  003114       MOVB    #11,OUTBUF
3675  045102                                LET OUTBUF+1 :B= #12                        ; LINE FEED CODE
 (4)  045102  112737  000012  003115       MOVB    #12,OUTBUF+1
3676  045110                                LET OUTBUF+2 :B= #14                        ; FORM FEED CODE
 (4)  045110  112737  000014  003116       MOVB    #14,OUTBUF+2
3677  045116                                LET OUTBUF+3 :B= #15                        ; CARRIAGE RETURN CODE
 (4)  045116  112737  000015  003117       MOVB    #15,OUTBUF+3
3678  045124                                LET OUTBUF+4 :B= #40                        ; SPACE CODE
 (4)  045124  112737  000040  003120       MOVB    #40,OUTBUF+4
3679  045132                                LET OUTBUF+5 :B= #123                       ; UPPER CASE "S" CODE
 (4)  045132  112737  000123  003121       MOVB    #123,OUTBUF+5
3680  045140                                LET OUTBUF+6 :B= #124                       ; "T  CODE
 (4)  045140  112737  000124  003122       MOVB    #124,OUTBUF+6
3681  045146                                LET OUTBUF+7 :B= #137                       ; UNDERLINE ( ) CODE
 (4)  045146  112737  000137  003123       MOVB    #137,OUTBUF+7
3682  045154                                OUTPUT #REINIT,#2
3683  045216                                OUTPUT #SELDEC,#5                           ; DECIPOINTS
3684  045260                                OUTPUT #UNDON,#4                            ; SEQUENCE TO TURN UNDERLINE ON
3685  045322                                OUTPUT #NOUND,#5                            ;          "           OFF
3686  045364                                OUTPUT #UNDTTL,#36.                         ; TEST ID
3687  045426                                OUTPUT #NOTUND,#40.                         ; MESSAGE SAYING  NOT UNDERLINED
3688                                        ;
3689  045470                                OUTPUT #UNDON,#4                            ; SEQ TURNING UNDERLINE ON
3690  045532                                OUTPUT #UNDMSG,#60.                         ; MESSAGE SAYING  UNDERLINED
3691  045574                                OUTPUT #ATHRUZ,#29.
3692                                        ;
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     045636                              OUTPUT #TABS,#7                 ;SEND TABS MESSAGE
     045700                              OUTPUT #NOTAB,#4                ;CLR ALL TABS
     045742                              OUTPUT #STTAB,#41.              ;SET TABS AT 1,1 1/2,2,3,4,5,7,1
     046004                              INCR WORK FROM #1 TO #8. BY #1
(5)  046004  012737  000001  003110      MOV     #1,WORK
(7)  046012  000402                      BR      50425$
(6)  046014                      50424$:
(8)  046014  005237  003110              INC     WORK
(6)  046020                      50425$:
(7)  046020  023727  003110  000010      CMP     WORK,#8.
(9)  046026  003402                      BLE     50426$
(7)  046030  000137  046142              JMP     50427$
(6)  046034                      50426$:
     046034                                      OUTPUT #OUTBUF,#1       ;DO TAB
     046076                                      OUTPUT #OUTBUF+6,#1     ; "T"
     046140                              ENDINCR                         ;DO FOR ALL TAB SETTINGS
(4)  046140  000725                      BR      50424$
(4)  046142                      50427$:
     046142                              OUTPUT #NOTAB,#4                ;CLR TABS
     046204                              OUTPUT #ACRLF,#2                ; CR, LF
     046246                              OUTPUT #ACRLF,#2                ; CR, LF
                                         ;
     046310                              OUTPUT #SPACES,#9.              ;SEND SPACE MESSAGE
     046352                              OUTPUT #OUTBUF+5,#1             ;SEND "S"
     046414                              INCR WORK FROM #1 TO #14. BY #1
(5)  046414  012737  000001  003110      MOV     #1,WORK
(7)  046422  000402                      BR      50431$
(6)  046424                      50430$:
(8)  046424  005237  003110              INC     WORK
(6)  046430                      50431$:
(7)  046430  023727  003110  000016      CMP     WORK,#14.
(9)  046436  003402                      BLE     50432$
(7)  046440  000137  046556              JMP     50433$
(6)  046444                      50432$:
     046444                                      OUTPUT #OUTBUF+4,#1,,WORK   ;SEND SPACE WORK TIMES
     046506  004737  005306                      JSR PC,QUIET
     046512                                      OUTPUT #OUTBUF+5,#1     ;SEND "S"
     046554                              ENDINCR
(4)  046554  000723                      BR      50430$
(4)  046556                      50433$:
     046556                              OUTPUT #ACRLF,#2                ; CR, LF
     046620                              OUTPUT #ACRLF,#2                ; CR, LF
                                         ;
     046662                              OUTPUT #UNDUND,#36.             ;UNDERLINE THE UNDERLINE MESSAGE
     046724                              INCR COUNT FROM #1 TO #132. BY #1   ; DO IT 132 TIMES
(5)  046724  012737  000001  002276      MOV     #1,COUNT
(7)  046732  000402                      BR      50435$
(6)  046734                      50434$:
(8)  046734  005237  002276              INC     COUNT
(6)  046740                      50435$:
(7)  046740  023727  002276  000204      CMP     COUNT,#132.
(9)  046746  003402                      BLE     50436$
(7)  046750  000137  047020              JMP     50437$
(6)  046754                      50436$:
     046754                                      OUTPUT #OUTBUF+7,#1     ; UNDERLINE  CHARACTER
     047016                              ENDINC
```

```
 (4)  047016  000746                        BR      50434$
 (4)  047020                          50437$:
3718  047020  004737  005306                JSR PC,QUIET
3719  047024                                OUTPUT #ACRLF,#2
3720  047066                                OUTPUT #ACRLF,#2
3721  047130                                INCR COUNT FROM #1 TO #11. BY #1                ;. NOTE: THIS SHOULD BE 16 BUT M
 (5)  047130  012737  000001  002276        MOV     #1,COUNT
 (7)  047136  000402                        BR      50441$
 (6)  047140                          50440$:
 (8)  047140  005237  002276                INC     COUNT
 (6)  047144                          50441$:
 (7)  047144  023727  002276  000013        CMP     COUNT,#11.
 (9)  047152  003402                        BLE     50442$
 (7)  047154  000137  047372                JMP     50443$
 (6)  047160                          50442$:
3722  047160                                OUTPUT #UNDON,#4                        ; TURN ON UNDERLINE
3723  047222                                OUTPUT #OUN,#3                          ; PRINT ON AND A SPACE
3724  047264                                OUTPUT #CLRUND,#4                       ; TURN OFF UNDERLINE
3725  047326                                OUTPUT #FUN,#4                  ; PRINT OFF AND A SPACE
3726  047370                                ENDINC
 (4)  047370  000663                        BR      50440$
 (4)  047372                          50443$:
3727  047372                                OUTPUT #ACRLF,#2
3728  047434                                OUTPUT #ACRLF,#2
3729                                        ;
3730  047476                                OUTPUT #CLRUND,#4                       ; UNDERLINE MODE OFF
3731  047540                                OUTPUT #NOTUND,#40.                     ; NOT UNDERLINED MSG
3732  047602                                OUTPUT #OUTBUF+2,#1                     ; DO FORM FEED
3733  047644                                OUTPUT #REINIT,#2                       ; RESET DEFAULT CONDITIONS
3734  047706                                OUTPUT #SELDEC,#5                       ; DECIPOINTS
3735  047750  004737  005306                JSR PC, QUIET                           ; WAIT TILL DONE
3736  047754                                EXIT    TST
 (3)  047754  104432                        TRAP    C$EXIT
 (3)  047756  000442                        .WORD   L10025-.
3737
3738                                  .NLIST BEX
3739  047760     033     133     060  CLRUND: .BYTE   33,133,60,155                          ;ESC [ 0 m
3740  047764     033     133     064  UNDON:  .BYTE   33,133,64,155                          ;ESC [ 4 m
3741  047770     033     133     062  NOUND:  .BYTE   33,133,62,64,155                       ;ESC [ 2 4 m
3742  047775     033     133     067  STTAB:  .BYTE   33,133,67,62,60,73,61,60,70,60,73,61,64,64,60,73,62,61,66,60,73,62,70,70
3743  050027     063     066     060          .BYTE   63,66,60,60,73,65,60,64,60,73,67,62,60,60,165   ;SET TABS AT 1,1 1/2,2,3
3744  050046     033     133     063  NOTAB:  .BYTE   33,133,63,147                          ; CLEAR ALL HOR TABS
3745  050052  055433  030061  040555  UNDTTL: .ASCIZ  <33>/[10mAUTO-UNDERLINE-MODE TEST 14/<15><12><12><12>
3746  050117     124  044510  020123  NOTUND: .ASCIZ  /THIS MESSAGE SHOULD NOT BE UNDERLINED./<15><12>
3747  050170  044124  051511  046440  UNDMSG: .ASCII  /THIS MESSAGE SHOULD BE UNDERLINED /
3748  050232  047111  040440  052125          .ASCIZ  /IN AUTO-UNDERLINE MODE./<15><12><12>
3749  050265     125  042116  051105  UNDUND: .ASCIZ  /UNDERLINE OF UNDERLINE-CHARACTERS:/<15><12>
3750  050332  050123  041501  051505  SPACES: .ASCIZ  /SPACES:/<12><15>
3751  050344  040524  051502  006472  TABS:   .ASCIZ  /TABS:/<15><12>
3752  050354  041101  042103  043105  ATHRUZ: .ASCII  /ABCDEFGHIJKLMNOPQRSTUVWXYZ/<15><12><12>        ; 29 CHARACTERS
3753  050411     117  020116          ON:     .ASCII  /ON /
3754  050414  043117  020106          FUN:    .ASCII  /OFF /
3755
3756                                          .EVEN
3757                                  .LIST BEX
3758
```

```
3759  050420                              ENDTST
 (3)  050420                          L10025:
 (3)  050420  104401                     TRAP    C$ETST
3760  050422                              ENDMOD
3761
3762
3763
3764
3765
3766
3767
3768
3769
3770
3772                                 .SBTTL  PARTIAL LINE UP/DOWN TEST
3773                                 ; MODULE NAME: NEWPLU.P11
3774
3775  050422                              BGNMOD
3776
3777                                 ;**
3778                                 ;
3779                                 ; THIS TEST IS AN ADAPTATION OF THE PARTIAL LINE UP, PARTIAL LINE DOWN
3780                                 ; TEST USED ON HARDCOPY TERMINALS.  THE ORIGINAL VERSION OF THIS TEST
3781                                 ; IS DESIGNED FOR USE ON TERMINALS USING THE DZ11 SERIAL INTERFACE.
3782                                 ; THE ORIGINAL IS CALLED PTLINE.P11, AND, IS LOCATED IN THE TML LIBRARY
3783                                 ; ON THE MILL20 DEVELOPMENT SYSTEM IN A SUBDIRECTORY CALLED TML.TESTS.
3784                                 ; THIS COPY, WHICH HAS BEEN NAMED PLUP.P11, IS FOR USE ON THE LNO1
3785                                 ; ELECTRONIC PRINTER ONLY. IT IS DESIGNED FOR USE ON PRINTERS USING THE
3786                                 ; LP11 (M7258) INTERFACE. A COPY OF PLUP.P11 IS LOCATED ON MILL20 <TML.G>
3787                                 ; THIS TEST WILL EXERCISE THE TERMINALS CAPABILITY TO EXECUTE
3788                                 ; THE ANSI PARTIAL LINE UP AND PARTIAL LINE DOWN ESCAPE SEQUENCES.
3789                                 ; OTHER THINGS TESTED INCLUDE THE MACHINES ABILITY TO PERFORM MULTIPLE
3790                                 ; PLU, PLD FUNCTIONS ON ONE LINE, AND, THE STATED FACT THAT USING THE
3791                                 ; PLU, PLD FUNCTIONS TAKES UP ONE LINE SPACE APIECE IN THE LNO1'S PAGE
3792                                 ; BUFFER.
3793                                 ;
3794                                 ;--
3795
3796  000000                         .REPT 0
3797                                 BGN PTLINE TEST
3798                                 :   SKIP 3 LINES
3799                                 :   PRINT THE TEST ID
3800                                 :   SKIP 3 MORE LINES
3801                                 :   INCREMENT WORK FROM 1 TO 9 BY 1
3802                                 :   :   DO FOR COUNT = 5 DOWN TO 0 BY 1
3803                                 :   :   :       SELECT LOGICAL FONT #10
3804                                 :   :   :       SEND '000'
3805                                 :   :   :       SEND PLU 1 PLD
3806                                 :   :   :       SEND '000'
3807                                 :   :   :       SEND PLD 1 PLU
3808                                 :   :   ENDDO
3809                                 :   END INCREMENT
3810                                 :   SEND '000'
3811                                 :   SKIP 2 LINES
3812                                 :   PRINT END OF TEST MESSAGE
3813                                 :   TOGGLE PAPER OFFSET
```

```
3814                                    :   DO FORM FEED
3815                                    :   RESET THE PRINTER
3816                                    :   SELECT SIZE UNIT AS DECIPOINTS
3817                                    END TEST
3818
3819                                    EXAMPLE OF OUTPUT:
3820
3821
3822                                       1       1       1       1
3823                                    000 000 000 000 000 000 000 000
3824                                           1       1       1
3825
3826                                    WHERE SUBSCRIPTS AND SUPERSCRIPTS ARE OFFSET BY A PARTIAL LINE.
3827
3828
3829                                    .ENDR
3830
3831
3832
3833
3834
3835
3836
3837
3838
3839
3840  050422                                    BGNTST  15.
 (3)  050422                            T15::
3841                                                        ;**** SELECT PORTRAIT FONT ****;
3842  050422                                    OUTPUT #REINIT,#2
3843  050464                                    OUTPUT #SELDEC,#5                       ; DECIPOINTS
3844  050526                                    OUTPUT #SKIP3,#4                        ; SKIP 3 LINES
3845  050570                                    OUTPUT #PTLINE,#35.                     ; PRINT TEST ID
3846  050632                                    OUTPUT #SKIP3,#4                        ; SKIP 3 MORE LINES
3847  050674                                    LET OUTBUF :B= #12
 (4)  050674  112737  000012  003114            MOVB    #12,OUTBUF
3848  050702                                    INCR WORK FROM #1 TO #9. BY #1          ; DO 9 LINES OF THE CODE
 (5)  050702  012737  000001  003110            MOV     #1,WORK
 (7)  050710  000402                            BR      50445$
 (6)  050712                            50444$:
 (8)  050712  005237  003110                    INC     WORK
 (6)  050716                            50445$:
 (7)  050716  023727  003110  000011            CMP     WORK,#9.
 (9)  050724  003402                            BLE     50446$
 (7)  050726  000137  051346                    JMP     50447$
 (6)  050732                            50446$:
3849  050732                                    DECR COUNT FROM #5 TO #1 BY #1
 (5)  050732  012737  000005  002276            MOV     #5,COUNT
 (7)  050740  000402                            BR      50451$
 (6)  050742                            50450$:
 (8)  050742  005337  002276                    DEC     COUNT
 (6)  050746                            50451$:
 (7)  050746  023727  002276  000001            CMP     COUNT,#1
 (9)  050754  002002                            BGE     50452$
 (7)  050756  000137  051236                    JMP     50453$
 (6)  050762                            50452$:
```

```
3850  050762                                        OUTPUT #DECLCS,#5               ; SELECT LOGICAL FONT #10
3851  051024                                        OUTPUT #PL1,#3                  ; PRINT '000'
3852  051066                                        OUTPUT #PL2,#5                  ; DO SUPERSCRIPTS
3853  051130                                        OUTPUT #PL1,#3                  ; PRINT '000'
3854  051172                                        OUTPUT #PL3,#5                  ; DO SUBSCRIPTS
3855  051234                                ENDDEC
 (4)  051234  000642                      BR       50450$
 (4)  051236                           50453$:
3856  051236                                        OUTPUT #PL1,#3                  ; PRINT '000'
3857  051300                                        OUTPUT #OUTBUF,#1               ; LINE FEED
3858  051342                                ENDINC
 (4)  051342  000137  050712              JMP      50444$
 (4)  051346                           50447$:
3859  051346                                        OUTPUT #OUTBUF,#1,,#2           ; SKIP 2 LINES
3860  051410                                        OUTPUT #TDONE,#14.              ; TEST COMPLETE MESSAGE
3861  051452  004737  005306                       JSR PC,QUIET
3862  051456                                        OUTPUT #DECFIN,#5               ; TOGGLE PAPER OFFSET
3863  051520                                        LET OUTBUF :B= #14              ; CODE FOR FORM FEED
 (4)  051520  112737  000014  003114              MOVB     #14,OUTBUF
3864  051526                                        OUTPUT #OUTBUF,#1               ; DO THE FORM FEED
3865  051570                                        OUTPUT #REINIT,#2               ; RESET DEFAULT CONDITIONS
3866  051632                                        OUTPUT #SELDEC,#5               ; DECIPOINTS
3867  051674  004737  005306                       JSR PC,QUIET
3868  051700                                EXIT    TST
 (3)  051700  104432                      TRAP     C$EXIT
 (3)  051702  000112                      .WORD    L10026-.
3869
3870                                    .NLIST BEX
3871  051704     033     133     061    DECLCS: .BYTE   33,133,61,60,155              ; SEQ TO SELECT LOG FONT #10 (DEFAULT)
3872  051711     012  015415  030533    PTLINE: .ASCIZ  <12><15><33>/[10mPARTIAL LINE UP-DOWN TEST 15/
3873  051755     124  051505  020124    TDONE:  .ASCII  /TEST COMPLETE/<12>
3874  051773     060  030060     000    PL1:    .ASCIZ  /000/
3875  051777     033  030514  045433    PL2:    .ASCIZ  <33>/L1/<33>/K/
3876  052005     033  030513  046033    PL3:    .ASCIZ  <33>/K1/<33>/L/
3877          052014                    .EVEN
3878                                    .LIST BEX
3879  052014                                    ENDTST
 (3)  052014                           L10026:
 (3)  052014  104401                              TRAP    C$ETST
3880  052016                                    ENDMOD
3881
3882
3883
3884
3885
3886
3887
3888
3889
3890
3892                                    .SBTTL  DRAW VECTORS TEST
3893                                    ;MODULE DRWVEC.P11
3894
3895  052016                                    BGNMOD
3896
3897                                    ;++
```

```
                                ;               FUNCTIONAL DESCRIPTION
                                ;       THIS TEST IS DESIGNED TO TEST THE DRAW VECTOR (SOMETIMES CALLED DRAW RULE) FUNCT
                                ;       OF THE LN01 ELECTRONIC PRINTER.  THE DRAW VECTOR FUNCTION, CALLED "DECVEC",  DRA
                                ;       A LINE OF VARIABLE THICKNESS.  THE X DIRECTION IS PARALLEL TO PHYSICAL PAGE MOVE
                                ;       THE Y DIRECTION IS PARALLEL TO THE LASER SCAN.  THE LINE'S ORIENTATION, POINT OF
                                ;       ORIGIN, DISTANCE AND WIDTH MAY BE DEFINED BY SPECIFYING CERTAIN PARAMETERS IN TH
                                ;       AFTER USING THE DRAW VECTOR COMMAND, THE ACTIVE POSITION IS RETURNED TO THE ACTI
                                ;       POSITION PREVICUS TO GIVING THE COMMAND.
                                ;               EXAMPLE:
                                ;                       SUPPOSE THAT "BEFORE" A DRAW VECTOR COMMAND: ACTIVE POSITIONS AR
                                ;                                                                    VERTICAL     = 1 INCH FROM TOP O
                                ;                                                                    HORIZONTAL   = 5 INCHES FROM LEF
                                ;
                                ;                       THEN A COMMAND IS GIVEN TO DRAW VECTOR FROM 3 INCHES HORIZONTALL
                                ;                       HORIZONTALLY, VERTICAL ORIGIN IS 4 INCHES, WIDTH IS 1/2 INCH.
                                ;
                                ;                       "AFTER" EXECUTING THE COMMAND:  ACTIVE POSITIONS SHOULD STILL BE
                                ;                                                       VERTICAL     = 1 INCH FROM TOP OF
                                ;                                                       HORIZONTAL   = 5 INCHES FROM LEF
                                ;
                                ;               NOTE:   CURRENT POSITION IS IDENTICAL AFTER DRAW RULE COMMAND AS BEFORE.
                                ;
                                ;       THE TEST VERIFIES THESE FUNCTIONS BY PRINTING THE TEST ID AND THEN
                                ;       BELOW THE ID DRAWING A RECTANGLE 3 INCHES IN HEIGHT AND 9 INCHES IN WIDTH.  THE
                                ;       CENTER LINE DRAWN HORIZONTALLY THROUGH IT.  IT WILL ALSO HAVE 8 VERTICAL LINES
                                ;       DRAWN AT 1 INCH INTERVALS INSIDE THE RECTANGLE.  THE RECTANGLE WILL ALSO CONTAIN
                                ;       THE LETTERS WILL BE ARRANGED IN SUCH A WAY SO AS TO SPELL OUT "LN01" ON THE UPPE
                                ;       THE RECTANGLE AND TO SPELL OUT "DIGITAL" IN THE LOWER HALF.
                                ;       THE TEST WILL CONCLUDE BY PRINTING THE TEST ID BELOW THE RECTANGLE.
                                ;       THE RECTANGLE WILL BE HANDLED BY, FIRST, DRAWING THE UPPER AND LOWER OUTSIDE
                                ;       BORDERS OF THE RECTANGLE USING THE DRAW VECTOR COMMAND.  THESE LINES WILL BE
                                ;       1/2 INCH THICK.  SECOND, THE TEST WILL MOVE THE ACTIVE POSITION TO THE CORRECT
                                ;       LOCATION OF THE FIRST LETTER (L) TO BE PRINTED.  HOWEVER, THE LETTER WILL NOT BE
                                ;       PRINTED YET.  BEFORE PRINTING IT A DRAW VECTOR COMMAND WILL BE GIVEN TO THE
                                ;       PRINTER TO DRAW THE LEFT OUTSIDE BORDER OF THE RECTANGLE. THE THICKNESS OF THIS
                                ;       BORDER WILL ALSO BE 1/2 INCH.  AFTER DRAWING THE BORDER THE ACTIVE POSITION
                                ;       SHOULD AUTOMATICALLY RETURN TO THE POSITION OF THE FIRST LETTER.  THE LETTER
                                ;       WILL THEN BE PRINTED.  THIS SAME CONCEPT OF POSITIONING THE ACTIVE COLUMN
                                ;       TO THE PROPER LETTER POSITION AND THEN DRAWING A VECTOR BEFORE PRINTING THE
                                ;       LETTER WILL BE USED TO COMPLETE THE RECTANGLE,  INCLUDING THE LETTERS.
                                ;       THE VERTICAL LINES WITHIN THE RECTANGLE WILL BE A DIFFERENT WIDTH THAN
                                ;       THE BOUNDARIES.  THE CENTER LINE WILL BE STILL A DIFFERENT WIDTH THAN
                                ;       THE BOUNDARIES AND THE VERTICAL LINES.  THIS WILL TEST THE VARIABLE
                                ;       WIDTH FUNCTION.  THE DRAW VECTOR COMMAND'S ABILITY TO DRAW OUTSIDE
                                ;       EXISTING MARGINS IS CURRENTLY BEING TESTED IN THE MARGINS TEST, AND,
                                ;       WILL NOT BE EXERCISED IN THIS TEST.
                                ;
                                ;
                                ;               GLOBALS REFERENCED:
                                ;       REINIT,QUIET

000000                          .REPT 0
```

```
3954                                                    PDL
3955
3956                                    BEGIN ROUTINE
3957                                    :       MOVE VERTICALLY TO ABSOLUTE 1 INCH MARK
3958                                    :       PRINT TEST ID
3959                                    :       DRAW VECTOR FOR TOP LINE OF RECTANGLE           ; FROM 2ND INCH VERTICAL
3960                                    :                                                       ; TO 10TH INCH HORIZONTA
3961                                    :       DO FOR EACH ENTRY IN TABLE                      ; TABLE OF SEQUENCES TO
3962                                    :       :       MOVE TO CORRECT POSITION FOR NEXT LETTER
3963                                    :       :       DRAW NEXT VECTOR
3964                                    :       :       PRINT NEXT LETTER                       ; SHOULD BE IN CORRECT P
3965                                    :       ENDDO
3966                                    :       MOVE VERTICALLY TO 7 INCH MARK
3967                                    :       PRINT TEST ID                                   ; CENTER JUSTIFIED
3968                                    :       RESET THE PRINTER
3969                                    :       DO FORM FEED
3970                                    :       SELECT SIZE UNIT AS DECIPOINTS
3971                                    :       CALL QUIET ROUTINE
3972                                    END ROUTINE
3973
3974                                    .ENDR
3975
3976
3977
3978
3979
3980
3981
3982
3983
3984
3985  052016                                            BGNTST  16.
 (3)  052016                            T16::
3986  052016                            OUTPUT #VERPO1,#6                                       ; MOVE VERTICALLY TO 1 INCH MARK
3987  052060                            OUTPUT #DRWVEC,#22.                                     ; TEST ID
3988  052122                            OUTPUT #UNDER,#4                                        ; TURN ON UNDERLINE
3989  052164                            OUTPUT #TOPVEC,#31.                                     ; DRAW TOP LINE OF RECTANGLE
3990  052226                            OUTPUT #VERPO3,#7                                       ; MOVE VERTICALLY TO 3 INCH MARK
3991  052270                            LET R3 := #LETTBL                                       ; SET UP TABLE OF SEQUENCES TO P
 (4)  052270  012703  052750                       MOV     #LETTBL,R3
3992  052274                            LET R4 := #BYTTBL                                       ; BYTE COUNTS OF SEQUENCES IN TA
 (4)  052274  012704  053000                       MOV     #BYTTBL,R4
3993  052300                            WHILE (R3) NE #0 DO                                     ; DO FOR EACH ENTRY IN LETTER TA
 (4)  052300                            50454$:
 (6)  052300  005713                               TST     (R3)
 (8)  052302  001002                               BNE     .+6
 (9)  052304  000137  052350                       JMP     50455$
3994  052310                            OUTPUT (R3)+,(R4)+                                      ; MOVE TO LETTER POSITION, DRAW
3995  052346                            ENDDO
 (3)  052346  000754                               BR      50454$
 (3)  052350                            50455$:
3996  052350                            OUTPUT #VERPO7,#8.                                      ; MOVE VERTICALLY TO 8 INCH MARK
3997  052412                            OUTPUT #UNDROF,#4
3998  052454                            OUTPUT #DRWVEC,#28.                                     ; SEND TEST ID FOLLOWED BY A FOR
3999  052516                            OUTPUT #REINIT,#2                                       ; RESET TO DEFAULT CONDITIONS
4000  052560                            OUTPUT #SELDEC,#5                                       ; SELECT DECIPOINTS
```

```
4001  052622  004737  005306          JSR PC,QUIET                                    ; GUARANTEE THE FORM FEED
4002  052626                                  EXIT TST
 (3)  052626  104432                           TRAP    C$EXIT
 (3)  052630  001240                           .WORD   L10027 .
4003
4004                                  .NLIST BEX
4005                                  ;               LOCAL VARIABLES, TABLES, MESSAGES
4006  052632  055433  030061  042155  DRWVEC: .ASCII  <33>/[10mDRAW VECTORS TEST 16/<15><12><14>      ; TEST ID. FIRST 22 CHAR
4007  052666  044124  051511  050040  OFFSET: .ASCII  /THIS PAGE SHOULD BE OFFSET FROM THE PREVIOUS PAGE/
4008          052750                  .EVEN
4009  052750  053133  053203  053253  LETTBL: .WORD   LVEC,NVEC,VECO,VEC1,DVEC,IVEC,GVEC,IVEC2,TVEC,AVEC,LVEC2,0      ; TBL OF
4010  053000  000050  000050  000075  BYTTBL: .WORD   40.,40.,61.,39.,46.,40.,40.,40.,40.,40.,0                        ; BYTE C
4011  053030     033     133     064  UNDER:  .BYTE   33,133,64,155                                ; UNDERLINE ON
4012  053034     033     133     060  UNDROF: .BYTE   33,133,60,155                               ;       "   OFF
4013  053040     033     133     067  VERPO1: .BYTE   33,133,67,62,60,144                             ; VERTICAL POSITION FOR
4014  053046     033     133     062  VERPO3: .BYTE   33,133,62,61,66,60,144                          ;       "
4015  053055     033     133     063  VERPO5: .BYTE   33,133,63,66,60,60,144                          ;       "
4016  053064     033     133     065  VERPO7: .BYTE   33,133,65,60,64,60,144,15                       ;       "
4017  053074     033     133     067  TOPVEC: .BYTE   33,133,67,40,111,33,133,61,73,66,60,60,73,63,60,60,73          ; DRAW V
4018  053115     062     067     060          .BYTE   62,67,60,60,73,63,67,41,174,33,133,62,40,111
4019  053133     033     133     061  LVEC:   .BYTE   33,133,61,70,60,60,140,33,133,67,40,111,33,133,61,73,61,70,60,60,73
4020  053160     063     060     060          .BYTE   63,60,60,73,62,67,63,67,73,63,67,41,174,33,133,62,40,111,114
4021  053203     033     133     063  NVEC:   .BYTE   33,133,63,62,64,60,140,33,133,67,40,111,33,133,61,73,61,62,60,60,73
4022  053230     063     060     060          .BYTE   63,60,60,73,62,67,60,60,73,61,70,41,174,33,133,62,40,111,116
4023  053253     033     133     064  VECO:   .BYTE   33,133,64,66,70,60,140,33,133,67,40,111,33,133,60,73,66,60,60,73
4024  053277     063     060     060          .BYTE   63,60,60,73,61,62,60,60,73,63,67,41,174,33,133
4025  053316     060     073     066          .BYTE   60,73,66,60,60,73,63,60,60,60,73,61,62,60,60,73
4026  053336     063     067     041          .BYTE   63,67,41,174,33,133,62,40,111,60
4027  053350     033     133     066  VEC1:   .BYTE   33,133,66,61,62,60,140,33,133,67,40,111,33,133,60,73,66,60,60,73
4028  053374     066     060     060          .BYTE   66,60,60,73,61,62,60,60,73,63,67,41,174,33,133,62,40,111,61
4029  053417     033     133     063  DVEC:   .BYTE   33,133,63,66,60,60,144,33,133,61,70,60,60,140,33,133,67,40,111
4030  053442     033     133     060          .BYTE   33,133,60,73,66,60,60,73,71,60,60,73,61,62,60,60
4031  053462     073     063     067          .BYTE   73,63,67,41,174,33,133,62,40,111,144
4032  053475     033     133     062  IVEC:   .BYTE   33,133,62,65,62,60,140,33,133,67,40,111,33,133,60,73,66,60,60,73
4033  053521     061     062     060          .BYTE   61,62,60,60,73,61,62,60,60,73,63,67,41,174,33,133,62,40,111,151
4034  053545     033     133     063  GVEC:   .BYTE   33,133,63,62,64,60,140,33,133,67,40,111,33,133,60,73,66,60,60,73
4035  053571     061     065     060          .BYTE   61,65,60,60,73,61,62,60,60,73,63,67,41,174,33,133,62,40,111,147
4036  053615     033     133     063  IVEC2:  .BYTE   33,133,63,71,66,60,140,33,133,67,40,111,33,133,60,73,66,60,60,73
4037  053641     061     070     060          .BYTE   61,70,60,60,73,61,62,60,60,73,63,67,41,174,33,133,62,40,111,151
4038  053665     033     133     064  TVEC:   .BYTE   33,133,64,66,70,60,140,33,133,67,40,111,33,133,60,73,66,60,60,73
4039  053711     062     061     060          .BYTE   62,61,60,60,73,61,62,60,60,73,63,67,41,174,33,133,62,40,111,164
4040  053735     033     133     065  AVEC:   .BYTE   33,133,65,64,60,60,140,33,133,67,40,111,33,133,60,73,66,60,60,73
4041  053761     062     064     060          .BYTE   62,64,60,60,73,61,62,60,60,73,63,67,41,174,33,133,62,40,111,141
4042  054005     033     133     066  LVEC2:  .BYTE   33,133,66,61,62,60,140,33,133,67,40,111,33,133,60,73,66,60,60,73
4043  054031     062     067     060          .BYTE   62,67,60,60,73,61,62,60,60,73,63,67,41,174,33,133,62,40,111,154
4044  054055     033     133     062  JUSTON: .BYTE   33,133,62,40,106                                 ; BEGIN JUSTIFY
4045  054062     033     133     060  JUSTOF: .BYTE   33,133,60,40,106                                ; END JUSTIFY
4046          054070                  .EVEN
4047                                  .LIST BEX
4048  054070                                  ENDTST
 (3)  054070                           L10027:
 (3)  054070  104401                           TRAP    C$ETST
4049  054072                                  ENDMOD
4050
4051
4052
```

```
4053
4054
4055
4056
4057
4058
4059
4062                                    .SBTTL  JUSTIFY TEST
4063                                    ;MODULE JUSTIF.P11
4064
4065  054072                                    BGNMOD
4066
4067                                    ;**
4068                                    ;                   FUNCTIONAL DESCRIPTION
4069                                    ;
4070                                    ; THIS IS A TEST OF THE STATED FUNCTIONS OF THE JUSTIFY COMMAND ON LN01
4071                                    ; ELECTRONIC PRINTER. THE JUSTIFY COMMAND AS DEFINED IN THE LN01 FUNCTIONAL
4072                                    ; SPECIFICATION IS SUPPOSED TO FUNCTION IN THE FOLLOWING WAY:
4073                                    ;       IT JUSTIFIES TEXT LINES WITHIN THE LEFT AND RIGHT MARGINS BY VARYING THE
4074                                    ;       SPACE BETWEEN WORDS.  INTERWORD SPACING IS ADJUSTED SUCH THAT THE FIRST
4075                                    ;       WORD STARTS AT THE LEFT MARGIN AND THE LAST WORD ENDS AT THE RIGHT MARGIN.
4076                                    ;       THE SPACE IS EVENLY DISTRIBUTED BETWEEN WORDS OF JUSTIFIED TEXT.
4077                                    ;       THE MINIMUM AND MAXIMUM DISTANCE BETWEEN WORDS WILL NOT BE LESS THAN
4078                                    ;       60% NOR GREATER THAN 200% OF THE WIDTH OF THE SPACE CHARACTER.
4079                                    ;       NO JUSTIFICATION WILL OCCUR IF THESE LIMITATIONS ARE EXCEEDED.
4080                                    ;       JUSTIFICATION WILL OCCUR ON ALL TEXT BETWEEN A START AND STOP
4081                                    ;       JUSTIFY COMMAND.
4082                                    ;
4083                                    ;       A START JUSTIFY DETECTED WITHIN A LINE WILL DETERMINE THE LEFT
4084                                    ;       JUSTIFY POINT FOR THAT LINE.  A STOP JUSTIFY DETECTED WITHIN A
4085                                    ;       LINE DETERMINES THE RIGHT JUSTIFY POINT FOR THAT LINE.
4086                                    ;       TO JUSTIFY ACCORDING TO THE LEFT AND RIGHT MARGIN, THE START
4087                                    ;       AND STOP JUSTIFY COMMANDS MUST ENCOMPASS THE LINE BEGINNING AND
4088                                    ;       END POINTS.
4089                                    ;       IF JUSTIFICATION HAS BEEN TURNED ON AND OFF WITHIN A TEXT LINE
4090                                    ;       THE SPACE CHARACTERS OUTSIDE THE SEQUENCE USE THE NORMAL WIDTH
4091                                    ;       OF A SPACE CHARACTER.
4092                                    ;
4093                                    ; THE JUSTIFY TEST WILL EXERCISE THESE FUNCTIONS AND PROVIDE A MEANS
4094                                    ; FOR VISUALLY VERIFYING CORRECT OPERATION AND LIMITATIONS.
4095                                    ;
4096                                    ;--
4097
4098                                    ;               GLOBALS REFERENCED:
4099                                    ;       MESSAGES, VARIABLES, SUBROUTINES
4100                                    ; REINIT,COUNT,OUTBUF,QUIET
4101
4102  000000                            .REPT   0
4103
4104                                                    PDL
4105
4106                                    BEGIN ROUTINE
4107                                    :       SEND RESET SEQUENCE                             ; RESET PRINTER TO DEFAU
4108                                    :       PRINT JUSTIF                                    ; TEST ID
4109                                    :       SKIP A LINE
4110                                    :                       SECTION 1
```

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4111                    :
4112                    :       TURN ON JUSTIFY
4113                    :       PRINT EXPLANATION OF SECTION 1
4114                    :       TURN OFF JUSTIFY
4115                    :       SKIP A LINE
4116                    :       INCREMENT COUNT FROM #1 TO #17. BY #1                   ; DO NEXT CODE 17 TIMES
4117                    :               SEND "JUSTFY"                                   ; PRINT WORD "JUSTIFY"
4118                    :               SEND "SPAJUS",COUNT TIMES                       ; SPACE AND WORD JUSTIFY
4119                    :               DO A CARRIAGE RETURN AND LINE FEED
4120                    :       ENDINC
4121                    :       SKIP A LINE
4122                    :
4123                    :       TURN JUSTIFY ON
4124                    :       INCREMENT COUNT FROM #1 TO #17. BY #1
4125                    :               IF COUNT EQ #14. THEN
4126                    :                       TURN UNDERLINE ON
4127                    :               ENDIF
4128                    :               IF COUNT EQ #17. THEN
4129                    :                       TURN OFF UNDERLINE
4130                    :               ENDIF
4131                    :               SEND "JUSTFY"                                   ; PRINT WORD "JUSTIFY
4132                    :               SEND "SPAJUS",COUNT TIMES                       ; SPACE AND WORD JUSTIFY
4133                    :               SEND A CARRIAGE RETURN, LINE FEED
4134                    :       ENDINC
4135                    :       TURN JUSTIFY OFF
4136                    :       SKIP A LINE
4137                    :
4138                    :       INCREMENT COUNT FROM 1 TO 17. BY 1
4139                    :               IF COUNT EQ 14. THEN
4140                    :                       TURN UNDERLINE ON
4141                    :               ENDIF
4142                    :               IF COUNT EQ 17. THEN
4143                    :                       TURN OFF UNDERLINE
4144                    :               ENDIF
4145                    :               TURN ON JUSTIFY
4146                    :               SEND "JUSTFY"                                   ; PRINT WORD 'JUSTIFY
4147                    :               SEND "SPAJUS",COUNT TIMES                       ; SPACE AND WORD JUSTIFY
4148                    :               TURN JUSTIFY OFF
4149                    :               CARRIAGE RETURN, LINE FEED
4150                    :       ENDINC
4151                    :
4152                    :                       SECTION 2
4153                    :
4154                    :       TOGGLE PAPER OFFSET
4155                    :       DO FORM FEED
4156                    :       PRINT EXPLANATION OF SECTION 2
4157                    :       TURN ON JUSTIFY
4158                    :       LET R3 EQUAL TEXTBL                                     ; TABLE OF TEXT LINES
4159                    :       LET R4 EQUAL TEXTBP                                     ; BYTE COUNTS FOR TEXT T
4160                    :       WHILE (R3) NOT EQUAL TO 0 DO                            ; DO FOR ALL ENTRIES
4161                    :               SEND (R3)*,(R4)*                                ; OUTPUT THE ENTRY
4162                    :       ENDDO
4163                    :       SKIP 3 LINES
4164                    :       TURN JUSTIFY OFF
4165                    :       LET R3 EQUAL TEXTBL
4166                    :       LET R4 EQUAL TEXTBP
```

```
4167                                    :       WHILE (R3) NOT EQUAL TO 0 DO
4168                                    :           SEND (R3)+,(R4)+                ; OUTPUT THE ENTRY
4169                                    :       ENDDO
4170                                    :       SKIP 3 LINES
4171                                    :       PRINT END OF TEST MESSAGE
4172                                    :       DO A FORM FEED
4173                                    :       RESET THE PRINTER
4174                                    :       SELECT SIZE UNIT AS DECIPOINTS
4175                                    END ROUTINE
4176                                    :
4177                                    .ENDR
4178
4179
4180
4181
4182
4183
4184
4185
4186
4187
4188  054072                            BGNTST  17.
 (3)  054072                            T17::
4189
4190                                    ;               SOURCE CODE
4191
4192  054072                            LET OUTBUF :B= #15                          ; CARRIAGE RETURN
 (4)  054072  112737  000015  003114          MOVB    #15,OUTBUF
4193  054100                            LET OUTBUF+1 :B= #12                        ; LINE FEED
 (4)  054100  112737  000012  003115          MOVB    #12,OUTBUF+1
4194  054106                            LET OUTBUF+2 :B= #14                        ; FORM FEED
 (4)  054106  112737  000014  003116          MOVB    #14,OUTBUF+2
4195  054114                            LET OUTBUF+3 :B= #40                        ; SPACE
 (4)  054114  112737  000040  003117          MOVB    #40,OUTBUF+3
4196  054122                            LET OUTBUF+4 := #55                         ; DASH
 (4)  054122  012737  000055  003120          MOV     #55,OUTBUF+4
4197  054130                            OUTPUT #REINIT,#2                           ; RESET THE PRINTER
4198  054172                            OUTPUT #SELDEC,#5                           ; DECIPOINTS
4199  054234                            OUTPUT #JUSTIF,#22.                         ; TEST ID
4200  054276                            OUTPUT #OUTBUF+1,#1                         ; SKIP A LINE
4201
4202                                    ;                       SECTION 1
4203
4204  054340                            OUTPUT #ONJUST,#5                           ; TURN JUSTIFY ON
4205  054402                            OUTPUT #EXP,#136.                           ; EXPLAINS FIRST SECTION
4206  054444                            OUTPUT #EXP1,#143.
4207  054506                            OUTPUT #EXP2,#145.
4208  054550                            OUTPUT #EXP3,#142.
4209  054612                            OUTPUT #EXP4,#40.
4210  054654  004737  005306            JSR PC,QUIET
4211  054660                            OUTPUT #OFFJUS,#5                           ; TURN JUSTIFY OFF
4212  054722                            OUTPUT #OUTBUF+1,#1                         ; SKIP A LINE
4213  054764                            INCR COUNT FROM #1 TO #17. BY #1            ; DO THIS CHUNK OF CODE
 (5)  054764  012737  000001  002276          MOV     #1,COUNT
 (7)  054772  000402                          BR      50457$
 (6)  054774                            50456$:
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  (8)  054774  005237  002276          INC     COUNT
  (6)  055000                  50457$:
  (7)  055000  023727  002276  000021  CMP     COUNT,#17.
  (9)  055006  003402          BLE     50460$
  (7)  055010  000137  055164          JMP     50461$
  (6)  055014                  50460$:
4214   055014                          OUTPUT #JUSTFY,#7.                      ; WORD "JUSTIFY"
4215   055056                          OUTPUT #SPAJUS,#8.,,COUNT               ; SPACE AND WORD  JUSTIF
4216   055120                          OUTPUT #OUTBUF+1,#1                     ; CRLF
4217   055162                  ENDINC
  (4)  055162  000704          BR      50456$
  (4)  055164                  50461$:
4218   055164                  OUTPUT #OUTBUF+1,#1                             ; SKIP A LINE
4219   055226                  OUTPUT #ONJUST,#5                               ; TURN JUSTIFY ON
4220   055270                  INCR COUNT FROM #1 TO #17. BY #1                ; DO THIS CHUNK OF CODE
  (5)  055270  012737  000001  002276  MOV     #1,COUNT
  (7)  055276  000402          BR      50463$
  (6)  055300                  50462$:
  (8)  055300  005237  002276          INC     COUNT
  (6)  055304                  50463$:
  (7)  055304  023727  002276  000021  CMP     COUNT,#17.
  (9)  055312  003402          BLE     50464$
  (7)  055314  000137  055624          JMP     50465$
  (6)  055320                  50464$:
4221   055320                          IF COUNT EQ #14. THEN
  (6)  055320  023727  002276  000016  CMP     COUNT,#14.
  (8)  055326  001402          BEQ     .+6
  (9)  055330  000137  055376          JMP     50466$
4222   055334                          OUTPUT #UNON,#4                         ; TURN ON UNDERLINE
4223   055376                          ENDIF
  (4)  055376                  50466$:
4224   055376                          IF COUNT EQ #17. THEN
  (6)  055376  023727  002276  000021  CMP     COUNT,#17.
  (8)  055404  001402          BEQ     .+6
  (9)  055406  000137  055454          JMP     50467$
4225   055412                          OUTPUT #UNOF,#4
4226   055454                          ENDIF
  (4)  055454                  50467$:
4227   055454                          OUTPUT #JUSTFY,#7.                      ; WORD "JUSTIFY
4228   055516                          OUTPUT #SPAJUS,#8.,,COUNT               ; SPACE AND WORD  JUSTIF
4229   055560                          OUTPUT #OUTBUF+1,#1                     ; CRLF
4230   055622                  ENDINC
  (4)  055622  000626          BR      50462$
  (4)  055624                  50465$:
4231   055624                  OUTPUT #UNOF,#4                                 ; UNDERLINE OFF
4232   055666                  OUTPUT #OFFJUS,#5                               ; TURN JUSTIFY OFF
4233   055730                  OUTPUT #OUTBUF+1,#1                             ; SKIP A LINE
4234   055772                  INCR COUNT FROM #1 TO #17. BY #1
  (5)  055772  012737  000001  002276  MOV     #1,COUNT
  (7)  056000  000402          BR      50471$
  (6)  056002                  50470$:
  (8)  056002  005237  002276          INC     COUNT
  (6)  056006                  50471$:
  (7)  056006  023727  002276  000021  CMP     COUNT,#17.
  (9)  056014  003402          BLE     50472$
  (7)  056016  000137  056434          JMP     50473$
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 (6)  056022                          50472$:
4235  056022                                IF COUNT EQ #14. THEN
 (6)  056022  023727  002276  000016        CMP     COUNT,#14.
 (8)  056030  001402                        BEQ     .+6
 (9)  056032  000137  056100                JMP     50474$
4236  056036                                OUTPUT #UNON,#4                    ; UNDERLINE ON
4237  056100                                ENDIF
 (4)  056100                          50474$:
4238  056100                                IF COUNT EQ #17. THEN
 (6)  056100  023727  002276  000021        CMP     COUNT,#17.
 (8)  056106  001402                        BEQ     .+6
 (9)  056110  000137  056156                JMP     50475$
4239  056114                                OUTPUT #UNOF,#4
4240  056156                                ENDIF
 (4)  056156                          50475$:
4241  056156                                OUTPUT #ONJUST,#5
4242  056220                                OUTPUT #JUSTFY,#7.                 ; WORD "JUSTIFY
4243  056262                                OUTPUT #SPAJUS,#8.,.COUNT          ; SPACE AND WORD  JUSTIF
4244  056324                                OUTPUT #OFFJUS,#5
4245  056366                                OUTPUT #OUTBUF+1,#1                ; CRLF
4246  056430                          ENDINC
 (4)  056430  000137  056002                JMP     50470$
 (4)  056434                          50473$:
4247  056434                          OUTPUT #UNOF,#4                          ; UNDERLINE OFF
4248
4249
4250                                  ;                       SECTION 2
4251
4252  056476                          OUTPUT #DECFIN,#5                        ; TOGGLE PAPER OFFSET
4253  056540                          OUTPUT #OUTBUF+2,#1                      ; FORM FEED
4254  056602                          OUTPUT #EXPL,#133.                       ; EXPLAINS THE SECTION
4255  056644                          OUTPUT #EXPL1,#58.                       ; 2ND PART OF EXPLANATIO
4256  056706                          OUTPUT #EXPL2,#98.                       ; 3RD PART
4257  056750                          OUTPUT #SKIP3,#4
4258  057012                          OUTPUT #ONJUST,#5                        ; TURN ON JUSTIFY
4259  057054                          LET R3 := #TEXTBL
 (4)  057054  012703  063506                MOV     #TEXTBL,R3
4260  057060                          LET R4 := #TEXTBP
 (4)  057060  012704  063526                MOV     #TEXTBP,R4
4261  057064                          WHILE (R3) NE #0 DO
 (4)  057064                          50476$:
 (6)  057064  005713                        TST     (R3)
 (8)  057066  001002                        BNE     .+6
 (9)  057070  000137  057140                JMP     50477$
4262  057074                                OUTPUT (R3)+,(R4)+                 ; OUTPUT THE ENTRY
4263  057132  004737  005306                JSR PC, QUIET
4264  057136                          ENDDO
 (3)  057136  000752                        BR      50476$
 (3)  057140                          50477$:
4265  057140                          OUTPUT #SKIP3,#4                         ; SKIP 3 LINES
4266  057202                          OUTPUT #OFFJUS,#5                        ; TURN OFF JUSTIFY
4267  057244                          LET R3 := #TEXTBL
 (4)  057244  012703  063506                MOV     #TEXTBL,R3
4268  057250                          LET R4 := #TEXTBP
 (4)  057250  012704  063526                MOV     #TEXTBP,R4
4269  057254                          WHILE (R3) NE #0 DO
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  (4)  057254                          50500$:
  (6)  057254  005713                          TST     (R3)
  (8)  057256  001002                          BNE     .+6
  (9)  057260  000137  057330                  JMP     50501$
4270   057264                                  OUTPUT (R3)+,(R4)+
4271   057322  004737  005306                  JSR PC, QUIET
4272   057326                       ENDDO
  (3)  057326  000752                          BR      50500$
  (3)  057330                          50501$:
4273   057330                       OUTPUT #SKIP3,#4                        ; SKIP 3 LINES
4274
4275   057372                       OUTPUT #ENJUS,#11.                      ; END OF TEST MESSAGE
4276   057434                       OUTPUT #OUTBUF+2,#1                     ; FORM FEED
4277   057476                       OUTPUT #REINIT,#2                       ; DO A RESET PRINTER TO
4278   057540                       OUTPUT #SELDEC,#5                       ; DECIPOINTS
4279   057602  004737  005306          JSR PC, QUIET                       ; GUARANTEE THE FORM FEE
4280   057606                               EXIT TST
  (3)  057606  104432                          TRAP    C$EXIT
  (3)  057610  003774                          .WORD   L10030 .
4281
4282                                 .NLIST BEX
4283                                 ;               LOCAL VARIABLES, TABLES, MESSAGES
4284   057612  047440  043106       SPAOFF: .ASCII  / OFF/                                  ; 4 CHARS
4285   057616  052512  052123  043111 JUSSPA: .ASCII  /JUSTIFY /                            ; 8 CHARS
4286   057626  045040  051525  044524 SPAJUS: .ASCII  / JUSTIFY/
4287   057636  052512  052123  043111 JUSTFY: .ASCII  /JUSTIFY/
4288   057645     117  043106     040 OFFSPA: .ASCII  /OFF /                              ; 4 CHARS
4289   057651     117  020116         ONSPA:  .ASCII  /ON /                               ; 3 CHARS
4290   057654  047117               ON:     .ASCII  /ON/
4291   057656  047516     040       NOSPA:  .ASCII  /NO /
4292   057661     116     117       NO:     .ASCII  /NO/
4293   057663     112  051525  044524 CHAR44: .ASCII  /JUSTIFY IS TURNED OFF  JUSTIFY IS TURNED OFF/  ; 44 CHARS
4294   057737     112  051525  044524 CHAR24: .ASCII  /JUSTIFY IS NOW TURNED ON/                       ; 24 CHARS
4295   057767     033  030533  066460 JUSTIF: .ASCII  <33>/[10mJUSTIFY TEST 17/<15><12>              ; 17 CHARS
4296   060015     124  044510  020123 EXP:    .ASCII  /THIS PAGE WILL DEMONSTRATE AT WHAT POINT JUSTIFY OCCURS.  IT SHOULD OCC
4297   060126  053440  044510  042514        .ASCII  / WHILE THE SPACE BETWEEN WORDS IS LESS THAN 200% AND MORE THAN/<12>
4298   060225     066  022460  047440 EXP1:   .ASCII  /60% OF THE NORMAL SIZE OF THE SPACE CHARACTER IN THE CURRENTLY SELECTED
4299   060334  043040  047117  027124        .ASCII  / FONT.  THE LINES THAT ARE UNDERLINED ARE JUSTIFIED.  THE FIRST SECTION
4300   060444  051511  042040  047117 EXP2:   .ASCII  /IS DONE WITHOUT JUSTIFY ON.  THE SECOND AND THIRD SECTIONS ARE DONE WIT
4301   060555     112  051525  044524        .ASCII  /JUSTIFY TURNED ON.  THE DIFFERENCE BETWEEN THE SECOND AND THIRD SECTION
4302   060665     111  020123  044124 EXP3:   .ASCII  /IS THAT THE SECOND SECTION LEAVES JUSTIFY ON FOR THE ENTIRE SECTION AND
4303   061001     124  044510  042122        .ASCII  /THIRD TURNS IT ON AND OFF FOR EACH LINE WITH JUSTIFY BEING TURNED/<12>
4304   061103     117  043106  044440 EXP4:   .ASCII  /OFF IMMEDIATELY PRIOR TO THE LINE FEED./<12>
4305   061153     124  042510  043040 EXPL:   .ASCII  /THE FOLLOWING TWO PARAGRAPHS WILL DEMONSTRATE THE DIFFERENCE WHEN PRINT
4306   061265     040  042524  052130        .ASCII  / TEXT WITH JUSTIFY ON AND JUSTIFY OFF./<12>/PARAGRAPH 1 IS DONE /
4307   061360  044527  044124  045040 EXPL1:  .ASCII  /WITH JUSTIFY ON AND PARAGRAPH 2 IS DONE WITH JUSTIFY OFF./<12>
4308   061452  047516  042524  052040 EXPL2:  .ASCII  /NOTE THE EVEN RIGHT MARGIN IN PARAGRAPH 1.  NOTE THE UNEVEN MARGIN AND
4309   061614  044124  020105  047114 TEXT:   .ASCII  /THE LN01 PRINTER JUSTIFIES TEXT LINES WITHIN THE CURRENTLY DEFINED LEFT
4310   061724  047101  020104  044522        .ASCII  /AND RIGHT MARGINS BY VARYING THE SPACING BETWEEN WORDS./<12>/THE LN01 D
4311   062031     040  047516  020124 TEXT1:  .ASCII  / NOT DETERMINE THE END OF LINE NOR DOES IT MAKE HYPHENATION DECISIONS.
4312   062141     111  052116  051105        .ASCII  /INTERWORD SPACING WITHIN A LINE OF TEXT IS ADJUSTED SUCH/<12>/THAT THE
4313   062251     103  040510  040522 TEXT2:  .ASCII  /CHARACTER OF THE FIRST WORD STARTS ON THE LEFT MARGIN, THE LAST CHARACT
4314   062363     117  020106  044124        .ASCII  /OF THE LAST WORD ENDS ON THE RIGHT MARGIN.  THE SPACE/<12>/BETWEEN WORD
4315   062476  052512  052123  043111 TEXT3:  .ASCII  /JUSTIFIED TEXT LINE IS EVENLY DISTRIBUTED.  THE MINIMUM AND MAXIMUM/
4316   062601     040  044504  052123        .ASCII  / DISTANCE BETWEEN WORDS WILL NOT BE GREAT-/<12>/ER THAN 200% OF THE
4317   062700  044527  052104  020110 TEXT4:  .ASCII  /WIDTH OF THE SPACE CHARACTER NOR LESS THAN 60% OF THE SPACE CHARACTER
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 4318  063006  047111  052040  042510          .ASCII  /IN THE FONT FROM WHICH THE WORD CHARAC /<12>/TERS ARE DERIVED.  A LINE
 4319  063110  043117  052040  054105  TEXT5:  .ASCII  /OF TEXT WILL NOT BE JUSTIFIED IF THE MAXIMUM OR /
 4320  063170  044515  044516  052515          .ASCII  /MINIMUM SPACE SIZE RESTRICTIONS CANNOT BE HONORED./<12>/THE /
 4321  063257     112  051525  044524  TEXT6:  .ASCII  /JUSTIFICATION OPERATION WILL BE PERFORMED ON ALL TEXT WHICH OCCURS /
 4322  063362  042502  053524  042505          .ASCII  /BETWEEN A START OF JUSTIFICATION AND AN END OF JUSTIFICATION SE /<12>/Q
 4323  063472  047105  020104  043117  ENJUS:  .ASCII  /END OF TEST/
 4324          063506                  .EVEN
 4325  063506  061614  062031  062251  TEXTBL: .WORD   TEXT,TEXT1,TEXT2,TEXT3,TEXT4,TEXT5,TEXT6,0
 4326  063526  000215  000220  000225  TEXTBP: .WORD   141.,144.,149.,130.,136.,103.,139.
 4327  063544     033     133     062  ONJUST: .BYTE   33,133,62,40,106                                  ; 5 CHARS
 4328  063551     033     133     060  OFFJUS: .BYTE   33,133,60,40,106                                  ;    "
 4329  063556     033     133     064  UNON:   .BYTE   33,133,64,155                            ; UNDERLINE ON
 4330  063562     033     133     060  UNOF:   .BYTE   33,133,60,155                            ;      "   OFF
 4331  063566     033     133     062  ABS3:   .BYTE   33,133,62,66,63,65,140                   ; ABSOLUTE TO 3.66 INCH
 4332  063575     033     133     065  ABS7:   .BYTE   33,133,65,62,67,67,140                   ;          "     7.33
 4333                                  .EVEN
 4334                                  .LIST BEX
 4335  063604                                  ENDTST
  (3)  063604                          L10030:
  (3)  063604  104401                         TRAP    C$ETST
 4336  063606                                  ENDMOD
 4337
 4338
 4339
 4340
 4341
 4342
 4343
 4344
 4345
 4346
 4349                                  .SBTTL  PORTRAIT TEST
 4350                                  ;MODULE PORT.P11
 4351
 4352  063606                                  BGNMOD
 4353
 4354                                  ;++
 4355                                  ;               FUNCTIONAL DESCRIPTION
 4356                                  ;
 4357                                  ;       THE PORTRAIT TEST IS DESIGNED TO "VERIFY" THE EXTENDED FUNCTIONALITY OF
 4358                                  ;THE LNO1 IN PORTRAIT ORIENTATION USING THE RESIDENT PORTRAIT FONT.
 4359                                  ;       DUE TO THE FACT THAT THE LNO1 DEFAULT FONT IS LANDSCAPE, THE MAJORITY
 4360                                  ;OF TESTING OF BOTH BASIC AND EXTENDED FUNCTIONALITY IS DONE IN DEFAULT LANDSCAPE
 4361                                  ;ORIENTATION.  THE PURPOSE OF THE "PORTRAIT TEST" IS TO "VERIFY" THE FUNCTIONALITY
 4362                                  ;OF EXTENDED FUNCTIONS IN PORTRAIT ORIENTATION.
 4363                                  ;       THIS TEST WILL USE ONLY ONE SHEET OF PAPER, AND, WILL IDENTIFY ITS OWN
 4364                                  ;FUNCTIONAL SECTIONS.  THIS WILL BE A "QUICK VERIFY" ONLY OF THE EXTENDED FUNCTIONS
 4365                                  ;LISTED BELOW.  COMPREHENSIVE TESTING OF THE EXTENDED FUNCTIONS IS ACCOMPLISHED IN
 4366                                  ;THE TESTS DESIGNED SPECIFICALLY FOR EACH PARTICULAR FUNCTION.
 4367                                  ;       FONT LOADING, ASSIGNING AND SELECTING WILL NOT BE TESTED IN THIS TEST.
 4368                                  ;THESE FUNCTIONS WILL BE TESTED IN THE "FONT TEST".
 4369                                  ;
 4370                                  ;       THE FUNCTIONS VERIFIED INCLUDE:
 4371                                  ;               1 MARGINS
 4372                                  ;               2 TABS
 4373                                  ;               3 UNDERLINE
```

```
                        ;               4 SUPERSCRIPT AND SUBSCRIPT
                        ;               5 HORIZONTAL AND VERTICAL POSITION ABSOLUTE
                        ;               6 HORIZONTAL AND VERTICAL POSITION RELATIVE
                        ;               7 DRAW VECTORS
                        ;               9 SIZE UNIT SELECT
                        ;
                        ;

                        ;               GLOBALS REFERENCED:
                        ;       MESSAGES, VARIABLES, SUBROUTINES

000000                  .REPT   0

                        BEGIN PORTRAIT TEST
                        :                       SECTION 0
                        :
                        :       SET OUTPUT BUFFER WITH OCTAL CODES TO BE SENT DURING TEST
                        :       DO RESET
                        :       LET R3 EQ ADDRESS OF TABLE SECO                         ; TABLE OF OUTPUTS FOR T
                        :       LET R4 EQ ADDRESS OF TABLE SECCNT                       ; TABLE OF BYTE COUNTS F
                        :       WHILE (R3) NE #0 DO                                     ; DO FOR EACH ENTRY IN S
                        :               OUTPUT (R3)+,(R4)+                              ; OUTPUT CURRENT ENTRY
                        :       ENDDO
                        :
                        :                       SECTION 1
                        :
                        :       MOVE TO VERTICAL 3 INCH MARK
                        :       SET MARGINS
                        :       PRINT SECTION ID
                        :       LET R3 EQ ADDRESS OF TABLE MARTBL                       ; TABLE OF MARGIN SETTIN
                        :       WHILE (R3) NE #0 DO
                        :               OUTPUT ENTRY
                        :               PRINT LETTER "M"
                        :               OUTPUT #ABMAR                                   ; SEQUENCE TO TRY AND MO
                        :               PRINT LETTER "M"
                        :       ENDDO
                        :
                        :                       SECTION 2
                        :
                        :       LET R3 EQ ADDRESS OF TABLE TABUND                       ; TBL OF SEQS TO SET TAB
                        :       LET R4 EQ ADDRESS OF TABLE TABUCT                       ; BYTE COUNTS
                        :       WHILE (R3) NE #0 DO
                        :               OUTPUT (R3)+,(R4)+                              ; OUTPUT NEXT ENTRY OF "
                        :       ENDDO
                        :
                        :                       SECTION 3
                        :
                        :       MOVE VERTICALLY TO 5 INCH MARK
                        :       PRINT SECTION ID
                        :       PRINT LETTER "S"
                        :       INCR FROM 1 TO 2 BY 1                           ; DO THIS CHUNK OF CODE TWICE
                        :               OUTPUT #S1                              ; HT,SUBSCRIPT AND "S"
                        :               OUTPUT #S2                              ; HT,SUPERSCRIPT AND 'S'
                        :               OUTPUT #S2                              ;       "
                        :               OUTPUT #S1                              ; HT,SUBSCRIPT AND  S
                        :       ENDINC
```

```
4430                                    ;       DO A LINE FEED
4431                                    ;
4432                                    ;                       SECTION 4
4433                                    ;
4434                                    ;       MOVE VERTICALLY TO 6 INCH MARK
4435                                    ;       PRINT SECTION ID
4436                                    ;       LET R3 EQ ADDRESS OF TABLE #ABTBL       ; TABLE OF ABSOLUTE AND RELATIVE
4437                                    ;       LET R4 EQ ADDRESS OF TABLE #ABTBCT      ; BYTE COUNTS FOR ABTBL TABLE
4438                                    ;       PRINT "H"                               ; FIRST H AT LEFT MARGIN
4439                                    ;       SELECT PIXELS AS NEW SIZE UNIT
4440                                    ;       WHILE (R3) NE #0 DO                     ; DO FOR EACH ENTRY IN MOVE TABL
4441                                    ;               OUTPUT (R3),(R4)                ; NEXT MOVE
4442                                    ;               PRINT "H"
4443                                    ;       ENDDO
4444                                    ;       SELECT DECIPOINTS AS SIZE UNIT
4445                                    ;       DO LINE FEED
4446                                    ;
4447                                    ;                       SECTION 5
4448                                    ;
4449                                    ;       LET R3 EQ ADDRESS OF TABLE #IDVEC       ; TABLE FOR SECTION ID,POSITIONI
4450                                    ;       LET R4 EQ ADDRESS OF TABLE #IDVCNT      ; BYTE COUNTS FOR TABLE IDVEC
4451                                    ;       WHILE (R3) NE #0 DO                     ; DO FOR EACH ENTRY OF TABLE
4452                                    ;               OUTPUT (R3)+,(R4)+              ; NEXT ENTRY
4453                                    ;       ENDDO
4454                                    ;       LET R3 EQ ADDRESS OF TABLE #LN01TB      ; TABLE TO POSITION FOR AND PRIN
4455                                    ;               OUTPUT (R3)+                    ; NEXT ENTRY
4456                                    ;       ENDDO
4457                                    ;       DO FORM FEED
4458                                    ;       DO RESET
4459                                    ;
4460                                    END PORTRAIT TEST
4461                                    .ENDR
4462
4463
4464
4465
4466
4467
4468
4469
4470
4471
4472  063606                                    BGNTST  18.
 (3)  063606                            T18::
4473
4474
4475                                    ;                       SECTION 0
4476
4477  063606                            LET OUTBUF :B= #11                              ; HOR TAB
 (4)  063606  112737  000011  003114              MOVB    #11,OUTBUF
4478  063614                            LET OUTBUF+1 :B= #12                            ; LINE FEED
 (4)  063614  112737  000012  003115              MOVB    #12,OUTBUF+1
4479  063622                            LET OUTBUF+2 :B= #13                            ; VER TAB
 (4)  063622  112737  000013  003116              MOVB    #13,OUTBUF+2
4480  063630                            LET OUTBUF+3 :B= #14                            ; FORM FEED
 (4)  063630  112737  000014  003117              MOVB    #14,OUTBUF+3
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4481  063636                        LET OUTBUF+4 :B= #15                    ; CARRIAGE RETURN
 (4)  063636  112737  000015  003120          MOVB    #15,OUTBUF+4
4482  063644                        LET OUTBUF+5 :B= #115                   ; UPPER CASE "M"
 (4)  063644  112737  000115  003121          MOVB    #115,OUTBUF+5
4483  063652                        LET OUTBUF+6 :B= #123                   ;       "    "S"
 (4)  063652  112737  000123  003122          MOVB    #123,OUTBUF+6
4484  063660                        LET OUTBUF+7 :B= #110                   ;       "    "H"
 (4)  063660  112737  000110  003123          MOVB    #110,OUTBUF+7
4485  063666                        LET OUTBUF+10 :B= #114                  ; UPPER CASE "L"
 (4)  063666  112737  000114  003124          MOVB    #114,OUTBUF+10
4486  063674                        LET OUTBUF+11 :B= #152                  ; ASTERISK
 (4)  063674  112737  000152  003125          MOVB    #152,OUTBUF+11
4487  063702                        OUTPUT #REINIT,#2
4488  063744                        OUTPUT #SELDEC,#5                       ; DECIPOINTS AS SIZE UNITS
4489  064006                        LET R3 := #SECO                         ; NAME OF TABLE OF OUTPUTS FOR T
 (4)  064006  012703  066554          MOV     #SECO,R3
4490  064012                        LET R4 := #SECCNT                       ; TABLE OF BYTE COUNTS FOR OUTPU
 (4)  064012  012704  066566          MOV     #SECCNT,R4
4491  064016                        WHILE (R3) NE #0 DO                     ; DO FOR EACH ENTRY IN TABLE
 (4)  064016                        50502$:
 (6)  064016  005713                  TST     (R3)
 (8)  064020  001002                  BNE     .+6
 (9)  064022  000137  064066          JMP     50503$
4492  064026                        OUTPUT (R3)+,(R4)+                      ; SEND THE ENTRY
4493  064064                        ENDDO
 (3)  064064  000754                  BR      50502$
 (3)  064066                        50503$:
4494
4495                                ;                       SECTION 1
4496  064066                        OUTPUT #VER2,#7                         ; MOVE VERTICALLY TO 2 INCH MARK
4497  064130                        OUTPUT #NORMAR,#12.                     ; NORMAL MARGINS FOR THIS TEST
4498  064172                        OUTPUT #PORT,#17.                       ; TEST ID
4499  064234                        OUTPUT #VER3,#7                         ; MOVE VERTICALLY TO 3 INCH MARK
4500  064276                        OUTPUT #SEC1,#11.                       ; PRINT SECTION ID AND 2 LINE FE
4501  064340                        LET R3 := #MARTBL                       ; TABLE OF MARGIN SETTING SEQUEN
 (4)  064340  012703  067036          MOV     #MARTBL,R3
4502  064344                        WHILE (R3) NE #0 DO                     ; DO FOR EACH ENTRY IN MARTBL
 (4)  064344                        50504$:
 (6)  064344  005713                  TST     (R3)
 (8)  064346  001002                  BNE     .+6
 (9)  064350  000137  064564          JMP     50505$
4503  064354                        OUTPUT (R3)+,#12.                       ; OUTPUT NEXT ENTRY
4504  064414                        OUTPUT #OUTBUF+5,#1                     ; PRINT LETTER "M"
4505  064456                        OUTPUT #ABMAR,#7                        ; SEQUENCE TO TRY AND MOVE TO "N
4506  064520                        OUTPUT #OUTBUF+11,#1                    ; PRINT ASTERISK
4507  064562                        ENDDO
 (3)  064562  000670                  BR      50504$
 (3)  064564                        50505$:
4508  064564                        OUTPUT #OUTBUF+1,#1                     ; LINE FEED
4509  064626                        OUTPUT #NORMAR,#12.                     ; NORMAL MARGIN SETTING SEQUENCE
4510
4511                                ;                       SECTION 2
4512
4513
4514  064670                        LET R3 := #TABUND                       ; TABLE OF SEQUENCES TO SET TABS
 (4)  064670  012703  067246          MOV     #TABUND,R3
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064674                           LET R4 := #TABUCT                          ; TABLE OF BYTE COUNTS FOR TABUN
064674  012704  067274                   MOV     #TABUCT,R4
064700                           WHILE (R3) NE #0 DO
064700                           50506$:
064700  005713                           TST     (R3)
064702  001002                           BNE     .+6
064704  000137  064750                   JMP     50507$
064710                                   OUTPUT (R3)+,(R4)+                 ; OUTPUT NEXT ENTRY
064746                           ENDDO
064746  000754                           BR      50506$
064750                           50507$:

                                 ;                    SECTION 3

064750                           OUTPUT #VER5,#7                            ; ABSOLUTE 5 INCH VERTICAL
065012                           OUTPUT #SEC3,#29.                          ; 3RD SECTION ID AND 2 LINE FEED
065054                           OUTPUT #OUTBUF+6,#1                        ; PRINT LETTER "S"
065116                           INCR COUNT FROM #1 TO #2 BY #1             ; DO THIS CHUNK OF CODE TWICE
065116  012737  000001  002276           MOV     #1,COUNT
065124  000402                           BR      50511$
065126                           50510$:
065126  005237  002276                   INC     COUNT
065132                           50511$:
065132  023727  002276  000002           CMP     COUNT,#2
065140  003402                           BLE     50512$
065142  000137  065360                   JMP     50513$
065146                           50512$:
065146                                   OUTPUT #S1,#4                      ; HT,SUBSCRIPT AND "S"
065210                                   OUTPUT #S2,#4                      ; HT,SUPERSCRIPT AND "S" (BACK U
065252                                   OUTPUT #S2,#4                      ; HT,SUPERSCRIPT AND "S"
065314                                   OUTPUT #S1,#4                      ; HT,SUBSCRIPT AND "S" (BACK DOW
065356                           ENDINC
065356  000663                           BR      50510$
065360                           50513$:
065360                           OUTPUT #OUTBUF+1,#1                        ; LINE FEED


                                 ;                    SECTION 4

065422                           OUTPUT #VER6,#13.                          ; VERTICAL TO 6 INCHES USING ABS
065464                           OUTPUT #SEC4,#23.                          ; SECTION 4 ID AND 2 LINE FEEDS
065526                           LET R3 := #ABTBL                           ; TBL OF ABSOLUTE AND RELATIVE M
065526  012703  067512                   MOV     #ABTBL,R3
065532                           LET R4 := #ABTBCT                          ; BYTE COUNTS FOR ABTBL TABLE
065532  012704  067534                   MOV     #ABTBCT,R4
065536                           OUTPUT #OUTBUF+7,#1                        ; PRINT FIRST H AT LEFT MARGIN
065600                           OUTPUT #PSSU,#5                            ; SELECTS SIZE UNIT AS PIXELS RA
065642                           WHILE (R3) NE #0 DO
065642                           50514$:
065642  005713                           TST     (R3)
065644  001002                           BNE     .+6
065646  000137  065754                   JMP     50515$
065652                                   OUTPUT (R3)+,(R4)+                 ; MAKE NEXT MOVE
065710                                   OUTPUT #OUTBUF+7,#1                ; PRINT  H
065752                           ENDDO
065752  000733                           BR      50514$
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 (3)  065754                                50515$:
4546  065754                                OUTPUT #DSSU,#5                    ; RETURNS SIZE UNIT TO DECIPOINT
4547  066016                                OUTPUT #OUTBUF+1,#1                ; LINE FEED
4548
4549                                        ;                        SECTION 5
4550
4551
4552  066060                                LET R3 := #IDVEC                   ; TABLE FOR SECTION ID, POSITION
 (4)  066060  012703  067666                       MOV     #IDVEC,R3
4553  066064                                LET R4 := #IDVCNT                  ; TABLE OF BYTE COUNTS FOR IDVEC
 (4)  066064  012704  067712                       MOV     #IDVCNT,R4
4554  066070                                WHILE (R3) NE #0 DO
 (4)  066070                                50516$:
 (6)  066070  005713                               TST     (R3)
 (8)  066072  001002                               BNE     .+6
 (9)  066074  000137  066140                       JMP     50517$
4555  066100                                      OUTPUT (R3)+,(R4)+             ; OUTPUT NEXT ENTRY IN TABLE
4556  066136                                ENDDO
 (3)  066136  000754                               BR      50516$
 (3)  066140                                50517$:
4557  066140                                LET R3 := #LN01TB                  ; TABLE TO POSITION FOR AND PRIN
 (4)  066140  012703  070212                       MOV     #LN01TB,R3
4558  066144                                WHILE (R3) NE #0 DO
 (4)  066144                                50520$:
 (6)  066144  005713                               TST     (R3)
 (8)  066146  001002                               BNE     .+6
 (9)  066150  000137  066216                       JMP     50521$
4559  066154                                      OUTPUT (R3)+,#8.               ; DO NEXT ENTRY IN TABLE
4560  066214                                ENDDO
 (3)  066214  000753                               BR      50520$
 (3)  066216                                50521$:
4561  066216                                OUTPUT #OUTBUF+3,#1                ; FORM FEED
4562  066260                                OUTPUT #REINIT,#2                  ; RESET THE DEFAULTS IN THE PRIN
4563  066322                                OUTPUT #SELDEC,#5                  ; DECIPOINTS AS SIZE UNITS
4564  066364  004737  005306                JSR PC,QUIET                       ; GUARANTEE THE FORM FEED
4565  066370                                      EXIT TST
 (3)  066370  104432                               TRAP    C$EXIT
 (3)  066372  001660                               .WORD   L10031-.
4566
4567                                        .NLIST BEX
4568                                        ;                        LOCAL VARIABLES, TABLES, MESSAGES
4569  066374  047520  052122  040522  PORT:   .ASCII  /PORTRAIT TEST 18/<12>                  ; TEST ID AND LINE FEED
4570  066415     115  051101  044507  SEC1:   .ASCII  /MARGINS :/<12><12>                    ; SECTION ID AND 2 LF
4571  066430  052015  041101  020123  SEC2:   .ASCII  <15>/TABS AND UNDERLINE :/<12>         ; SECTION ID AND LINE FE
4572  066456  052523  042520  051522  SEC3:   .ASCII  /SUPERSCRIPT AND SUBSCRIPT :/<12><12>  ; SECTION ID AND 2 LINE FEEDS
4573  066513     110  051117  055111  SEC4:   .ASCII  /HORIZONTAL POSITION :/<12><12>        ; SECTION ID AND 2 LINE FEEDS
4574  066542  042526  052103  051117  SEC5:   .ASCII  /VECTORS :/<12>                       ; SECTION ID AND LINE FE
4575                                        .EVEN
4576  066554  066576  004036  066707  SEC0:   .WORD   PORSEQ,SELPIX,FRAME,SELDEC,0         ; TABLE FOR SECTION 0
4577  066566  000033  000005  000126  SECCNT: .WORD   27.,5,86.,5                          ; BYTE COUNTS FOR SEC0 TABLE
4578  066576     033     120     061  PORSEQ: .BYTE   33,120,61,73,61,61,175,104,105,124,151  ; SEQS TO ASSIGN AND SELECT PORT
4579  066611     164     141     156          .BYTE   164,141,156,61,60,55,122,33,134,33,133,61,61,155
4580  066627     033     133     061  VER2:   .BYTE   33,133,61,64,64,60,144                ; VERTICAL POSITION ABS
4581  066636     033     133     062  IDMAR:  .BYTE   33,133,62,64,63,60,73,63,67,70,60,163  ; LR MARGINS AT 3 1 4 4N
4582  066652     033     133     060  ONJU:   .BYTE   33,133,60,40,106                     ; TURN ON JUSTIFY
4583  066657     033     133     062  OFFJU:  .BYTE   33,133,62,40,106                     ; TURN OFF JUSTIFY
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4584  066664  033  133  062  VER3:   .BYTE  33,133,62,61,66,60,144                                  ; ABSOLUTE VER POS 3 INC
4585  066673  033  133  061  NORMAR: .BYTE  33,133,61,70,60,60,73,65,64,60,60,163                  ; NORMAL MARGINS FOR THI
4586  066707  033  133  061  FRAME:  .BYTE  33,133,61,73,63,60,60,73,63,60,60,73,62,67,60,60,73
4587  066730  062  060  041          .BYTE  62,60,41,174,33,133,61,73,62,62,65,60,73,63,60,60,73
4588  066751  062  067  060          .BYTE  62,67,60,60,73,62,60,41,174,33,133,60,73,63,60,60,73
4589  066772  063  060  060          .BYTE  63,60,60,73,61,71,65,60,73,62,60,41,174
4590  067007  033  133  060          .BYTE  33,133,60,73,63,60,60,73,63,60,60,60,73,61,71,67,60,73
4591  067031  062  060  041          .BYTE  62,60,41,174                                            ; SEQUENCES TO DRAW FRAM
4592                                                                                               ; ON ALL FOUR SIDES.
4593        067036                    .EVEN
4594  067036  067062  067076  067112  MARTBL: .WORD  AMAR,BMAR,CMAR,DMAR,EMAR,FMAR,GMAR,HMAR,IMAR,0  ; TABLE OF LR MARGIN SET
4595  067062  033  133  061  AMAR:   .BYTE  33,133,61,70,60,60,73,62,61,66,60,163                  ; LEFT  2 1/2,  RIGHT
4596  067076  033  133  062  BMAR:   .BYTE  33,133,62,61,66,60,73,62,65,62,60,163                  ;       3
4597  067112  033  133  062  CMAR:   .BYTE  33,133,62,65,62,60,73,62,70,70,60,163                  ;       3 1/2
4598  067126  033  133  062  DMAR:   .BYTE  33,133,62,70,70,60,73,63,62,64,60,163                  ;       4
4599  067142  033  133  063  EMAR:   .BYTE  33,133,63,62,64,60,73,63,66,60,60,163                  ;       4 1/2
4600  067156  033  133  063  FMAR:   .BYTE  33,133,63,66,60,60,73,63,71,66,60,163                  ;       5
4601  067172  033  133  063  GMAR:   .BYTE  33,133,63,71,66,60,73,64,63,62,60,163                  ;       5 1/2
4602  067206  033  133  064  HMAR:   .BYTE  33,133,64,63,62,60,73,64,66,70,60,163                  ;       6
4603  067222  033  133  064  IMAR:   .BYTE  33,133,64,66,70,60,73,65,60,64,60,163                  ;       6 1/2
4604  067236  033  133  065  ABMAR:  .BYTE  33,133,65,64,60,60,140                                 ; SEQ TRYING TO MOVE TO
4605        067246                    .EVEN
4606  067246  067320  003116  066430  TABUND: .WORD  STVER4,OUTBUF+2,SEC2,OUTBUF+1,CLEART,TSET,ONUN
4607  067264  067415  003115  067437          .WORD  UNDERL,OUTBUF+1,OFFUN,0                       ; TABLE OF SEQ TO SET TA
4608  067274  000013  000001  000026  TABUCT: .WORD  11.,1,22.,1,4,42.,4,18.,1,4                  ; BYTE COUNTS FOR TABUND
4609  067320  033  133  064  STVER4: .BYTE  33,133,64,147,33,133,62,70,70,60,166                  ; CLEAR ALL VER TABS AND
4610  067333  033  133  063  CLEART: .BYTE  33,133,63,147                                         ; CLEAR ALL HOR TABS
4611  067337  033  133  062  TSET:   .BYTE  33,133,62,61,66,60,73,62,65,62,60,73,62,70,70,60,73
4612  067360  063  062  064          .BYTE  63,62,64,60,73,63,66,60,60,73,63,71,66,60,73
4613  067377  064  063  062          .BYTE  64,63,62,60,73,64,66,70,60,165                          ; SET HTABS AT 3,3 1/2,4
4614  067411  033  133  064  ONUN:   .BYTE  33,133,64,155                                         ; TURNS UNDERLINING ON
4615  067415  125  011  116  UNDERL: .BYTE  125,11,116,11,104,11,105,11,122,11,114,11,111,11,116,11,105,12  ; PRINT
4616  067437  033  133  060  OFFUN:  .BYTE  33,133,60,155                                         ; TURNS UNDERLINING OFF
4617  067443  033  133  063  VER5:   .BYTE  33,133,63,66,60,60,144                                 ; MOVE TO ABSOLUTE VER P
4618  067452  011  033  113  S1:     .BYTE  11,33,113,123                                          ; HT.   SUBSCRIPT AND  S
4619  067456  011  033  114  S2:     .BYTE  11,33,114,123                                          ; "     SUPERSCRIPT "
4620  067462  033  133  063  VER6:   .BYTE  33,133,63,66,60,60,144,33,133,67,62,60,145            ; VER 6 INCH MARK USING
4621  067477  033  133  067  PSSU:   .BYTE  33,133,67,40,111                                      ; SELECT SIZE UNIT AS PI
4622  067504  033  133  062  DSSU:   .BYTE  33,133,62,40,111                                      ; SELECT SIZE UNIT AS DE
4623        067512                    .EVEN
4624  067512  067554  067562  067571  ABTBL:  .WORD  HORA,HORB,HORC,HORD,HORE,HORF,HORG,HORH,0     ; TABLE TO MOVE HOR ABSO
4625  067534  000006  000007  000007  ABTBCT: .WORD  6,7,7,7,13.,13.,13.,7                         ; BYTE COUNTS FOR ABTBL
4626  067554  033  133  071  HORA:   .BYTE  33,133,71,60,60,140                                   ; ABSOLUTE 3 INCHES IN P
4627  067562  033  133  061  HORB:   .BYTE  33,133,61,60,65,60,140                                ;          3 1/2
4628  067571  033  133  061  HORC:   .BYTE  33,133,61,62,60,60,140                                ;          4
4629  067600  033  133  061  HORD:   .BYTE  33,133,61,63,65,60,140                                ;          4 1/2
4630  067607  033  133  061  HORE:   .BYTE  33,133,61,62,60,60,140,33,133,63,60,60,141            ; ABSOLUTE TO 4 THEN REL
4631  067624  033  133  061  HORF:   .BYTE  33,133,61,63,65,60,140,33,133,63,60,60,141            ;              4 1/2
4632  067641  033  133  061  HORG:   .BYTE  33,133,61,65,60,60,140,33,133,63,60,60,141            ;              5
4633  067656  033  133  061  HORH:   .BYTE  33,133,61,71,65,60,140                                ; ABSOLUTE TO 6 1/2
4634        067666                    .EVEN
4635  067666  067734  066542  003115  IDVEC:  .WORD  VER7,SEC5,OUTBUF+1,VER8.5,HOR3,SELPIX,VEC01,SELDEC,OUTBUF+10,0  ; TBL FO
4636  067712  000007  000012  000001  IDVCNT: .WORD  7,10.,1,7,7.5,153.,5,1                        ; BYTE COUNTS FOR IDVEC
4637  067734  033  133  065  VER7:   .BYTE  33,133,65,60,64,60,144                                ; VERTICAL TO 7 INCHES
4638  067743  033  133  066  VER8.5: .BYTE  33,133,66,61,62,60,144                                ; VERTICAL TO 8.5 INCHES
4639  067752  033  133  062  HOR3:   .BYTE  33,133,62,61,64,62,140                                ; MOVE TO JUST LESS THAN
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 4640  067761  033  133  060  VEC01:  .BYTE  33,133,60,73,67,65,60,73,62,63,70,60,73        ;  SEQS FOR DRAWING RECT
 4641  067776  061  062  062          .BYTE  61,62,62,60,73,62,60,41,174                   ; TOP HORIZONTAL LINE
 4642  070007  033  133  060          .BYTE  33,133,60,73,67,65,60,73,62,66,70,60,73
 4643  070024  061  062  062          .BYTE  61,62,62,60,73,62,60,41,174                   ; BOTTOM HORIZONTAL LINE
 4644  070035  033  133  061          .BYTE  33,133,61,73,67,65,60,73,62,64,60,60,73
 4645  070052  063  060  060          .BYTE  63,60,60,73,62,60,41,174                      ;  1ST   VERTICAL      BA
 4646  070062  033  133  061          .BYTE  33,133,61,73,61,60,65,60,73,62,64,60,60,73
 4647  070100  063  060  060          .BYTE  63,60,60,73,62,60,41,174                      ;  2ND          "
 4648  070110  033  133  061          .BYTE  33,133,61,73,61,63,65,60,73,62,64,60,60,73
 4649  070126  063  060  060          .BYTE  63,60,60,73,62,60,41,174                      ;  3RD
 4650  070136  033  133  061          .BYTE  33,133,61,73,61,66,65,60,73,62,64,60,60,73
 4651  070154  063  060  060          .BYTE  63,60,60,73,62,60,41,174                      ;  4TH          "
 4652  070164  033  133  061          .BYTE  33,133,61,73,61,71,65,60,73,62,64,60,60,73
 4653  070202  063  060  060          .BYTE  63,60,60,73,62,60,41,174                      ;  5TH          "
 4654                               .EVEN
 4655  070212  070222  070232  070242  LN01TB: .WORD  HOR4,HOR5,HOR6,0                     ; TABLE TO POSITION AND
 4656  070222  033  133  062  HOR4:  .BYTE  33,133,62,70,66,62,140,116                    ; MOVE TO JUST LESS THAN
 4657  070232  033  133  063  HOR5:  .BYTE  33,133,63,65,70,62,140,60                     ; MOVE TO JUST LESS THAN
 4658  070242  033  133  064  HOR6:  .BYTE  33,133,64,63,60,62,140,61                     ;       "
 4659                               .EVEN
 4660                               .LIST BEX
 4661  070252                               ENDTST
  (3)  070252                       L10031:
  (3)  070252  104401                       TRAP    C$ETST
 4662  070254                               ENDMOD
 4663
 4664
 4665
 4666
 4667
 4668
 4669
 4670
 4671
 4672
 4675                               .SBTTL  FONT TEST
 4676                               ;MODULE FONT.P11
 4677
 4678  070254                       BGNMOD
 4679
 4680                               ;**
 4681                               ;               FUNCTIONAL DESCRIPTION
 4682                               ;
 4683                               ;THE "FONTS TEST" IS A COMPREHENSIVE TEST OF THE FOLLOWING FUNCTIONS WHICH
 4684                               ;ARE ASSOCIATED WITH MULTIPLE FONT USE ON THE LN01 ELECTRONIC PRINTER:
 4685                               ;
 4686                               ;       1- FONT LOADING
 4687                               ;       2- FONT ASSIGNMENT
 4688                               ;       3- FONT SELECTION
 4689                               ;       4- OTHER
 4690                               ;
 4691                               ;
 4692                               ;       1- FONT LOADING WILL BE TESTED BY DOWNLINE LOADING A PREDESIGNED SET OF
 4693                               ;FONTS WHICH WILL THEN BE ASSIGNED, SELECTED AND SUBSEQUENTLY PRINTED.
 4694                               ;       2- FONT ASSIGNMENT WILL BE TESTED BY AN EXHAUSTIVE SERIES OF ASSIGNING,
 4695                               ;RE ASSIGNING AND SELECTING OF FONTS.  THE FONTS WILL THEN BE PRINTED
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4696                            ;TO VERIFY THE ASSIGNMENTS.
4697                            ;       3- FONT SELECTION WILL BE TESTED BY A SERIES OF SELECTIONS OF SPECIFIC
4698                            ;FONTS IN SUCH A MANNER AS TO GUARANTEE THAT ANY FONT ASSIGNED TO
4699                            ;A PARTICULAR LOGICAL FONT NUMBER CAN BE SELECTED AND SUBSEQUENTLY PRINTED.
4700                            ;       4- OTHER STATED SPECIFIC FUNCTIONS WILL ALSO BE CHECKED FOR DESIRED RESULT.
4701                            ;       ONE SUCH EXAMPLE WOULD BE IF THE LNO1 WAS PRINTING FROM THE DEFAULT
4702                            ;LANDSCAPE FONT AND WAS IN THE MIDDLE OF A PAGE WHEN A FONT SELECTION SEQUENCE
4703                            ;WAS RECEIVED TO SELECT THE RESIDENT PORTRAIT FONT.  THE DESIRED RESULT IS THAT
4704                            ;THE CURRENT PAGE WOULD BE TERMINATED AND THAT A NEW PAGE WOULD BEGIN USING THE NEW
4705                            ;ORIENTATION.  AND VICE VERSA.
4706                            ;--
4707
4708                            ;               GLOBALS REFERENCED:
4709                            ;       MESSAGES, VARIABLES, SUBROUTINES
4710                            ;       REINIT
4711
4712  000000                    .REPT   0
4713
4714                                    PDL
4715                            BEGIN ROUTINE FONT
4716                            :       PART: 1         DEFAULT SELECTION
4717                            :
4718                            :       RESET PRINTER
4719                            :       ASSIGN PORTRAIT RESIDENT FONT TO LOGICAL #10 AND #11
4720                            :       SELECT LOGICAL FONT #11
4721                            :       RESET PRINTER                                   ; SHOULD ASSIGN DEFAULT
4722                            :       PRINT TEST ID
4723                            :       SKIP A LINE
4724                            :       PRINT DEFAULT MESSAGE
4725                            :       LET R3 EQUAL NSELTB                             ; FONT NUMBER TABLE
4726                            :       WHILE (R3) NOT EQUAL TO 0 DO
4727                            :               SEND BEGINNING OF SELECT SEQUENCE
4728                            :               SEND THE PARAMETER
4729                            :               SEND END OF SELECT SEQUENCE
4730                            :               SEND BEGINNING OF FONT ID MESSAGE
4731                            :               SEND (R3)*                              ; CORRECT FONT NUMBER FR
4732                            :               SEND REST OF FONT ID MESSAGE
4733                            :       ENDDO
4734                            :       SEND BELOW SEQUENCE                             ; ATTEMPTS TO SELECT ILL
4735                            :       SEND ABOVE SEQUENCE                             ;       "       "
4736                            :       SEND COMMEN MESSAGE                             ; IDENTIFIES PREVIOUS 2
4737                            :       SEND END OF PART 1 MESSAGE
4738                            :       DO FORM FEED
4739                            :
4740                            :       PART: 2         ASSIGNING OF RESIDENT FONTS
4741                            :
4742                            :       RESET PRINTER
4743                            :       SELECT SIZE UNIT AS DECIPOINTS
4744                            :       TOGGLE PAPER OFFSET
4745                            :       LET R3 EQUAL EVENTB                     ; TABLE OF EVEN PARAMETERS FOR F
4746                            :       LET R4 EQUAL ODDTB                      ;       "       ODD
4747                            :       WHILE (R3) NOT EQUAL TO 0 DO
4748                            :               SEND ASBGIN                     ; BEGINNING OF ASSIGNMENT SEQUEN
4749                            :               SEND (R3)*                      ; SEND THE FONT NUMBER FROM TABL
4750                            :               SEND ASENDP                     ; END OF ASSIGNMENT SEQUENCE
4751                            :               SEND ASBGIN                     ; BEGINNING OF ASSIGNMENT SEQUEN
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4752                    :                       SEND (R4)•                      ; SEND FONT NUMBER FROM TABLE
4753                    :                       SEND ASENDL                     ; END OF ASSIGNMENT SEQUENCE
4754                    :               ENDDO
4755                    :               LET R3 EQUAL EVENTB
4756                    :               LET R4 EQUAL ODDTB
4757                    :               SEND SEQEVE                             ; SEQUENTIAL EVEN SELECTIONS FRO
4758                    :               WHILE (R3) NOT EQUAL TO 0 DO
4759                    :                       SEND SELBGN                     ; BEGINNING OF SELECTION SEQUENC
4760                    :                       SEND (R3)•                      ; FONT NUMBER FROM EVEN TABLE
4761                    :                       SEND SELEND                     ; END OF SELECT SEQUENCE
4762                    :                       SEND PORFON                     ; IDENTIFIES FONT AS PORTRAIT
4763                    :               ENDDO
4764                    :               SEND SEL11                              ; SELECTS LOGICAL FONT #11 (NOW
4765                    :               SEND NEW PAGE MESSAGE
4766                    :               SEND SEQODD                             ; SEQUENTIAL ODD SELECTONS
4767                    :               WHILE (R4) NOT EQUAL TO 0 DO
4768                    :                       SEND SELBGN                     ; BEGINNING OF SELECT SEQUENCE
4769                    :                       SEND (R4)•                      ; FONT NUMBER FROM ODD TABLE
4770                    :                       SEND SELEND                     ; END OF SELECT SEQUENCE
4771                    :                       SEND LANFON                     ; IDENTIFIES FONT AS LANDSCAPE
4772                    :               ENDDO
4773                    :               SEND PRTEN2                             ; END OF SECTION AND PAGE MESSAG
4774                    :               DO FORM FEED
4775                    :               RESET PRINTER
4776                    :               SELECT SIZE UNIT AS DECIPOINTS
4777                    :               TOGGLE PAPER OFFSET
4778                    :
4779                    :               PART: 3         FONT LOAD SECTION
4780                    :
4781                    :               SEND #BGNLD                             ; BEGINNING OF LOAD SEQ
4782                    :               LET R3 EQUAL RECTBO                     ; SET UP RECORD TABLE
4783                    :               WHILE (R3) NOT EQUAL 0 DO
4784                    :                       SEND (R3)•
4785                    :               ENDDO                                   ; SEND RECORD IN PARTS
4786                    :               LET R3 EQUAL RECTBL                     ; SET UP RECORD TABLE
4787                    :               WHILE (R3) NOT EQUAL 0 DO
4788                    :                       SEND (R3)•
4789                    :               ENDDO                                   ; SEND RECORD IN PARTS
4790                    :               LET R3 EQUAL RECTBA                     ; SET UP NEXT REC TABLE
4791                    :               WHILE (R3) NOT EQUAL 0 DO
4792                    :                       SEND (R3)•
4793                    :               ENDDO                                   ; SEND RECORD IN PARTS
4794                    :               LET R3 EQUAL RECTBB                     ; SET UP NEXT REC TABLE
4795                    :               WHILE (R3) NOT EQUAL 0 DO
4796                    :                       SEND (R3)•
4797                    :               ENDDO                                   ; SEND RECORD IN PARTS
4798                    :               SEND ENDLD                              ; END OF LOAD SEQ
4799                    :               RESET PRINTER                           ; CHECK TO SEE IF RESET DESTROYS
4800                    :               SELECT SIZE UNIT AS DECIPOINTS
4801                    :               TOGGLE PAPER OFFSET
4802                    :               LET R3 EQUAL DIAGTB                     ; TABLE OF DIAG FONT ASSIGNMENT
4803                    :               WHILE (R3) NOT EQUAL 0 DO               ; DO FOR EACH ENTRY
4804                    :                       SEND (R3)•                      ; ASSIGN DIAG FONT AND SELECT IT
4805                    :               ENDDO
4806                    :               INCREMENT COUNT FROM 1 TO 3 BY 1
4807                    :                       SEND OUTBUF,2 CHARACTERS, 12 TIMES      ; PRINT A LINE OF ALTERNATING LI
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4808                                    ;               DO CARRIAGE RETURN AND LINE FEED
4809                                    ;               SEND OUTBUF+1, 2 CHARACTERS, 12 TIMES   ; PRINT A LINE OF ALTERNATING DA
4810                                    ;               DO CARRIAGE RETURN AND LINE FEED
4811                                    ;       ENDINC
4812                                    ;       DO FORM FEED
4813                                    ;       RESET PRINTER
4814                                    ;       SELECT SIZE UNIT AS DECIPOINTS
4815                                    ;
4816                                    END ROUTINE FONT
4817                                    .ENDR
4818
4819
4820
4821
4822
4823
4824
4825
4826
4827
4828  070254                                    BGNTST  19.
 (3)  070254                            T19::
4829
4830                                    ;               RESIDENT SECTION (USING RESIDENT FONTS ONLY)
4831                                    ;
4832                                    ;               PART 1  SELECTION DEFAULTS
4833                                    ;
4834                                    ;PART 1 FIRST GUARANTEES THAT,  ON RESET OF THE MACHINE (RIS SEQUENCE),
4835                                    ;THE DEFAULT POWER-UP FONT IS SELECTED FOR PRINTING.
4836                                    ;PART 1 NEXT CHECKS TO SEE IF ATTEMPTS TO SELECT UNASSIGNED
4837                                    ;LEGAL LOGICAL FONT NUMBERS ARE IGNORED.
4838                                    ;IT NEXT CHECKS TO SEE IF ATTEMPTS TO SELECT ILLEGAL LOGICAL FONT NUMBERS
4839                                    ;(ABOVE OR BELOW LEGAL RANGE) ARE IGNORED
4840  070254                            OUTPUT #REINIT,#2                 ; RESET PRINTER TO ALL DEFAULT CONDITIONS
4841  070316                            OUTPUT #SELDEC,#5                 ; SELECT DECIPOINTS AS SIZE UNIT
4842  070360                            OUTPUT #DECFIN,#5                 ; TOGGLE PAPER OFFSET
4843  070422                            OUTPUT #FONTST,#19.               ; TEST ID AND TWO LF'S
4844  070464                            OUTPUT #ASSDIA,#20.               ; ASSIGN DIAGNOSTIC FONT TO LOGICAL FONT #10
4845  070526                            OUTPUT #ASDIA1,#20.               ;       "       "       "       #11
4846  070570                            OUTPUT #SEL11,#5                  ; SELECT PORTRAIT FONT (LOG NUMBER 11)
4847  070632                            OUTPUT #REINIT,#2                 ; SHOULD REASSIGN #10 TO DEFAULT (LANDSCAPE) AND SELECT
4848  070674                            OUTPUT #SELDEC,#5                 ; SELECT DECIPOINTS AS SIZE UNIT
4849  070736                            OUTPUT #FONDEMES,#50.             ; PRINT DEFAULT MESSAGE
4850  071000                            LET R3 := #NSELTB                 ; FONT NUMBER IN MESSAGE TABLE
 (4)  071000  012703  074070                       MOV     #NSELTB,R3
4851  071004                            WHILE (R3) NE #0 DO               ; DO FOR EACH ENTRY SEQ TABLE
 (4)  071004                            50522$:
 (6)  071004  005713                               TST     (R3)
 (8)  071006  001002                               BNE     .+6
 (9)  071010  000137  071326                       JMP     50523$
4852  071014                                      OUTPUT #SELBGN,#2         ; BEGINNING OF SELECT SEQUENCE
4853  071056                                      OUTPUT (R3),#2            ; OUTPUT THE PARAMETER
4854  071116                                      OUTPUT #SELEND,#1         ; FINAL CHAR. FOR SELECT SEQ.
4855  071160                                      OUTPUT #FONSLA,#14.       ; BEGINNING OF FONT ID MESSAGE
4856  071222                                      OUTPUT (R3)+,#3           ; OUTPUT THE CORRECT FONT NUMBER FOR MESSAGE
4857  071262                                      OUTPUT #FONSLB,#51.       ; REST OF FONT NUMBER ID MESSAGE
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4858  071324                                ENDDO
 (3)  071324  000627                            BR      505228
 (3)  071326                            505238:
4859  071326                            OUTPUT #BELOW,#56.              ; ATTEMPTS TO SELECT NUMBER BELOW RANGE
4860  071370                            OUTPUT #ABOVE,#57.              ;       "       "       "   ABOVE   "
4861  071432                            OUTPUT #COMMEN,#56.             ; MESSAGE IDENTIFYING 2 PREVIOUS LINES AS LANDSCAPE
4862  071474                            OUTPUT #PRTEN1,#29.             ; END OF PART 1 MESSAGE + LF AND FF
4863                                    ;
4864                                    ;*****************************************************************************
4865                                    ;               PART 2  ASSIGNING OF RESIDENT FONTS
4866                                    ;
4867                                    ;OUTPUT #REINIT,#2              ; START THIS PART FRESH FROM RESET CONDITION
4868                                    ;OUTPUT #SELDEC,#5              ; SELECT DECIPOINTS AS SIZE UNIT
4869                                    ;OUTPUT #DECFIN,#5
4870                                    ;LET R3 := #EVENTB              ; TABLE OF EVEN PARAMS FOR ASSIGNMENT SEQS
4871                                    ;LET R4 := #ODDTB               ;       "  ODD   "       "       "
4872                                    ;WHILE (R3) NE #0 DO            ; ASSIGNS BOTH EVEN AND ODD NUMBERS
4873                                    ;       OUTPUT #ASBGIN,#4       ; BEGINNING OF ASSIGNMENT SEQ
4874                                    ;       OUTPUT (R3)+,#2         ; EVEN PARAM FOR SEQ
4875                                    ;       OUTPUT #ASENDP,#14.     ; END OF SEQ ASSIGNING PORTRAIT TO EVEN #
4876                                    ;       OUTPUT #ASBGIN,#4       ; BEGINNING OF ASSIGNMENT SEQ
4877                                    ;       OUTPUT (R4)+,#2         ; ODD PARAM
4878                                    ;       OUTPUT #ASENDL,#20.     ; END OF SEQ ASSIGNINC LANDSCAPE TO ODD #
4879                                    ;ENDDO
4880                                    ;LET R3 := #EVENTB              ; TABLE OF EVEN PARAMS
4881                                    ;LET R4 := #ODDTB               ;       "  ODD   "
4882                                    ;OUTPUT #SEQEVE,#15.            ; SEQUENTIAL EVEN SELECTIONS FROM 16-12
4883                                    ;WHILE (R3) NE #0 DO            ; NOW SELECT EVEN INDIVIDUALLY AND IDENTIFY
4884                                    ;       OUTPUT #SELBGN,#2       ; BEGINNING OF SELECTION SEQUENCE
4885                                    ;       OUTPUT (R3)+,#2         ; EVEN NUMBERED PARAMS
4886                                    ;       OUTPUT #SELEND,#1       ; FINAL CHAR OF SELECT ESC SEQUENCE
4887                                    ;       OUTPUT #PORFON,#47.     ; IDENTIFIES THIS FONT AS PORTRAIT
4888                                    ;ENDDO
4889                                    ;OUTPUT #PGEND,#17.             ; END OF PAGE MESSAGE
4890                                    ;OUTPUT #SEL11,#5               ; SELECTS LOG FONT #11 (LANDSCAPE NOW)
4891                                    ;OUTPUT #NEWPG,#36.             ; IDENTIFY NEW PAGE
4892                                    ;OUTPUT #SEQODD,#20.            ; SEQUENTIAL SELECTION OF ODD NUMBERS
4893                                    ;WHILE (R4) NE #0 DO            ; NOW SELECT THE ODD NUMBERS INDIVIDUALLY AND IDENTIFY
4894                                    ;       OUTPUT #SELBGN,#2       ; BEGINNING OF SELECT SEQUENCE
4895                                    ;       OUTPUT (R4)+,#2         ; ODD NUMBERED PARAMS
4896                                    ;       OUTPUT #SELEND,#1       ; FINAL CHAR OF ESC SEQUENCE
4897                                    ;       OUTPUT #LANFON,#47.     ; IDENTIFIES THIS FONT AS DEFAULT LANDSCAPE
4898                                    ;ENDDO
4899                                    ;OUTPUT #PRTEN2,#29.            ; END OF PART MESSAGE AND FF
4900                                    ;OUTPUT #REINIT,#2              ; RESET PRINTER
4901                                    ;OUTPUT #SELDEC,#5              ; SELECT DECIPOINTS AS SIZE UNIT
4902                                    ;OUTPUT #DECFIN,#5              ; TOGGLE PAPER OFFSET
4903                                    ;*****************************************************************************
4904                                    ;
4905                                    ;
4906                                    ;               PART 3    "FONT LOAD SECTION"
4907                                    ;
4908  071536                            LET OUTBUF :B= #40                              ; CODE FOR 1ST CHAR IN DIAG FONT
 (4)  071536  112737  000040  003114            MOVB    #40,OUTBUF
4909  071544                            LET OUTBUF+1 :B= #41                            ;       "       2ND
 (4)  071544  112737  000041  003115            MOVB    #41,OUTBUF+1
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4910  071552                            LET OUTBUF+2 :B= #40                  ; "         1ST          "
 (4)  071552  112737  000040  003116            MOVB    #40,OUTBUF+2
4911  071560                            LET OUTBUF+3 :B= #15                  ; CR
 (4)  071560  112737  000015  003117            MOVB    #15,OUTBUF+3
4912  071566                            LET OUTBUF+4 :B= #12                  ; LF
 (4)  071566  112737  000012  003120            MOVB    #12,OUTBUF+4
4913  071574                            LET OUTBUF+5 :B= #14                  ; FF
 (4)  071574  112737  000014  003121            MOVB    #14,OUTBUF+5
4914  071602                            OUTPUT #BGNLD,#6.                     ; BEGINNING OF LOAD SEQ
4915  071644                            LET R3 := #RECTBO                     ; SET UP RECORD TABLE
 (4)  071644  012703  074154                    MOV     #RECTBO,R3
4916  071650                            WHILE (R3) NE #0 DO
 (4)  071650                            50524$:
 (6)  071650  005713                            TST     (R3)
 (8)  071652  001002                            BNE     .+6
 (9)  071654  000137  071726                    JMP     50525$
4917  071660                                    OUTPUT (R3)+,#128.
4918  071720  004737  005306                    JSR PC, QUIET
4919  071724                            ENDDO                                 ; SEND RECORD IN PARTS
 (3)  071724  000751                            BR      50524$
 (3)  071726                            50525$:
4920  071726                            LET R3 := #RECTBL                     ; SET UP RECORD TABLE
 (4)  071726  012703  074216                    MOV     #RECTBL,R3
4921  071732                            WHILE (R3) NE #0 DO
 (4)  071732                            50526$:
 (6)  071732  005713                            TST     (R3)
 (8)  071734  001002                            BNE     .+6
 (9)  071736  000137  072010                    JMP     50527$
4922  071742                                    OUTPUT (R3)+,#128.
4923  072002  004737  005306                    JSR PC, QUIET
4924  072006                            ENDDO                                 ; SEND RECORD IN PARTS
 (3)  072006  000751                            BR      50526$
 (3)  072010                            50527$:
4925  072010                            LET R3 := #RECTBA                     ; SET UP NEXT REC TABLE
 (4)  072010  012703  074260                    MOV     #RECTBA,R3
4926  072014                            WHILE (R3) NE #0 DO
 (4)  072014                            50530$:
 (6)  072014  005713                            TST     (R3)
 (8)  072016  001002                            BNE     .+6
 (9)  072020  000137  072072                    JMP     50531$
4927  072024                                    OUTPUT (R3)+,#128.
4928  072064  004737  005306                    JSR PC, QUIET
4929  072070                            ENDDO                                 ; SEND RECORD IN PARTS
 (3)  072070  000751                            BR      50530$
 (3)  072072                            50531$:
4930  072072                            LET R3 := #RECTBB                     ; SET UP NEXT REC TABLE
 (4)  072072  012703  074322                    MOV     #RECTBB,R3
4931  072076                            WHILE (R3) NE #0 DO
 (4)  072076                            50532$:
 (6)  072076  005713                            TST     (R3)
 (8)  072100  001002                            BNE     .+6
 (9)  072102  000137  072154                    JMP     50533$
4932  072106                                    OUTPUT (R3)+,#128.
4933  072146  004737  005306                    JSR PC, QUIET
4934  072152                            ENDDO                                 ; SEND RECORD IN PARTS
 (3)  072152  000751                            BR      50532$
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  (3)  072154                                   50533$:
4935   072154                                   OUTPUT #ENDLD,#3                        ; END OF LOAD SEQ
4936   072216                                   OUTPUT #REINIT,#2                       ; CHECK TO SEE IF RESET DESTROYS FONTS L
4937   072260                                   OUTPUT #SELDEC,#5                       ; SELECT DECIPOINTS AS PARAMETER
4938   072322                                   OUTPUT #DECFIN,#5                       ; TOGGLE PAPER OFFSET
4939   072364                                   LET R3 := #DIAGTB                       ; TABLE OF DIAG FONT ASSIGNMENT AND SELE
  (4)  072364  012703  074364                        MOV     #DIAGTB,R3
4940   072370                                   LET R4 := #DIAGX
  (4)  072370  012704  074514                        MOV     #DIAGX,R4
4941   072374                                   WHILE (R3) NE #0 DO                     ; DO FOR EACH ENTRY
  (4)  072374                                   50534$:
  (6)  072374  005713                                TST     (R3)
  (8)  072376  001002                                BNE     .+6
  (9)  072400  000137  072754                        JMP     50535$
4942   072404                                         OUTPUT (R4)+,#13.                  ; ASSIGN DIAGX AND SELECT IT FOR TITLES
4943   072444                                         OUTPUT (R3)+,#21.                  ; ASSIGN DIAG FONT AND SELECT IT.
4944   072504                                         INCR COUNT FROM #1 TO #2 BY #1     ; PRINT ONLY TWO LINE (2+2=4 AS TOTAL OF LIN
  (5)  072504  012737  000001  002276                MOV     #1,COUNT
  (7)  072512  000402                                BR      50537$
  (6)  072514                                   50536$:
  (8)  072514  005237  002276                        INC     COUNT
  (6)  072520                                   50537$:
  (7)  072520  023727  002276  000002                CMP     COUNT,#2
  (9)  072526  003402                                BLE     50540$
  (7)  072530  000137  072752                        JMP     50541$
  (6)  072534                                   50540$:
4945   072534                                         OUTPUT #OUTBUF,#2,,#12.            ; PRINT A LINE OF ALTERNATING LI
4946   072576                                         OUTPUT #OUTBUF+3,#2                ; CRLF
4947   072640                                         OUTPUT #OUTBUF+1,#2,,#12.          ; PRINT A LINE OF ALTERNATING DA
4948   072702                                         OUTPUT #OUTBUF+3,#2                ; CRLF
4949   072744  004737  005306                        JSR PC,QUIET
4950   072750                                         ENDINC
  (4)  072750  000661                                BR      50536$
  (4)  072752                                   50541$:
4951   072752                                   ENDDO
  (3)  072752  000610                                BR      50534$
  (3)  072754                                   50535$:
4952   072754                                   OUTPUT #OUTBUF+5,#1                     ; FF
4953   073016                                   OUTPUT #REINIT,#2                       ; RESET TO DEFAULT FONT
4954   073060                                   OUTPUT #SELDEC,#5                       ; SELECT DECIPOINTS AS SIZE UNIT
4955   073122  004737  005306                   JSR PC,QUIET
4956
4957   073126                                         EXIT TST
  (3)  073126  104432                                TRAP    C$EXIT
  (3)  073130  006464                                .WORD   L10032-.
4958
4959                                            .NLIST BEX
4960                                            ;                  LOCAL VARIABLES, TABLES, MESSAGES
4961   073132  055433  030061  043155  FONTST: .ASCII  <33>/[10mFONT TEST 19/<12><12>
4962   073155     104  043105  052501  FONDEMES:       .ASCII  /DEFAULT FONT PRINTED - SHOULD BE DEFAULT POWER-UP/<12> ; IDENTI
4963   073237     114  043517  041511  FONSLA: .ASCII  /LOGICAL FONT #/                                               ; BEGINN
4964   073255     123  046105  041505  FONSLB: .ASCII  /SELECTED - DEFAULT POWER-UP FONT SHOULD BE PRINTED/<12>        ; END OF
4965   073340  044124  051511  051440  NEWPG:  .ASCII  /THIS SHOULD BE TOP LINE OF NEW PAGE/<12>                      ; 36 CHA
4966   073404  050033  035461  030061  ASSDIA: .ASCII  <33>/P1;10/<175>/DIAG000/<33>/\/                               ; ASSIGN
4967   073424  050033  035461  030461  ASDIA1: .ASCII  <33>/P1;11/<175>/DIAG001/<33>/\/                               ; ASSIGN
4968   073444  055433  030461     155  SEL11:  .ASCII  <33>/[11m/                      ; SELECTS LOGICAL FONT #11
```

```
073451     033  033533  040555  BELOW:  .ASCII  <33>/[7mATTEMPTING TO SELECT FONT NUMBER BELOW LEGAL RANGE./<12>
073541     033  031133  066460  ABOVE:  .ASCII  <33>/[20mATTEMPTING TO SELECT FONT NUMBER ABOVE LEGAL RANGE./<12>
073632  051120  041505  042105  COMMEN: .ASCII  /PRECEDING TWO LINES SHOULD BE THE DEFAULT POWER UP FONT/<12>
073722  047105  020104  043117  PGEND:  .ASCII  /END OF THIS PAGE/<12>
073743     105  042116  047440  PRTEN1: .ASCII  /END OF PART 1 AND THIS PAGE/<12><14>
                                ;PRTEN2:        .ASCII  /END OF PART 2 AND THIS PAGE/<12><14>
                                ;LANFON:        .ASCII  /THIS LINE SHOULD BE THE DEFAULT LANDSCAPE FONT/<12>
                                ;PORFON:        .ASCII  /THIS LINE SHOULD BE THE RESIDENT PORTRAIT FONT/<12>
                                ;ASSLAN:        .ASCII  <33>/P1;10/<175>/DELandscape13.6-@/<33>/\/             ; ASSIGN
074000  055433  033061  015555  SEQEVE: .ASCII  <33>/[16m/<33>/[14m/<33>/[12m/                          ; SEQUENTIAL SELECTION O
074017     033  030533  066467  SEQODD: .ASCII  <33>/[17m/<33>/[15m/<33>/[13m/<33>/[11m/                ;          "        '
074043     033  030533  066466  SEQALL: .ASCII  <33>/[16m/<33>/[15m/<33>/[14m/<33>/[13m/                ;          "        "
        074070                  .EVEN
074070  074416  074421  074424  NSELTB: .WORD   ASSI12,ASSI13,ASSI14,ASSI15,ASSI16,ASSI17,0    ;
074106  074410  074413  074416  ASSTBL: .WORD   ASSI10,ASSI11,ASSI12,ASSI13,ASSI14,ASSI15,ASSI16,ASSI17,0      ; TABLE
074130  074410  074416  074424  EVENTB: .WORD   ASSI10,ASSI12,ASSI14,ASSI16,0                           ; TABLE OF EVEN PARAMETE
074142  074413  074421  074427  ODDTB:  .WORD   ASSI11,ASSI13,ASSI15,ASSI17,0                           ;        "  ODD
074154  075014  076014  076214  RECTBO: .WORD   REC0,REC2,REC3,REC4,REC5,REC6,REC7,REC8,REC9,REC10,REC11,REC12,REC13,REC
074216  075214  076014  076214  RECTBL: .WORD   REC1,REC2,REC3,REC4,REC5,REC6,REC7,REC8,REC9,REC10,REC11,REC12,REC13,REC
074260  075414  076014  076214  RECTBA: .WORD   REC1A,REC2,REC3,REC4,REC5,REC6,REC7,REC8,REC9,REC10,REC11,REC12,REC13,RE
074322  075614  076014  076214  RECTBB: .WORD   REC1B,REC2,REC3,REC4,REC5,REC6,REC7,REC8,REC9,REC10,REC11,REC12,REC13,RE
074364  074616  074643  074670  DIAGTB: .WORD   DIAG12,DIAG13,DIAG14,DIAG15,DIAG16,DIAG17,0             ; ASSIGNS AND SELECTS LO
074402  050033  035461          ASBGIN: .ASCII  <33>/P1;/                                               ; BEGINNING OF ASSIGNMEN
074406  055433                  SELBGN: .ASCII  <33>/[/                                                 ; BEGINNING OF SELECTION
074410  030061     040          ASSI10: .ASCII  /10 /
074413     061  020061          ASSI11: .ASCII  /11 /
074416  031061     040          ASSI12: .ASCII  /12 /
074421     061  020063          ASSI13: .ASCII  /13 /
074424  032061     040          ASSI14: .ASCII  /14 /
074427     061  020065          ASSI15: .ASCII  /15 /
074432  033061     040          ASSI16: .ASCII  /16 /
074435     061  020067          ASSI17: .ASCII  /17 /
074440  042175  052105  072151  ASENDP: .ASCII  <175>/DETitan10-R/<33>/\/                                          ; END OF ASSIGNM
074456  042175  046105  067141  ASENDL: .ASCII  <175>/DELandscape13.6-@/<33>/\/                                   ;     "        "
074502     155                  SELEND: .ASCII  /m/                                                     ; END OF SELECTION SEQUE
074503     033     120     061  BGNLD:  .BYTE   33,120,61,73,61,171                            ; FIRST PART OF FONT LOAD SEQ
074511     073     033     134  ENDLD:  .BYTE   73,33,134                                               ; LAST  "        "
                                ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
074514  074532  074547  074564  DIAGX:  .WORD   DIAG0,DIAG1,DIAG2,DIAG3,DIAG0,DIAG1,0                   ; FONT BEING SELECTED TO
074532  055433  030461  042155  DIAG0:  .ASCII  <33>/[11mDIAG000/<12>
074547     033  030533  066461  DIAG1:  .ASCII  <33>/[11mDIAG001/<12>
074564  055433  030461  042155  DIAG2:  .ASCII  <33>/[11mDIAG002/<12>
074601     033  030533  066461  DIAG3:  .ASCII  <33>/[11mDIAG003/<12>
                                ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
074616     033     120     061  DIAG12: .BYTE   33,120,61,73,61,62,175,104,111,101,107   ; SEQS TO ASSIGN AND SELECT DIAG
074631     060     060     060          .BYTE   60,60,60,33,134,33,133,61,62,155
074643     033     120     061  DIAG13: .BYTE   33,120,61,73,61,63,175,104,111,101,107   ; SEQS TO ASSIGN AND SELECT DIAG
074656     060     060     061          .BYTE   60,60,61,33,134,33,133,61,63,155
074670     033     120     061  DIAG14: .BYTE   33,120,61,73,61,64,175,104,111,101,107   ; SEQS TO ASSIGN AND SELECT DIAG
074703     060     060     062          .BYTE   60,60,62,33,134,33,133,61,64,155
074715     033     120     061  DIAG15: .BYTE   33,120,61,73,61,65,175,104,111,101,107   ; SEQS TO ASSICN AND SELECT DIAG
074730     060     060     063          .BYTE   60,60,63,33,134,33,133,61,65,155
074742     033     120     061  DIAG16: .BYTE   33,120,61,73,61,66,175,104,111,101,107   ; SEQS TO ASSIGN AND SELECT DIAG
074755     060     060     060          .BYTE   60,60,60,33,134,33,133,61,66,155
074767     033     120     061  DIAG17: .BYTE   33,120,61,73,61,67,175,104,111,101,107   ; SEQS TO ASSIGN AND SELECT DIAG
075002     060     060     061          .BYTE   60,60,61,33,134,33,133,61,67,155
```

```
5025  075014  064551  040147  062477  REC0:   .ASCII  /iig@?e_CPCd@Pr?oKA?_GA?_GA?_GA?_GA???????????D??S??_GO/        ; 54 cha
5026  075102  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5027  075214  064551  040147  062477  REC1:   .ASCII  /iig@?e_CPCd@Pr?oKQ?_GA?_GA?_GA?_GA???????????D??S??_GO/        ; 54 cha
5028  075302  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5029  075414  064551  040147  062477  REC1A:  .ASCII  /iig@?e_CPCd@Pr?oKa?_GA?_GA?_GA?_GA???????????D??S??_GO/        ; 54 cha
5030  075502  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5031  075614  064551  040147  062477  REC1B:  .ASCII  /iig@?e_CPCd@Pr?oKq?_GA?_GA?_GA?_GA???????????D??S??_GO/        ; 54 cha
5032  075702  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5033  076014  037477  037477  037477  REC2:   .ASCII  /????????????????????????????????????????????????????/
5034  076102  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5035  076214  037477  037477  037477  REC3:   .ASCII  /????????????????????????????????????????????????????/
5036  076302  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5037  076414  037477  037477  037477  REC4:   .ASCII  /??????????????????????G?O?F/<176>/NO@cF_LA?†/<173>/t?EO???????????/
5038  076502  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5039  076614  037477  037477  037477  REC5:   .ASCII  /????????????????N/<176>/w?????????@/<176><176><176><173>/????????F/<17
5040  076702  047077  077176  077176          .ASCII  /?N/<176><176><176><176><176>/w??????N/<176><176><176><176><176><176>/_?
5041  076744  037575  037477  037477          .ASCII  <175>/?????@/<176><176><173>/?F/<176><176>/o?????/<176><176>/o??N/<176><
5042  077014  057576  037477  037477  REC6:   .ASCII  <176>/_????B/<176>/_???F/<176>/w????@/<176>/o???@/<176><175>/??????†/<173
5043  077102  037573  037477  041077          .ASCII  <173>/????B/<176>/_????/<176><176>/?????/<176>/w????N/<176>/o????N/<175>
5044  077166  077176  037477  037477          .ASCII  <176><176>/?????/<176>/w????N/<176>/o????N/<175>
5045  077214  037477  037477  077102  REC7:   .ASCII  /????B/<176><173>/????B/<176>/_????/<176><176>/?????/<176><174>/????N/<1
5046  077271     176  037573  037477          .ASCII  <176><173>/????@/<176>/o/
5047  077302  037477  040077  077176          .ASCII  /???@/<176><176>/?????†/<175>/????†/<176>/_????F/<176>/_???N/<176>/w????
5048  077366  067576  037477  077100          .ASCII  <176>/o??@/<176><176>/?????B/<176><176>/_?@/<176><176>/o?/
5049  077414  037477  037477  077176  REC8:   .ASCII  /????/<176><176><176>/_B/<176><176><173>/?????F/<176><176><176><176><175
5050  077456  077176  077176  037537          .ASCII  <176><176><176><176>/_?????N/<176><176><176><176><176><176>/o??/
5051  077502  037477  037477  077176          .ASCII  /????/<176><176><176><176><176><176>/_??????@/<176><176><176><176><176>/
5052  077546  037477  037477  037477          .ASCII  /??????????/<176><176>/_????????????????????????/
5053  077614  037477  037477  037477  REC9:   .ASCII  /??????????????????????????????????????????????†/<176><176><176><176><17
5054  077702  057576  037477  043077          .ASCII  <176>/_???F/<176><176><176><176><176><176><176><176>/w???@/<176><176><17
5055  077736  037477  037477  077136          .ASCII  /????†/<176><176><176><176><176><176><176><176>/_???F/<176><176><176><17
5056  077776  077176  077176  077176          .ASCII  <176><176><176><176><176><176><176><175>/????†/<176>
5057  100014  077176  077176  077176  REC10:  .ASCII  <176><176><176><176><176><176><176>/_???F/<176><176><176><176><176><176>
5058  100052  037477  037477  037477          .ASCII  /??????????F/<176><173>/??????????/
5059  100102  077102  057576  037477          .ASCII  /B/<176><176>/_?????????@/<176><176><173>/??????????/<176><176><175>/_??
5060  100170  063176  057576  037477          .ASCII  <176>/f/<176>/_????????F/<176>/o/<176><173>/???/
5061  100214  037477  037477  041077  REC11:  .ASCII  /?????B/<176>/wF/<176>/_???????@/<176><173>/?/<176><173>/????????/<176><
5062  100275     176  037573  037477          .ASCII  <176><173>/???/
5063  100302  037477  037477  077116          .ASCII  /????N/<176>/_?F/<176>/_??????F/<176>/o??/<176><173>/??????B/<176>/w??F/
5064  100363     176  037573  037477          .ASCII  <176><173>/???????/<176><175>/???F/<176>/_?????†/<176>/??/
5065  100414  037477  075576  037477  REC12:  .ASCII  /??/<176><173>/?????N/<176>/_???F/<176>/_????F/<176>/o????/<176><173>/??
5066  100475     176  037573  037477          .ASCII  <176><173>/???/
5067  100502  037477  075576  037477          .ASCII  /??/<176><173>/????N/<175>/?????F/<176>/????B/<176>/??????/<176>
5068  100540  042137  052124  052124          .ASCII  /_DTTTTTTTTT?????????????????????????????/
5069  100614  037477  037477  037477  REC13:  .ASCII  /????????????????????????????????????????????????/
5070  100702  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5071  101014  037477  037477  037477  REC14:  .ASCII  /????????????????????????????????????????????????/
5072  101102  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5073  101214  037477  037477  037477  REC15:  .ASCII  /????????????????????????????????????????????????/
5074  101302  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5075  101414  037477  037477  037477  REC16:  .ASCII  /????????????????????????????????????????????????/
5076  101502  037477  037477  037477          .ASCII  /??????????????????????????????????????????????????????????????????
5077                                  .EVEN
5078                                  .LIST BEX
5079  101614                                ENDTST
 (3)  101614                          L10032:
```

```
  (3)  101614  104401                    TRAP    C$ETST
5080   101616                            ENDMOD
5081
5082
5083
5084
5085
5086
5087
5088
5089
5090
5093                                .SBTTL  MISCELANEOUS CONTROL FUNCTIONS TEST
5094                                ;MODULE MISCON.P11
5095
5096   101616                       BGNMOD
5097
5098                                ;++
5099                                ;               FUNCTIONAL DESCRIPTION
5100                                ;
5101                                ;       THE MISCELANEOUS CONTROL FUNCTIONS TEST WAS CREATED FOR USE ON
5102                                ;THE LN01 PRINTER.  IT IS A COMPILATION OF SUBTESTS THAT ARE SHORT IN
5103                                ;DURATION AND DO NOT REQUIRE A SEPARATE TEST ALL OF THERE OWN.  THE
5104                                ;FUNCTIONS THAT ARE TESTED ARE AS FOLLOWS:
5105                                ;       1: "CANCEL" CHARACTER
5106                                ;       2: "SUBSTITUTE" CHARACTER
5107                                ;       3: USE OF CONTROL CHARACTERS INSIDE ESCAPE AND CONTRL SEQUENCES
5108                                ;--
5109
5110                                ;               GLOBALS REFERENCED:
5111                                ;       MESSAGES, VARIABLES, SUBROUTINES
5112
5113   000000                       .REPT   0
5114
5115                                ;               PDL
5116                                ;
5117                                ;BEGIN ROUTINE MISCON
5118                                ;       DO RESET                                                ; RESET
5119                                ;       SELECT SIZE UNIT AS DECIPOINTS
5120                                ;       PRINT TEST ID
5121                                ;
5122                                ;                       "CANCEL" SECTION
5123                                ;
5124                                ;       MOVE TO ABSOLUTE POSITION 1 INCH (VERTICAL AND HORIZONTAL)
5125                                ;       WHILE SEQUENCE TABLE NE TO 0 DO                         ; DO FOR
5126                                ;       ;       SEND ESCAPE OR CONTROL SEQUENCE WITH "CANCEL" CHARACTER INSIDE  ; SEQUEN
5127                                ;       ENDDO
5128                                ;       SEND SECTION ID AND LINE LOCATION AND CR                ; LINE L
5129                                ;       SEND 1 "CANCEL" CHARACTER OUTSIDE A SEQUENCE            ; NOTHIN
5130                                ;                                                               ; SHOULD
5131                                ;                       "SUBSTITUTE" SECTION
5132                                ;
5133                                ;       MOVE TO ABSOLUTE POSITION 2 INCHES VERTICAL, 1 INCH HORIZONTAL
5134                                ;       SEND SECTION ID WITH LINE LOC.                          ; LINE L
5135                                ;       WHILE TABLE1 OF SEQUENCES NE TO 0 DO                    ; DO FOR
5136                                ;       ;       SEND ESC OR CONT SEQUENCE WITH "SUBSTITUTE" CHAR INSIDE  ; SHOULD
```

```
5137                                    :       ENDDO
5138                                    :       SEND  SUBSTITUTE" CHAR (OCTAL CODE 32) OUTSIDE SEQUENCE          ; SHOULD
5139                                    :
5140                                    :                   "CONTROL CHARACTERS INSIDE SEQUENCE" SECTION
5141                                    :
5142                                    :       CLEAR ALL HORIZONTAL AND VERTICAL TABS
5143                                    :       SET A VERTICAL TAB AT THE 4 INCH MARK
5144                                    :       SET A HORIZONTAL TAB AT THE 2 INCH MARK
5145                                    :       MOVE TO HORIZONTAL POSITION ABSOLUTE 1 INCH MARK
5146                                    :       MOVE RELATIVE VERTICALLY 1 INCH                                  ; RESULT
5147                                    :       SEND ESCAPE SEQUENCE TO CLEAR VERTICAL TABS
5148                                    :           INSIDE THE SEQUENCE:- SEND VT, CR, HT                        ; SHOULD
5149                                    :       SEND SECTION ID WITH LINE LOCATION MESSAGE                       ; LINE
5150                                    :       MOVE TO HORIZONTAL POSITION 1 INCH
5151                                    :       SEND SEQUENCE TO TURN UNDERLINE
5152                                    :           INSIDE THE SEQUENCE:  SEND LF,FF,HT                          ; SHOULD
5153                                    :       PRINT "BELID" MESSAGE                                            ; IDENTI
5154                                    :                                                                        ; SECTIO
5155                                    :       RESET THE PRINTER
5156                                    :       SELECT SIZE UNIT AS DECIPOINTS
5157                                    :       DO A FORM FEED
5158                                    .ENDR
5159
5160
5161
5162
5163
5164
5165
5166
5167
5168
5169  101616                                    BGNTST  20.
 (3)  101616                            T20::
5170
5171                                    ;               SOURCE CODE
5172
5173  101616                            LET OUTBUF    :B= #11                                                    ; CODE FOR HT
 (4)  101616  112737  000011  003114            MOVB    #11,OUTBUF
5174  101624                            LET OUTBUF+1 :B= #12                                                     ;       LF
 (4)  101624  112737  000012  003115            MOVB    #12,OUTBUF+1
5175  101632                            LET OUTBUF+2 :B= #13                                                     ;       VT
 (4)  101632  112737  000013  003116            MOVB    #13,OUTBUF+2
5176  101640                            LET OUTBUF+3 :B= #14                                                     ;       FF
 (4)  101640  112737  000014  003117            MOVB    #14,OUTBUF+3
5177  101646                            LET OUTBUF+4 :B= #15                                                     ;       CR
 (4)  101646  112737  000015  003120            MOVB    #15,OUTBUF+4
5178  101654                            LET OUTBUF+5 :B= #30                                                     ;       CANCEL
 (4)  101654  112737  000030  003121            MOVB    #30,OUTBUF+5
5179  101662                            LET OUTBUF+6 :B= #32                                                     ;       SUBSTITUTE
 (4)  101662  112737  000032  003122            MOVB    #32,OUTBUF+6
5180  101670                            LET OUTBUF+7 :B= #33                                                     ;       ESCAPE
 (4)  101670  112737  000033  003123            MOVB    #33,OUTBUF+7
5181  101676                            OUTPUT #REINIT,#2
5182  101740                            OUTPUT #SELDEC,#5                                                        ; DECIPOINTS AS PARAMETERS
5183  102002                            OUTPUT #MISCON,#42.                                                      ; TEST ID
```

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5184                                    ;
5185                                    ;                       "CANCEL " SECTION
5186                                    ;
5187  102044                            OUTPUT #ABP01,#12.                    ; ABSOLUTE POSITION 1 INCH VERTI
5188  102106                            LET R3 :* #SEQTAB
 (4)  102106  012703  104364                    MOV     #SEQTAB,R3
5189  102112                            LET R4 :* #CNTTAB
 (4)  102112  012704  104410                    MOV     #CNTTAB,R4
5190  102116                            WHILE (R3) NE #0 DO                   ; DO FOR EACH SEQUENCE IN TABLE
 (4)  102116                            50542$:
 (6)  102116  005713                            TST     (R3)
 (8)  102120  001002                            BNE     .+6
 (9)  102122  000137  102230                    JMP     50543$
5191  102126                                    OUTPUT (R3)+,(R4)+            ; OUTPUT THE SEQUENCE WITHOUT A
5192  102164                                    OUTPUT #OUTBUF+5,#1           ; ABORT THE SEQUENCE BY SENDING
5193  102226                            ENDDO
 (3)  102226  000733                            BR      50542$
 (3)  102230                            50543$:
5194  102230                            OUTPUT #CANSEC,#87.                   ; OUTPUT TEST ID AND LINE LOCATI
5195  102272                            OUTPUT #OUTBUF+5,#1                   ; SEND 1 CANCEL CHAR. NOTHING SH
5196  102334  004737  005306           JSR PC, QUIET
5197
5198                                    ;                       "SUBSTITUTE" SECTION
5199
5200  102340                            OUTPUT #ABP02,#13.                    ; ABSOLUTE POS. 2 INCHES VER AND
5201  102402                            OUTPUT #SUBSEC,#89.                   ; SECTION ID PLUS LINE LOCATION
5202  102444                            LET R3 :* #SQTAB1
 (4)  102444  012703  104376                    MOV     #SQTAB1,R3
5203  102450                            LET R4 :* #CNTTAB
 (4)  102450  012704  104410                    MOV     #CNTTAB,R4
5204  102454                            WHILE (R3) NE #0 DO                   ; DO FOR EACH ENTRY IN THIS TABL
 (4)  102454                            50544$:
 (6)  102454  005713                            TST     (R3)
 (8)  102456  001002                            BNE     .+6
 (9)  102460  000137  102566                    JMP     50545$
5205  102464                                    OUTPUT (R3)+,(R4)+            ; SEND ESC OR CONT SEQ WITHOUT A
5206  102522                                    OUTPUT #OUTBUF+6,#1           ; ABORT THE SEQUENCE BY SENDING
5207                                                                          ; SHOULD PRINT NOTHING
5208  102564                            ENDDO
 (3)  102564  000733                            BR      50544$
 (3)  102566                            50545$:
5209  102566                            OUTPUT #OUTBUF+6,#1                   ; SUBSTITUTE CHAR OUTSIDE SEQUEN
5210
5211                                    ;                       CONTROL CHARACTERS INSIDE SEQUENCE SECTION"
5212                                    ;
5213  102630                            OUTPUT #CLHVTB,#8.                    ; CLEAR ALL HOR AND VER TABS
5214  102672                            OUTPUT #STVR4,#7                      ; SET VERTICAL TAB AT 4 INCH MAR
5215  102734                            OUTPUT #STHOR2,#7                     ; SET HORIZONTAL TAB AT 2 INCH M
5216  102776                            OUTPUT #ABP01H,#7                     ; MOVE TO ABSOLUTE POSITION HORI
5217  103040                            OUTPUT #RLTV1,#6                      ; RELATIVE VERTICAL 1 INCH (SHOU
5218  103102                            OUTPUT #CONSEQ,#8.                    ; SEND SEQ TO CLEAR VERTICAL TAB
5219  103144                            OUTPUT #CONSEC,#107.                  ; SEND SECTION ID AND LINE LOCAT
5220  103206                            OUTPUT #ABP01H,#7                     ; HOR ABSOLUTE TO 1 INCH
5221  103250                            OUTPUT #CONSQ1,#8.                    ; SEND SEQ TO TURN ON UNDERLINE
5222  103312                            OUTPUT #BELID,#81.                    ; IDENTIFIES LINE LOC AS BEING 1
5223                                                                          ; AND IDENTIFIES THE LINE AS BE
```

```
                                        OUTPUT #REINIT,#2                                       ; RESET THE MACHINE TO DEFAULT
                                        OUTPUT #SELDEC,#5                                       ; SELECT DECIPOINTS
                                        OUTPUT #OUTBUF+3,#1                                     ; FORM FEED
103522  004737  005306                  JSR PC,QUIET                                            ; GUARANTEE THE FORM FEED
103526                                          EXIT TST
(3)  103526  104432                             TRAP    C$EXIT
(3)  103530  001072                             .WORD   L10033-.

                                        .NLIST BEX
                                        ;               LOCAL VARIABLES, TABLES, MESSAGES
103532  055433  030061  046555  MISCON: .ASCII  <33>/[10mMISCELLANEOUS CONTROL FUNCTIONS TEST 20/<12>
103607     042  040503  041516  CANSEC: .ASCII  /"CANCEL" SECTION - THIS LINE POSITION SHOULD BE APPROX. 1 INCH VERTICAL
103736  051442  041125  052123  SUBSEC: .ASCII  /"SUBSTITUTE" SECTION - THIS LINE POSITION SHOULD BE APPROX. 2 INCHES VE
104067     042  047503  052116  CONSEC: .ASCII  /"CONTROL CHARACTERS INSIDE A SEQUENCE" SECTION   LINE POSITION SHOULD B
104242  044124  051511  046040  BELID:  .ASCII  /THIS LINE SHOULD BE 1 LINE BELOW SECTION ID AND IT SHOULD BE UNDERLINED
        104364                  .EVEN
104364  104422  104463  104466  SEQTAB: .WORD   INTCAN,UNDSEQ,JUSSEQ,0,VECSEQ                   ; TABLE OF CANCEL SEQUEN
104376  104431  104463  104466  SQTAB1: .WORD   INTSUB,UNDSEQ,JUSSEQ,VECSEQ,0                  ; TABLE OF SUBSTITUTE SE
104410  000007  000003  000004  CNTTAB: .WORD   7,3,4,19.,0                                     ; TABLE OF BYTE COUNTS F
104422     033     030     033  INTCAN: .BYTE   33,30,33,133,30,33,120                          ; POSSIBLE SEQUENCE INTR
104431     033     032     033  INTSUB: .BYTE   33,32,33,133,32,33,120                          ; POSSIBLE SEQUENCE INTR
104440     033     133     060  VECSEQ: .BYTE   33,133,60,73,63,60,60,73,63,60,60,73,71,60,60,73,61,65,60      ; DRWVEC
104463     033     133     064  UNDSEQ: .BYTE   33,133,64                                       ; UNDERLINE SEQ WITHOUT
104466     033     133     060  JUSSEQ: .BYTE   33,133,60,40                                    ; TURN ON JUSTIFY SEQ WI
104472     033     133     067  ABP01:  .BYTE   33,133,67,62,60,144,33,133,67,62,60,140         ; ABSOLUTE POSITION 1 IN
104506     033     133     061  ABP02:  .BYTE   33,133,61,64,64,60,144,33,133 67,62,60,140      ;       "       2
104523     033     133     063  CLRVTB: .BYTE   33,133,63,147,33,133,64,147                     ; CLEAR ALL HOR AND VER
104533     033     133     062  STVR4:  .BYTE   33,133,62,70,70,60,166                          ; SET VER TAB AT 4 INCH
104542     033     133     061  STHOR2: .BYTE   33,133,61,64,64,60,165                          ; SET HOR TAB AT 2 INCH
104551     033     133     062  ABP03:  .BYTE   33,133,62,61,66,60,140                          ; ABSOLUTE HOR POSITION
104560     033     133     060  ABP01H: .BYTE   33,133,60,67,62,60,140                          ; ABSOLUTE HOR POSITION
104567     033     133     067  RLTV1:  .BYTE   33,133,67,62,60,145                             ; RELATIVE VER 1 INCH
104575     033     133     064  CONSEQ: .BYTE   33,133,64,13,15,12,11,147                               ; CLEAR VER TABS
104605     033     133     064  CONSQ1: .BYTE   33,133,64,12,15,14,11,155                               ; TURN ON UNDERL
        104616                  .EVEN
                                        .LIST BEX
104616  004737  005306                        JSR     PC,QUIET
104622                                          ENDTST
(3)  104622                             L10033:
(3)  104622  104401                             TRAP    C$ETST
104624                                          ENDMOD


                                        .SBTTL  INTERRUPT SERVICE ROUTINES
104624                                  BGNSRV
                                        ;
                                        ;++
                                        ;INTERRUPT VECTORS ARE ESTABLISHED DURING INITIALIZATION
```

```
5278                                    ;POINTING TO THE BASIC ROUTINES WHICH
5279                                    ;SET UP THE UNIT NUMBER CAUSING THE INTERRUPTS.
5280                                    ;LINE NUMBER IS RETURNED IN R2
5281                                    ;
5282                                    ;
5283            000000                  X=0
5284   104624   000020                  INTOO:  .REPT 16.
5285                                            SETPRI #PRIO4
5286                                            PUSH    R2
5287                                            LET R2 := #X
5288                                            INLINE <JMP     IODRV>
5289                                    X=X+2
5290                                            .ENDR
 (4)   104624   012700   000200                MOV     #PRIO4,R0
 (4)   104630   104441                         TRAP    C$SPRI
 (3)   104632   010246                         MOV     R2,-(SP)
 (5)   104634   012702   000000                MOV     #X,R2
 (3)   104640   000137   004542                JMP     IODRV
 (4)   104644   012700   000200                MOV     #PRIO4,R0
 (4)   104650   104441                         TRAP    C$SPRI
 (3)   104652   010246                         MOV     R2,-(SP)
 (5)   104654   012702   000002                MOV     #X,R2
 (3)   104660   000137   004542                JMP     IODRV
 (4)   104664   012700   000200                MOV     #PRIO4,R0
 (4)   104670   104441                         TRAP    C$SPRI
 (3)   104672   010246                         MOV     R2,-(SP)
 (5)   104674   012702   000004                MOV     #X,R2
 (3)   104700   000137   004542                JMP     IODRV
 (4)   104704   012700   000200                MOV     #PRIO4,R0
 (4)   104710   104441                         TRAP    C$SPRI
 (3)   104712   010246                         MOV     R2,-(SP)
 (5)   104714   012702   000006                MOV     #X,R2
 (3)   104720   000137   004542                JMP     IODRV
 (4)   104724   012700   000200                MOV     #PRIO4,R0
 (4)   104730   104441                         TRAP    C$SPRI
 (3)   104732   010246                         MOV     R2,-(SP)
 (5)   104734   012702   000010                MOV     #X,R2
 (3)   104740   000137   004542                JMP     IODRV
 (4)   104744   012700   000200                MOV     #PRIO4,R0
 (4)   104750   104441                         TRAP    C$SPRI
 (3)   104752   010246                         MOV     R2,-(SP)
 (5)   104754   012702   000012                MOV     #X,R2
 (3)   104760   000137   004542                JMP     IODRV
 (4)   104764   012700   000200                MOV     #PRIO4,R0
 (4)   104770   104441                         TRAP    C$SPRI
 (3)   104772   010246                         MOV     R2,-(SP)
 (5)   104774   012702   000014                MOV     #X,R2
 (3)   105000   000137   004542                JMP     IODRV
 (4)   105004   012700   000200                MOV     #PRIO4,R0
 (4)   105010   104441                         TRAP    C$SPRI
 (3)   105012   010246                         MOV     R2,-(SP)
 (5)   105014   012702   000016                MOV     #X,R2
 (3)   105020   000137   004542                JMP     IODRV
 (4)   105024   012700   000200                MOV     #PRIO4,R0
 (4)   105030   104441                         TRAP    C$SPRI
 (3)   105032   010246                         MOV     R2,-(SP)
```

```
(5)  105034  012702  000020          MOV     #X,R2
(3)  105040  000137  004542          JMP     IODRV
(4)  105044  012700  000200          MOV     #PRI04,R0
(4)  105050  104441                  TRAP    C$SPRI
(3)  105052  010246                  MOV     R2,-(SP)
(5)  105054  012702  000022          MOV     #X,R2
(3)  105060  000137  004542          JMP     IODRV
(4)  105064  012700  000200          MOV     #PRI04,R0
(4)  105070  104441                  TRAP    C$SPRI
(3)  105072  010246                  MOV     R2,-(SP)
(5)  105074  012702  000024          MOV     #X,R2
(3)  105100  000137  004542          JMP     IODRV
(4)  105104  012700  000200          MOV     #PRI04,R0
(4)  105110  104441                  TRAP    C$SPRI
(3)  105112  010246                  MOV     R2,-(SP)
(5)  105114  012702  000026          MOV     #X,R2
(3)  105120  000137  004542          JMP     IODRV
(4)  105124  012700  000200          MOV     #PRI04,R0
(4)  105130  104441                  TRAP    C$SPRI
(3)  105132  010246                  MOV     R2,-(SP)
(5)  105134  012702  000030          MOV     #X,R2
(3)  105140  000137  004542          JMP     IODRV
(4)  105144  012700  000200          MOV     #PRI04,R0
(4)  105150  104441                  TRAP    C$SPRI
(3)  105152  010246                  MOV     R2,-(SP)
(5)  105154  012702  000032          MOV     #X,R2
(3)  105160  000137  004542          JMP     IODRV
(4)  105164  012700  000200          MOV     #PRI04,R0
(4)  105170  104441                  TRAP    C$SPRI
(3)  105172  010246                  MOV     R2,-(SP)
(5)  105174  012702  000034          MOV     #X,R2
(3)  105200  000137  004542          JMP     IODRV
(4)  105204  012700  000200          MOV     #PRI04,R0
(4)  105210  104441                  TRAP    C$SPRI
(3)  105212  010246                  MOV     R2,-(SP)
(5)  105214  012702  000036          MOV     #X,R2
(3)  105220  000137  004542          JMP     IODRV
5291
5292
5293
5294
5295
5296
5297
5298
5299
5300
5301
5302                                  .SBTTL CLOCK SERVICE ROUTINE
5303                                  ;++
5304                                  ;UPDATES THE COUNTER AT A RATE OF 16.67 MILLISECONDS PER TICK
5305                                  ;AND UPDATES A SECOND COUNTER WHEN THE FIRST OVERFLOWS.
5306                                  ;
5307
5308  105224                          BGNSRV
5309  105224                          CLKTCK: SETPRI #PRI06
```

```
 (3)  105224  012700  000300          MOV     #PRI06,R0
 (3)  105230  104441                  TRAP    C$SPRI
5310  105232                        IF TICK EQ #0 THEN
 (6)  105232  005737  105310          TST     TICK
 (8)  105236  001402                  BEQ     .+6
 (9)  105240  000137  105256          JMP     50546$
5311  105244                            LET TICK := #60.          ;60 TICKS PER SECOND
 (4)  105244  012737  000074  105310  MOV     #60.,TICK
5312  105252                            LET TIME := TIME + #1
 (7)  105252  005237  105306          INC     TIME
5313  105256                        ENDIF
 (4)  105256                    50546$:
5314  105256                        LET TICK := TICK - #1         ;BACK UP SECOND TIMER
 (7)  105256  005337  105310          DEC     TICK
5315  105262                        IF CLKTYP EQ #2 THEN
 (6)  105262  023727  002316  000002  CMP     CLKTYP,#2
 (8)  105270  001402                  BEQ     .+6
 (9)  105272  000137  105304          JMP     50547$
5316  105276                            LET @CLKCSR := #100
 (4)  105276  012777  000100  075016  MOV     #100,@CLKCSR
5317  105304                        ENDIF
 (4)  105304                    50547$:
5318
5319  105304                    ENDSRV                            ;AND EXIT
 (3)  105304                    L10035:
 (2)  105304  000002                  RTI
5320                            ;
5321  105306  000000            TIME:   .WORD   0
5322  105310  000000            TICK:   .WORD   0
5323                            .SBTTL  HARDWARE PARAMETER SECTION
5324  105312                    BGNMOD
5325
5326                            ;++
5327                            ;THIS SECTION INCLUDES THE QUESTIONS WHICH REQUEST THE OPERATOR TO
5328                            ;FURNISH THE HARDWARE INFORMATION NECESSARY TO BUILD THE HARDWARE
5329                            ;P-TABLES.
5330                            ;
5331                            ;--
5332  105312                    BGNHRD
 (3)  105312  000010                  .WORD L10036-L$HARD/2
 (3)  105314                    L$HARD::
5333
5334  105314                          GPRMA   GETADR,0,0,160000,177516,YES
 (4)  105314  000031                  .WORD   T$CODE
 (4)  105316  105334                  .WORD   GETADR
 (4)  105320  160000                  .WORD   T$LOLIM
 (4)  105322  177516                  .WORD   T$HILIM
5335  105324                          GPRMA   GETVEC,2,0,110,770,YES
 (4)  105324  001031                  .WORD   T$CODE
 (4)  105326  105351                  .WORD   GETVEC
 (4)  105330  000110                  .WORD   T$LOLIM
 (4)  105332  000770                  .WORD   T$HILIM
5336  105334                    ENDHRD
 (2)                                  .EVEN
 (3)  105334                    L10036:
5337                            .NLIST BEX
```

```
                        HARDWARE PARAMETER SECTION

5338  105334  050114  030461  040440  GETADR: .ASCIZ  /LP11 ADDRESS/
5339  105351     111  052116  051105  GETVEC: .ASCIZ  /INTERRUPT VECTOR/
5340                                  .LIST BEX
5341                                  .EVEN
5342                                  .SBTTL  SOFTWARE PARAMETER SECTION
5343                                  ;
5344                                  ;++
5345                                  ;THIS SECTION INCLUDES THE QUESTIONS WHICH REQUEST THE OPERATOR TO FURNISH
5346                                  ;THE SOFTWARE INFORMATION NECESSARY TO BUILD THE SOFTWARE P-TABLES.
5347                                  ;
5348                                  ;
5349  105372                          BGNSFT
 (3)  105372  000010                          .WORD L10037 L$SOFT/2
 (3)  105374                          L$SOFT::
5350  105374                                  GPRML   MGTINT,0,1,YES
 (4)  105374  000130                          .WORD   T$CODE
 (4)  105376  105414                          .WORD   MGTINT
 (4)  105400  000001                          .WORD   1
5351  105402                                  GPRMD   GETMAX,2,D,377,1,255.,YES
 (4)  105402  001052                          .WORD   T$CODE
 (4)  105404  105452                          .WORD   GETMAX
 (4)  105406  000377                          .WORD   377
 (4)  105410  000001                          .WORD   T$LOLIM
 (4)  105412  000377                          .WORD   T$HILIM
5352  105414                          ENDSFT
 (2)                                          .EVEN
 (3)  105414                          L10037:
5353                                  .NLIST BEX
5354  105414  052522  020116  040515  MGTINT: .ASCIZ  /RUN MANUAL INTERVENTION TESTS/
5355  105452  052501  047524  051104  GETMAX: .ASCIZ  /AUTODROP ERROR COUNT/
5356                                  .LIST BEX
5357           105500                 .EVEN
5358                                  ;
5359
5360  105500  000020                  PATCH:  .BLKW   20
5361  105540                          LASTAD
 (2)                                          .EVEN
 (4)  105540  000000                          .WORD   0
 (4)  105542  000000                          .WORD   0
 (3)  105544                          L$LAST::
5362  105544                          ENDMOD
5363           000001                 .END
```

```
ABMAR   067236          4505    4604#
ABOVE   073541          4860    4970#
ABPO1   104472          5187    5246#
ABPO1H  104560          5216    5220    5252#
ABPO2   104506          5200    5247#
ABPO3   104551          5251#
ABREL   024656          2585    2613#
ABS3    063566          4331#
ABS7    063575          4332#
ABTBCT  067534          4539    4625#
ABTBL   067512          4538    4624#
ACRLF   004043 G        1078#   2717    2728    3701    3702    3711    3712    3719    3720    3727    3728
ACTIVE= 020000           950#   1233    1245    1250    1314    1316    1321    1595    1700    2439
ADR   = 000020 G          910#
AMAR    067062          4594    4595#
APTBL   044254          3426    3558#
ASBGIN  074402          4991#
ASDIA1  073424          4845    4967#
ASENDL  074456          5002#
ASENDP  074440          5001#
ASSDIA  073404          4844    4966#
ASSEMB= 000010           748     750
ASSI10  074410          4983    4984    4993#
ASSI11  074413          4983    4985    4994#
ASSI12  074416          4982    4983    4984    4995#
ASSI13  074421          4982    4983    4985    4996#
ASSI14  074424          4982    4983    4984    4997#
ASSI15  074427          4982    4983    4985    4998#
ASSI16  074432          4982    4983    4984    4999#
ASSI17  074435          4982    4983    4985    5000#
ASSTBL  074106          4983#
ATBL    044160          3425    3555#
ATHRUZ  050354          3691    3752#
AVEC    053735          4009    4040#
BELID   104242          5222    5236#
BELOW   073451          4859    4969#
BEM     033221          2982    2996#
BGNLD   074503          4914    5004#
BGNSEQ  043254          3512#   3568
BIN2DA  004330          1168#
BIT0  = 000001 G         910#
BIT00 = 000001 G         910#
BIT01 = 000002 G         910#
BIT02 = 000004 G         910#
BIT03 = 000010 G         910#
BIT04 = 000020 G         910#
BIT05 = 000040 G         910#
BIT06 = 000100 G         910#
BIT07 = 000200 G         910#   1660    1670
BIT08 = 000400 G         910#
BIT09 = 001000 G         910#
BIT1  = 000002 G         910#
BIT10 = 002000 G         910#
BIT11 = 004000 G         910#
BIT12   010000 G         910#
BIT13 - 020000 G         910#    950
```

CROSS REFERENCE TABLE -- USER SYMBOLS

```
BIT14  = 040000 G   910#  949
BIT15  = 100000 G   910#  948  1223  1307  1643  2379  2453  2470
BIT2   = 000004 G   910#
BIT3   = 000010 G   910#
BIT4   = 000020 G   910#
BIT5   = 000040 G   910#
BIT6   = 000100 G   910#
BIT7   = 000200 G   910#  1652  1717
BIT8   = 000400 G   910#
BIT9   = 001000 G   910#
BLANK    022301    2389  2490#
BMAR     067076    4594  4596#
BOE    = 000400 G   910#
BOTMAR   044023    3549#  3569  3576
BOTNUM   044155    3552#  3569  3576
BOTSEC   037447    3176  3179  3234#
BPTBL    044422    3432  3563#
BTBL     044346    3431  3560#
BUFADD   002344     993#  1341  1342  1369*  1430*  1525*  1709*  1710*  1712*  1715*  1787*  1790*  1791*
                   1811*  1816*  1851*  1856*  1857*  1865*  1869*  1877*  1881*  1884*  1886*  1887*  1888*
                   1941*  1942*  1973*  2008*  2014*  2123*  2125*  2130*  2135*  2138*  2142*  2144*  2147*
                   2149*  2150*  2157*  2215*  2217*  2218*  2239*  2244*  2291*  2293*  2294*  2295*  2296*
                   2306*  2314*  2318*  2323*  2330*  2338*  2388*  2389*  2412*  2416*  2421*  2483*  2583*
                   2584*  2585*  2586*  2587*  2588*  2589*  2592*  2593*  2595*  2599*  2600*  2601*  2602*
                   2604*  2605*  2606*  2714*  2715*  2716*  2717*  2718*  2719*  2725*  2726*  2728*  2729*
                   2730*  2732*  2733*  2735*  2736*  2737*  2738*  2899*  2900*  2901*  2902*  2912*  2914*
                   2915*  2917*  2919*  2921*  2926*  2927*  2929*  2930*  2933*  2937*  2938*  2940*  2941*
                   2943*  2947*  2948*  2949*  2953*  2957*  2959*  2960*  2962*  2966*  2968*  2969*  2971*
                   2975*  2976*  2978*  2979*  2982*  2983*  3142*  3143*  3144*  3145*  3146*  3147*  3148*
                   3149*  3150*  3151*  3152*  3153*  3154*  3155*  3156*  3157*  3158*  3159*  3161*  3164*
                   3166*  3167*  3168*  3170*  3171*  3173*  3174*  3175*  3176*  3178*  3179*  3181*  3182*
                   3183*  3184*  3185*  3187*  3190*  3192*  3193*  3194*  3195*  3196*  3408*  3409*  3410*
                   3411*  3412*  3414*  3415*  3417*  3420*  3421*  3423*  3428*  3434*  3437*  3438*  3439*
                   3440*  3444*  3445*  3447*  3450*  3455*  3461*  3466*  3467*  3468*  3470*  3474*  3475*
                   3479*  3480*  3484*  3487*  3488*  3489*  3490*  3491*  3682*  3683*  3684*  3685*  3686*
                   3687*  3689*  3690*  3691*  3693*  3694*  3695*  3697*  3698*  3700*  3701*  3702*  3704*
                   3705*  3707*  3709*  3711*  3712*  3714*  3716*  3719*  3720*  3722*  3723*  3724*  3725*
                   3727*  3728*  3730*  3731*  3732*  3733*  3734*  3842*  3843*  3844*  3845*  3846*  3850*
                   3851*  3852*  3853*  3854*  3856*  3857*  3859*  3860*  3862*  3864*  3865*  3866*  3986*
                   3987*  3988*  3989*  3990*  3994*  3996*  3997*  3998*  3999*  4000*  4197*  4198*  4199*
                   4200*  4204*  4205*  4206*  4207*  4208*  4209*  4211*  4212*  4214*  4215*  4216*  4218*
                   4219*  4222*  4225*  4227*  4228*  4229*  4231*  4232*  4233*  4236*  4239*  4241*  4242*
                   4243*  4244*  4245*  4247*  4252*  4253*  4254*  4255*  4256*  4257*  4258*  4262*  4265*
                   4266*  4270*  4273*  4275*  4276*  4277*  4278*  4487*  4488*  4492*  4496*  4497*  4498*
                   4499*  4500*  4503*  4504*  4505*  4506*  4508*  4509*  4517*  4522*  4523*  4524*  4526*
                   4527*  4528*  4529*  4531*  4536*  4537*  4540*  4541*  4543*  4544*  4546*  4547*  4555*
                   4559*  4561*  4562*  4563*  4840*  4841*  4842*  4843*  4844*  4845*  4846*  4847*  4848*
                   4849*  4852*  4853*  4854*  4855*  4856*  4857*  4859*  4860*  4861*  4862*  4914*  4917*
                   4922*  4927*  4932*  4935*  4936*  4937*  4938*  4942*  4943*  4945*  4946*  4947*  4948*
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                   5205*  5206*  5209*  5213*  5214*  5215*  5216*  5217*  5218*  5219*  5220*  5221*  5222*
                   5224*  5225*  5226*
BUFCNT   002346     995#  1343  1344  1369*  1430*  1525*  1709*  1710*  1712*  1715*  1787*  1790*  1791*
                   1811*  1816*  1851*  1856*  1857*  1865*  1869*  1877*  1881*  1884*  1886*  1887*  1888*
                   1941*  1942*  1973*  2008*  2014*  2123*  2125*  2130*  2135*  2138*  2142*  2144*  2147*
                   2149*  2150*  2157*  2215*  2217*  2218*  2239*  2244*  2291*  2293*  2294*  2295*  2296*
```

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BUFREP 002350 997# 1345 1369# 1430# 1525# 1709# 1710# 1712# 1715# 1787# 1790# 1791# 1811#
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```
                        4500▲  4503▲  4504▲  4505▲  4506▲  4508▲  4509▲  4517▲  4522▲  4523▲  4524▲  4526▲  4527▲
                        4528▲  4529▲  4531▲  4536▲  4537▲  4540▲  4541▲  4543▲  4544▲  4546▲  4547▲  4555▲  4559▲
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                        5225▲  5226▲
BYTTBL  053000          3992   4010#
CANSEC  103607          5194   5233#
CCNT    002300           962#  1800▲  2226▲
CHAR    011722          1795▲  1797▲  1801   1802▲  1803▲  1804   1805▲  1806▲  1820#
CHAR24  057737          4294#
CHAR44  057663          4293#
CHRGEN  002304           964#
CK1     006342          1509#
CLEAN   007276          1589#
CLEART  067333          4606   4610#
CLHVTB  104523          5213   5248#
CLKCSR  002322           977#  1502▲  1503▲  1513▲  1516▲  1604▲  5316▲
CLKENA  002330           980#
CLKSET  002324           978#
CLKTCK  105224          5309#
CLKTYP  002316           972#  1497▲  1500▲  1511▲  1519   1602   1606   5315
CLKVEC  002326           979#  1505▲  1506   1514▲  1603   1607
CLOCKP  002320           976#  1501▲  1502   1512▲  1513
CLRHOR  036610          3146   3167   3208#
CLRTAB  043170          3508#
CLRUND  047760          3724   3730   3739#
CLRVER  036604          3145   3207#
CMAR    067112          4594   4597#
CNTTAB  104410          5189   5203   5240#
COMMEN  073632          4861   4971#
CONSEC  104067          5219   5235#
CONSEQ  104575          5218   5254#
CONSQ1  104605          5221   5255#
COUNT   002276           961#  1861▲  1873▲  1948▲  1983▲  2131▲  2151▲  2152   2913▲  2918▲  2928▲  2939▲  2958▲
                        2967▲  2977▲  3160▲  3163▲  3169▲  3177▲  3186▲  3189▲  3413▲  3446▲  3483▲  3715▲  3721▲
                        3849▲  4213▲  4215   4220▲  4221   4224   4228   4234▲  4235   4238   4243   4525▲  4944▲
COUNTD  004536          1172▲  1177▲  1180   1181▲  1182   1189▲  1204#
CPTBL   044646          3453   3572#
CR    = 000015 G         917#
CSRERR  003342          1065#  1647   2381
CTBL    044554          3452   3568#
CURADD  002546          1015#  1228   1229▲  1240▲  1242   1243▲  1341▲  2441▲
CURCNT  002746          1027#  1227   1234▲  1241▲  1244▲  1326   1343▲  1346   1382▲  1464▲  1596▲  2440▲  2481▲
C$AU  = 000052           748#
C$AUTO= 000061           748#   818
C$BRK = 000022           748#
C$BSEG= 000004           748#
C$BSUB= 000002           748#
C$CEFG= 000045           748#
C$CLCK= 000062           748#  1498   1509
C$CLEA= 000012           748#  1610
C$CLOS= 000035           748#
C$CLP1= 000006           748#
```

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C$CVEC= 000036          7480  1603
C$DCLN= 000044          7480  1389
C$DODU= 000051          7480
C$DRPT= 000024          7480
C$DU  = 000053          7480
C$EDIT= 000003          7480   769
C$ERDF= 000055          7480
C$ERHR= 000056          7480  1134  1139  1145  1647  1664  1674  1698  1728  2381  2422  2460  2477
C$ERRO= 000060          7480
C$ERSF= 000054          7480
C$ERSO= 000057          7480
C$ESCA= 000010          7480
C$ESEG= 000005          7480
C$ESUB= 000003          7480
C$ETST= 000001          7480  1752  1829  1899  2089  2185  2260  2348  2508  2641  2750  3001  3237
                       3581  3759  3879  4048  4335  4661  5079  5259
C$EXIT= 000032          7480  1434  1526  1719  1818  1891  2016  2161  2246  2341  2368  2371  2485
                       2608  2740  2985  3201  3493  3736  3868  4002  4280  4565  4957  5228
C$GETB= 000026          7480
C$GETW= 000027          7480
C$GMAN= 000043          7480  1454  2408  2430  2452  2456  2469  2473
C$GPHR= 000042          7480  1404  1460
C$GPLO= 000030          7480
C$GPRI= 000040          7480
C$INIT= 000011          7480  1541
C$INLP= 000020          7480
C$MANI= 000050          7480  1443  2366
C$MEM = 000031          7480
C$MSG = 000023          7480
C$OPEN= 000034          7480
C$PNTB= 000014          7480
C$PNTF= 000017          7480  1384  1388  1440  1441  1446  1520  1521  2405  2406  2407  2428  2449
                       2450  2451  2454  2455  2467  2468  2471  2472
C$PNTS= 000016          7480
C$PNTX= 000015          7480
C$QIO = 000377          7480
C$RDBU= 000007          7480
C$REFG= 000047          7480  1422  1424
C$RESE= 000033          7480  1438  1587
C$REVI= 000003          7480   769
C$RFLA= 000021          7480
C$RPT = 000025          7480
C$SEFG= 000046          7480
C$SPRI= 000041          7480  1428  1523  1586  1609  1681  1692  1708  5290  5309
C$SVEC= 000037          7480  1482  1506  1566  1607  1682  1693
C$TPRI= 000013          7480
DATPTH  011724          1791  1821#
DEBUG = ****** U        2653  2762  3012  3593  3771  3891  4060  4347  4673  5091  5271
DECFIN  004052 G        1060# 1712  1787  1857  2123  2215  2291  2901  3193  3410  3862  4252  4842
                       4938
DECLCS  051704          3850  3871#
DEFMAR  043713          3547# 3568  3570
DEFMR1  037372          3155  3229#
DEFMR2  037402          3156  3230#
DEL   = 000177 G         918#
DFAULT  010634          1710  1742#
```

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DFPTBL  002252 G          803#
DIAGMC= 000000            748      750
DIAGTB  074364           4939     4990#
DIAGX   074514           4940     5007#
DIAGO   074532           5007     5008#
DIAG1   074547           5007     5009#
DIAG12  074616           4990     5013#
DIAG13  074643           4990     5015#
DIAG14  074670           4990     5017#
DIAG15  074715           4990     5019#
DIAG16  074742           4990     5021#
DIAG17  074767           4990     5023#
DIAG2   074564           5007     5010#
DIAG3   074601           5007     5011#
DIGITS  004540           1174*    1205#
DISANL  027126           2718     2743#
DMAR    067126           4594     4598#
DONE    013132           1884     1894#
DOORDY  023372           2471     2503#
DOORD1  023441           2472     2504#
DOORSW  023265           2467     2501#
DOOSWI  003556           1069#    2477
DOOSW1  023342           2468     2502#
DPTBL   045010           3459     3577#
DROPED= 040000            949#    1303     1381     1491     1595     1700
DROPIT  005354           1152     1381#
DRULE1  043636           3543#    3562
DRULE2  043664           3545#    3569
DRWVEC  052632           3987     3998     4006#
DSSU    067504           4546     4622#
DTBL    044740           3458     3574#
DVEC    053417           4009     4029#
EF.CON= 000036 G          910#
EF.NEW= 000035 G          910#
EF.PWR= 000034 G          910#
EF.RES= 000037 G          910#    1424
EF.STA= 000040 G          910#    1422
EMAR    067142           4594     4599#
ENABNL  027177           2729     2744#
ENDHAB  043566           3535#    3555     3556     3557     3560
ENDHR   043565           3534#    3556
ENDHT   043564           3533#
ENDLD   074511           4935     5005#
ENDLRM  043562           3531#
ENDPLP  043570           3537#
ENDTBM  043563           3480     3532#    3568     3569     3570     3574     3575
ENDTS   044113           3488     3550#
ENDVAB  043567           3536#    3569     3576
END2    010224           1699#    1729     1736
ENJUS   063472           4275     4323#
EOIGN   042772           3487     3502#
EOPLP   042676           3470     3501#
ERFLG = 000400           1129#    1335#
ERRCOD  002332            981#    1129     1155*    1258*    1299*    1308*    1320*    1330*    1334     1451*    2438*
ERRFLG  002334            983#    2393*    2410*    2418     2419     2426*    2437*
ERROR = 100000            948#    1154     1257     1309     1322     1595     1644     1661     1671     1700     2439
```

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GETVEC  105351          5335    5339#
GMAR    067172          4594    4601#
GRID    025507          2593    2630#
GRID1   025654          2595    2637#
GVEC    053545          4009    4034#
G$CNTO= 000200           7488#
G$DELM= 000372           7488#  1317   1432   1654   1685   1695
G$DISP= 000003           7488#
G$EXCP= 000400           7488#
G$HILI= 000002           7488#
G$LOLI= 000001           7488#
G$NO  = 000000           7488#
G$OFFS= 000400           7488#  1454   2408   2430   2452   2456   2469   2473   5334   5335   5350   5351
G$OFSI= 000376           7488#  1454   2408   2430   2452   2456   2469   2473   5334   5335   5350   5351
G$PRMA= 000001           7488#  5334   5335
G$PRMD= 000002           7488#  5351
G$PRML= 000000           7488#  1454   2408   2430   2452   2456   2469   2473   5350
G$RADA= 000140           7488#
G$RADB= 000000           7488#
G$RADD= 000040           7488#  5351
G$RADL= 000120           7488#  1454   2408   2430   2452   2456   2469   2473   5350
G$RADO= 000020           7488#  5334   5335
G$XFER= 000004           7488#
G$YES = 000010           7488#  1454   2408   2430   2452   2456   2469   2473   5334   5335   5350   5351
HANRDY  023132          2454    2499#
HANRD1  023217          2455    2500#
HANRSW  022675          2449    2496#
HANSW1  003503          1068#   2460
HANSW1  023006          2450    2497#
HANSW2  023073          2451    2498#
HILOSQ  025427          2600    2602    2627#
HMAR    067206          4594    4602#
HOE   = 100000 G         910#
HORA    067554          4624    4626#
HORB    067562          4624    4627#
HORC    067571          4624    4628#
HORD    067600          4624    4629#
HORDEF  032562          2912    2990#
HORE    067607          4624    4630#
HORF    067624          4624    4631#
HORG    067641          4624    4632#
HORH    067656          4624    4633#
HORTB1  037115          3152    3182    3220#
HORTB2  037237          3153    3183    3224#
HOR3    067752          4635    4639#
HOR4    070222          4655    4656#
HOR5    070232          4655    4657#
HOR6    070242          4655    4658#
IBE   = 010000 G         910#
IDMAR   066636          4581#
IDU   = 000040 G         910#
IDVCNT  067712          4553    4636#
IDVEC   067666          4552    4635#
IER   = 020000 G         910#
IGNORA  043606          3539#   3564    3566
IGNORB  043611          3540#   3564    3566
```

IGNORC	043615	3541#	3566											
IGNORE	007202	1506	1549#	1607										
IGNOR1	043571	3538#												
IGNOR2	043623	3542#												
IGNTBL	044532	3476	3566#											
IGNTBP	044544	3477	3567#											
IGSEC	043103	3484	3503#											
IGTBL	044474	3441	3564#											
IGTBLP	044514	3442	3565#											
IMAR	067222	4594	4603#											
INDEX	002340	988#												
INHINT	002264	828#	2370											
INSTRC	024751	2586	2614#											
INSTR1	025140	2587	2616#											
INTCAN	104422	5238	5241#											
INTERR	010516	1682	1726#											
INTER1	003622	1070#												
INTFAC	010554	1709	1740#											
INTHDL	010546	1693	1736#											
INTLK	022244	2388	2489#											
INTSUB	104431	5239	5242#											
INTOO	104624	1480	5284#											
IOCTRL	004740	1278#	1369	1430	1525	1709	1710	1712	1715	1787	1790	1791	1811	1816
		1851	1856	1857	1865	1869	1877	1881	1884	1886	1887	1888	1941	1942
		1973	2008	2014	2123	2125	2130	2135	2138	2142	2144	2147	2149	2150
		2157	2215	2217	2218	2239	2244	2291	2293	2294	2295	2296	2306	2314
		2318	2323	2330	2338	2388	2389	2412	2416	2421	2483	2583	2584	2585
		2586	2587	2588	2589	2592	2593	2595	2599	2600	2601	2602	2604	2605
		2606	2714	2715	2716	2717	2718	2719	2725	2726	2728	2729	2730	2732
		2733	2735	2736	2737	2738	2899	2900	2901	2902	2912	2914	2915	2917
		2919	2921	2926	2927	2929	2930	2933	2937	2938	2940	2941	2943	2947
		2948	2949	2953	2957	2959	2960	2962	2966	2968	2969	2971	2975	2976
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		3414	3415	3417	3420	3421	3423	3428	3434	3437	3438	3439	3440	3444
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		4205	4206	4207	4208	4209	4211	4212	4214	4215	4216	4218	4219	4222
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I$DU  = 000041           748#
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                        2751#   2765#   3014#   3017#   3239#   3243#   3582#   3596#   3760#   3775#   3880#   3895#   4049#
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I$PROT= 000040           748#    774#
I$PTAB= 000041           748#
I$PWR = 000041           748#
I$RPT = 000041           748#
I$SEG = 000041           748#   1627    1784    1850    1938    2121    2210    2288    2364    2581    2712    2897    3134
                        3388    3673    3840    3985    4188    4472    4828    5169
I$SETU= 000041           748#
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I$SRV = 000041           748#   1725#   1730#   1734#   1737#   5274#   5308#   5319#
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                        3388    3673    3840    3985    4188    4472    4828    5169
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JUSSPA  057616          4285#
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JUSTOF  054062          4045#
JUSTON  054055          4044#
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LETTBL  052750          3991    4009#
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LFM     033040          2976    2995#
LINCNT  002272           959#   1810*   1949*   1984*   2146*   2223*   2224*   2230    2237    2242    2409*   2413*   2414
                        2418
LN01TB  070212          4557    4655#
LOBYTE= 000377           951#   1595
LOE   = 040000 G         910#
LOOP    033350          2923*   2946    3000#
LOT   = 000010 G         910#
LPBUF   002446          1009#   1228*   1242*   1471*   1669*
LPCSR   002352          1003#   1156*   1223    1235*   1246*   1251*   1307    1347*   1383*   1470*   1471    1643    1648*
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                        2470    2479*
LPDROP  004060          1092#   1384
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L$DUT   002072 G          7690
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L$ENVI  002044 G          7690
L$ETP   002102 G          7690
L$EXP1  002046 G          7690
L$EXP4  002064 G          7690
L$EXP5  002066 G          7690
L$HARD  105314 G          769     5332#
L$HIME  002120 G          7690
L$HPCP  002016 G          7690
L$HPTP  002022 G          7690
L$HW    002252 G          769      803#
L$ICP   002104 G          7690
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L$LADP  002026 G          7690
L$LAST  105544 G          769     5361#
L$LOAD  002100 G          7690
L$LUN   002074 G          7690    1133#   1138#   1144#   1285#   1288#   1298    1355#   1384    1402#   1403    1404    1405#
                         1459#    1460    1462    1590#   1593    1646#   1662#   1673#   1697#   1727#   2447#   2459#   2476#
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L$NAME  002000 G          7690
L$PRIO  002042 G          7690
L$PROT  002122 G          769     7740#
L$PRT   002112 G          7690
L$REPP  002062 G          7690
L$REV   002010 G          7690
L$SOFT  105374 G          769     5349#
L$SPC   002056 G          7690
L$SPCP  002020 G          7690
L$SPTP  002024 G          7690
L$STA   002030 G          7690
L$SW    002264 G          769      826#
L$TEST  002114 G          7690
L$TIML  002014 G          7690
L$UNIT  002012 G          7690    1284    1403    1439    1458    1564    1589    1628    2126    2374
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L10002  002260            818#
L10003  002270            826     835#
L10004  007200           1434    1526    1541#
L10005  007454           1610#
L10006  011224           1719    1752#
L10007  010544           1730#
L10010  010552           1737#
L10011  011772           1818    1829#
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L10013  015152           2016    2089#
L10014  016514           2161    2185#
L10015  017314           2246    2260#
L10016  020436           2341    2348#
L10017  023474           2368    2371    2485    2508#
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L10027  054070          4002    4048#
L10030  063604          4280    4335#
L10031  070252          4565    4661#
L10032  101614          4957    5079#
L10033  104622          5228    5259#
L10035  105304          5319#
L10036  105334          5332    5336#
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MIDSEC  037443          3174    3233#
MIDSEQ  043561          3530#   3568
MISCON  103532          5183    5232#
MRESET  006661          1531#
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MSGCNT  002606          1018#   1241    1344*
MULINE  017157          2218    2252#
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NO      057661          4292#
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NONBUF  014124          1943    2024#
NONCHR  014010          1942    2021#
NORMAR  066673          4497    4509    4585#
NOSPA   057656          4291#
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NVEC    053203          4009    4021#
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OFFJUS  063551          4211    4232    4244    4266    4328#
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OFFUN   067437          4607    4616#
ON      057654          4290#
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PL1	051773		3851	3853	3856	3874#								
PL2	051777		3852	3875#										
PL3	052005		3854	3876#										
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PORSQ	013150		1881	1895#										
PORT	066374		4498	4569#										
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REC1B   075614     4989  5031#
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RESVEC  007204 G   1562#  1601  1707
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RMANL   027337     2719  2735  2746#
SCALE   033340     2919  2997#
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SEC2    066430     4571#  4606
SEC3    066456     4523  4572#
SEC4    066513     4537  4573#
SEC5    066542     4574#  4635
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SEQEVE	074000	4978#												
SEQODD	074017	4979#												
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SMANL	027345	2730	2747#											
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SPAJUS	057626	4215	4228	4243	4286#									
SPAOFF	057612	4284#												
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STOPS3	037415	3168	3231#											
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SUBSEC	103736	5201	5234#											
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		5349	5361#											
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		1384	1388	1389	1404	1422	1423	1424	1425	1428	1432	1434	1438	1440
		1441	1443	1444	1446	1454	1460	1461	1482	1498	1506	1509	1520	1521
		1523	1526	1541	1566	1586	1587	1603	1607	1609	1610	1647	1654	1664
		1674	1681	1682	1685	1692	1693	1695	1698	1708	1719	1728	1730	1737
		1752	1818	1829	1891	1899	2016	2089	2161	2185	2246	2260	2341	2348
		2366	2367	2368	2371	2381	2405	2406	2407	2408	2422	2428	2430	2449
		2450	2451	2452	2454	2455	2456	2460	2467	2468	2469	2471	2472	2473
		2477	2485	2508	2608	2641	2740	2750	2985	3001	3201	3237	3493	3581
		3736	3759	3868	3879	4002	4048	4280	4335	4565	4661	4957	5079	5228
		5259	5290	5309	5319	5332	5334	5335	5336	5349	5350	5351	5352	5361
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		1829	1899	2089	2185	2260	2348	2408	2430	2452	2456	2469	2473	2508
		2641	2750	3001	3237	3581	3759	3879	4048	4335	4661	5079	5259	5319
		5336	5352											
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		3134	3388	3673	3840	3985	4188	4472	4828	5169				
SYM	= 000037	1129#												
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		1386#	1405#	1431#	1458#	1459#	1462#	1471#	1479#	1480#	1486#	1491#	1567#	1568#
		1589#	1590#	1593#	1595#	1628#	1642#	1644#	1645#	1653#	1661#	1663#	1671#	1672#
		1683#	1684#	1691#	1694#	1696#	1700#	1726#	1793#	1800#	1803#	1806#	1810#	1949#
		1954#	1961#	1975#	1984#	1989#	1996#	2010#	2126#	2129#	2151#	2224#	2226#	2232#
		2237#	2238#	2300#	2302#	2309#	2324#	2326#	2333#	2374#	2377#	2378#	2380#	2398#
		2413#	2423#	2431#	2439#	2445#	2446#	2458#	2464#	2465#	2475#	2597#	2724#	2731#

		2913#	2918#	2932#	2944#	5312#	5314#							
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		1589#	1590#	1593#	1595#	1628#	1642#	1644#	1645#	1653#	1661#	1663#	1671#	1672#
		1683#	1684#	1691#	1694#	1696#	1700#	1726#	1793#	1800#	1803#	1806#	1810#	1949#
		1954#	1961#	1975#	1984#	1989#	1996#	2010#	2126#	2129#	2151#	2224#	2226#	2232#
		2237#	2238#	2300#	2302#	2309#	2324#	2326#	2333#	2374#	2377#	2378#	2380#	2398#
		2413#	2423#	2431#	2439#	2445#	2446#	2458#	2464#	2465#	2475#	2597#	2724#	2731#
		2913#	2918#	2932#	2944#	5312#	5314#							
S$LSYM=	010000	748#	810#	818#	835#	1454#	1541#	1610#	1730#	1737#	1752#	1829#	1899#	2089#
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		3237#	3581#	3759#	3879#	4048#	4335#	4661#	5079#	5259#	5319#	5336#	5352#	
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S2	067456	4527	4528	4619#										
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TABTST	036560	3144	3206#											
TABUCT	067274	4515	4608#											
TABUND	067246	4514	4606#											
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TDONE	051755	3860	3873#											
TEM	032724	2994#												
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TEXTBL	063506	4259	4267	4325#										
TEXTBP	063526	4260	4268	4326#										
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TEXT2	062251	4313#	4325											
TEXT3	062476	4315#	4325											
TEXT4	062700	4317#	4325											
TEXT5	063110	4319#	4325											
TEXT6	063257	4321#	4325											
TICK	105310	5310	5311*	5314*	5322#									
TIME	105306	5312*	5321#											
TIMOUT=	000002	924#	1320											
TOPBOT	025316	2588	2618#											
TOPMAR	043736	3548#	3568	3571	3574	3575								
TOPNUM	044127	3551#	3568	3571	3574	3575								
TOPSEC	037435	3171	3232#											
TOPVEC	053074	3989	4017#											
TSET	067337	4606	4611#											
TSTMRA	042514	3411	3498#											
TSTMRB	042552	3499#	3570											
TVEC	053665	4009	4038#											
TXERR	003655	1071#	1134											
TXNOIN	003727	1073#	1145											
T$ARGC=	000001	769#	1384#	1388#	1440#	1441#	1446#	1520#	1521#	2405#	2406#	2407#	2428#	2449#
		2450#	2451#	2454#	2455#	2467#	2468#	2471#	2472#					
T$CODE=	001052	1454#	2408#	2430#	2452#	2456#	2469#	2473#	5334#	5335#	5350#	5351#		
T$ERRN=	000012	748#	1134#	1139#	1145#	1647#	1664#	1674#	1698#	1728#	2381#	2422#	2460#	2477#
T$EXCP=	000000	5334#	5335#	5351#										
T$FLAG=	000040	1434#	1526#	1719#	1818#	1891#	2016#	2161#	2246#	2341#	2368#	2371#	2485#	2608#

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                  5079   5259   5319   5336   5352
T$LTNO= 000024    5361#
T$NEST= 000000     748#   766#   774#   778#   803#   810#   814#   818#   826#   835#   897#   900#  1410#
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                  1754#  1769#  1784#  1829#  1831#  1845#  1850#  1899#  1901#  1915#  1938#  2089#  2091#
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                  2364#  2508#  2510#  2513#  2581#  2641#  2642#  2658#  2712#  2750#  2751#  2765#  2897#
                  3001#  3014#  3017#  3134#  3237#  3239#  3243#  3388#  3581#  3582#  3596#  3673#  3759#
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T$NSO = 000010     766#   897#   900#  1410  1418#  1612   1616#  1754   1769#  1831   1845#  1901   1915#
                  2091   2105#  2186   2200#  2261   2273#  2350   2354#  2510   2513#  2642   2658#  2751
                  2765#  3014   3017#  3239   3243#  3582   3596#  3760   3775#  3880   3895#  4049   4065#
                  4336   4352#  4662   4678#  5080   5096#  5260   5274#
T$NS1 = 000000     774#   778   803#   810   814#   818   826#   835   1419#  1541   1585#  1610   1627#
                  1752   1784#  1829   1850#  1899   1938#  2089   2121#  2185   2210#  2260   2288#  2348
                  2364#  2508   2581#  2641   2712#  2750   2897#  3001   3134#  3237   3388#  3581   3673#
                  3759   3840#  3879   3985#  4048   4188#  4335   4472#  4661   4828#  5079   5169#  5259
                  5308#  5319   5324#  5362
T$NS2 = 000005    1725#  1730   1734#  1737   5332#  5336   5349#  5352
T$PTNU= 000000     748#
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T$SEGL= 177777     748#
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                  3388#  3673#  3840#  3985#  4188#  4472#  4828#  5169#
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                  4472#  4828#  5169#  5274#  5308#  5332#  5349#
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                  2016#  2089#  2091#  2161#  2185#  2186#  2246#  2260#  2261#  2341#  2348#  2350#  2368#
                  2371#  2408#  2430#  2452#  2456#  2469#  2473#  2485#  2508#  2510#  2608#  2641#  2642#
                  2740#  2750#  2751#  2985#  3001#  3014#  3201#  3237#  3239#  3493#  3581#  3582#  3736#
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                  1438   1440   1441   1443   1446   1454   1460   1482   1498   1506   1509   1520   1521
                  1523   1526   1541   1566   1586   1587   1603   1607   1609   1610   1647   1664   1674
                  1681   1682   1692   1693   1698   1708   1719   1728   1752   1818   1829   1891   1899
                  2016   2089   2161   2185   2246   2260   2341   2348   2366   2368   2371   2381   2405
                  2406   2407   2408   2422   2428   2430   2449   2450   2451   2452   2454   2455   2456
                  2460   2467   2468   2469   2471   2472   2473   2477   2485   2508   2608   2641   2740
                  2750   2985   3001   3201   3237   3493   3581   3736   3759   3868   3879   4002   4048
                  4280   4335   4565   4661   4957   5079   5228   5259   5290   5309
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T$$HAR= 010036         5332#  5336
T$$HW = 010001          803#   810
T$$INI= 010004         1419#  1434   1526   1541
T$$PRO= 010000          774#
T$$SOF= 010037         5349#  5352
T$$SRV= 010035         1725#  1730   1734#  1737   5274#  5308#  5319
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T$$TES= 010033         1627#  1719   1752   1784#  1818   1829   1850#  1891   1899   1938#  2016   2089   2121#
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                       4335   4472#  4565   4661   4828#  4957   5079   5169#  5228   5259
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T1A     007472         1635#  1706
T1B     010244         1640   1707#
T1C     007476         1634   1637#
T10     025724 G        786   2712#
T11     027356 G        786   2897#
T12     033354 G        786   3134#
T13     037460 G        786   3388#
T14     045074 G        786   3673#
T15     050422 G        786   3840#
T16     052016 G        786   3985#
T17     054072 G        786   4188#
T18     063606 G        786   4472#
T19     070254 G        786   4828#
T2      011226 G        786   1784#
T20     101616 G        786   5169#
T3      011774 G        786   1850#
T4      013204 G        786   1938#
T5      015154 G        786   2121#
T6      016516 G        786   2210#
T7      017316 G        786   2288#
T8      020440 G        786   2364#
T9      023476 G        786   2581#
UAM   = 000200 G        910#
UNDER   053030         3988   4011#
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UNDMSG  050170         3690   3747#
UNDON   047764         3684   3689   3722   3740#
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UNDSEQ  104463         5238   5239   5244#
UNDTTL  050052         3686   3745#
UNDUND  050265         3714   3749#
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UNON    063556         4222   4236   4329#
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VERP03  053046          3990    4014#
VERP05  053055          4015#
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VERTB1  036640          3149    3211#
VERTB2  036762          3150    3215#
VER2    066627          4496    4580#
VER3    066664          4499    4584#
VER5    067443          4522    4617#
VER6    067462          4536    4620#
VER7    067734          4635    4637#
VER8.5  067743          4635    4638#
VFIVE   025402          2612    2624#
VFOUR   025373          2612    2623#
VFUCMD  002342           989#
VONEHF  025346          2601    2620#
VPA     020430          2294    2346#
VSIX    025411          2612    2625#
VSIXHF  025420          2599    2626#
VTHREE  025364          2612    2622#
VTWO    025355          2612    2621#
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XVER    037106          3151    3219#
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X$FALS= 000040           748#
X$OFFS= 000400           748#
X$TRUE= 000020           748#
X0      016246          2166#   2180    2181
X1      016260          2167#   2180    2181
X11     016412          2147    2177#
X2      016272          2168#   2181
X3      016304          2169#   2181
X4      016316          2170#   2181
X5      016330          2171#   2181
X6      016342          2172#   2181
X7      016354          2173#   2181
X8      016366          2174#   2181
X9      016400          2175#   2181
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                        1319    1324    1325    1326    1334    1336    1346    1356    1387    1403    1406    1431    1433
                        1439    1459    1492    1499    1510    1519    1565    1569    1590    1600    1602    1606    1643
                        1652    1653    1655    1660    1670    1684    1686    1717    1718    1793    1794    1796    1800
                        1807    1810    1813    1814    1855#   1858    1859    1861    1863    1867    1871    1873    1875
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	1996	1998	2011	2127#	2128	2134	2136	2141	2143	2146	2148	2152	2159
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	2445	2453	2457	2462	2464	2470	2474	2480	2591	2598	2724	2727	2731
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	2942	2945	2946	2951	2952#	2958	2961	2967	2970	2977	2981	3160	3162
	3163	3165	3169	3172	3177	3180	3186	3188	3189	3191	3413	3416	3419
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	3478	3481	3483	3485	3696	3699	3706	3710	3715	3717	3721	3726	3848
	3849	3855	3858	3993	3995	4213	4217	4220	4221	4224	4230	4234	4235
	4238	4246	4261	4264	4269	4272	4491	4493	4502	4507	4516	4518	4525
	4530	4542	4545	4554	4556	4558	4560	4851	4858	4916	4919	4921	4924
	4926	4929	4931	4934	4941	4944	4950	4951	5190	5193	5204	5208	5310
	5315												
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M13

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	1793#	1814	1858#	1883	1949#	1976	1984#	2011	2128#	2159	2222#	2242	2300#
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	3186#	3188	3189#	3191	3413#	3416	3419#	3424	3427#	3429	3433#	3435	3443#
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	3715#	3717	3721#	3726	3848#	3858	3993#	3995	4213#	4217	4220#	4230	4234#
	4246	4261#	4264	4269#	4272	4491#	4493	4502#	4507	4516#	4518	4525#	4530
	4542#	4545	4554#	4556	4558#	4560	4851#	4858	4916#	4919	4921#	4924	4926#
	4929	4931#	4934	4941#	4951	5190#	5193	5204#	5208				
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	1880#	1882	1954#	1956	1961#	1963	1989#	1991	1996#	1998	2134#	2136	2141#
	2143	2146#	2148	2152#	2154	2226#	2228	2230#	2233	2302#	2304	2309#	2311
	2326#	2328	2333#	2335	2379#	2383	2453#	2457#	2461	2470#	2474#	2478	2925#
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	4235#	4237	4238#	4240	4944#	4950							
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$TSK7  = 050041     1319#   1323
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                    2453#   2470#   2591#   2946#   3419#   3427#   3433#   3443#   3454#   3460#   3478#   3993#   4221#
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.       105544       764#    791#   1081#   1129    1151    1175    1180    1192    1223    1227    1239    1283    1294
                    1303    1307    1314    1316    1317    1319    1326    1334    1346    1387    1403    1432    1434
                    1439    1499    1510    1519    1526    1565    1602    1606    1643    1652    1654    1660    1670
                    1685    1695    1717    1719    1751#   1794    1818    1823#   1863    1867    1875    1879    1880
                    1883    1891    1897#   2016    2085#   2134    2136    2141    2143    2148    2152    2159    2161
                    2230    2242    2246    2257#   2341    2368    2370    2371    2379    2414    2418    2419    2453
                    2470    2485    2505#   2591    2608    2639#   2740    2748#   2931    2934    2942    2945    2946
                    2951    2961    2970    2981    2985    3162    3165    3172    3180    3188    3191    3201    3235#
                    3416    3419    3424    3427    3429    3433    3435    3443    3448    3451    3454    3456    3460
                    3462    3478    3481    3485    3493    3553#   3699    3710    3717    3726    3736    3855    3858
                    3868    3877#   3993    3995    4002    4008#   4046#   4217    4221    4224    4230    4235    4238
                    4246    4261    4264    4269    4272    4280    4324#   4491    4493    4502    4507    4516    4518
                    4530    4542    4545    4554    4556    4558    4560    4565    4593#   4605#   4623#   4634#   4851
                    4858    4916    4919    4921    4924    4926    4929    4931    4934    4941    4950    4951    4957
                    4981#   5190    5193    5204    5208    5228    5237#   5256#   5310    5315    5357#   5360#

. ABS.  105544      000      OVR    RW     REL    GBL    I

 ERRORS DETECTED:  0

 CZLNAD,CZLNAD.SEQ/CRF:SYM/DOC=SPMACJ/ML,SVC33/ML,CZLNAD.P11
 RUN TIME.  134 135 6 SECONDS
 RUN-TIME RATIO: 585/276=2.1
 CORE USED:  32K  (63 PAGES)

 DOCUMENT PAGES:  171
```