

Table with multiple columns and rows of technical data, including component names and values. The text is very faint and difficult to read.

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.REM

IDENTIFICATION

PRODUCT CODE: AC-U022A-MC  
PRODUCT NAME: CZLCPA0 LCPO1 PRTR DIAG  
DATE : JANUARY 15, 1985  
MAINTAINER: CSS PRODUCT GROUP DIAGNOSTIC

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16- 646	PARAMETERS
17- 704	MACROS
18- 957	VARIABLES
19- 1006	SETUP SERIAL LINE PARAMETERS
20- 1042	
20- 1043	TEST # DESCRIPTION
20- 1044	-----
20- 1045	TEST 1 SERIAL LINE UNIT TEST
22- 1178	TEST 2 COLOR PRINTER 'SELF' TEST
23- 1260	TEST 3 PRINTER DISPLAY TEST
24- 1317	
24- 1318	END OF TEST SEQUENCE
25- 1351	MISC. SUBROUTINES
26- 1485	KEYBOARD INTERRUPT ROUTINE
27- 1620	LOCAL MESSAGES
28- 1689	SERIAL LINE SETUP ROUTINES
32- 2577	SERIAL LINE SETUP MESSAGES

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
TABLE OF CONTENTS

CONTENTS

- 1.0 ABSTRACT
  - 1.1 MAINTENANCE HISTORY
- 2.0 REQUIREMENTS
  - 2.1 EQUIPMENT
  - 2.2 STORAGE
  - 2.3 SOFTWARE
- 3.0 TEST OVERVIEW
  - 3.1 SECTION DESCRIPTIONS
  - 3.2 SERIAL LINE OPERATIONS
- 4.0 ASSUMPTIONS
- 5.0 OPERATING PROCEDURE
  - 5.1 STARTING ADDRESS OR ADDRESSES
  - 5.2 OPERATIONAL SWITCH SETTINGS - HARDWARE AND SOFTWARE
- 6.0 TEST DESCRIPTIONS
  - 6.1 TEST 1: SERIAL LINE TEST
  - 6.2 TEST 2: COLOR PRINTER SELF TEST
  - 6.3 TEST 3: PRINTER DISPLAY TEST

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
ABSTRACT

1.0 ABSTRACT

THIS IS A PDP-11 DIAGNOSTIC WHICH IS DESIGNED TO FUNCTIONALLY EXERCISE AN LPC01 PRINTER WHILE ATTACHED TO A PDP-11 PROCESSOR.

THE DIAGNOSTIC CAUSES THE MICROCODE TO EXECUTE SPECIFIC TESTS. THE DIAGNOSTIC THEN MONITORS THE LCPO1 SERIAL LINE OUTPUT, TRACING TEST COMPLETION AND ERROR INDICATIONS.

CZLCP IS AN XXDP+ DIAGNOSTIC.

1.1 MAINTENANCE HISTORY

CZLCP IS A NEW PDP-11 DIAGNOSTIC.

AUTHOR: DIGITAL EQUIPMENT CORPORATION  
COMPUTER SPECIAL SYSTEMS  
HUDSON, NEW HAMPSHIRE

PREPARED BY:  
DICE SYSTEMS, INC.  
7 1/2 HARRIS ROAD  
NASHUA, NEW HAMPSHIRE

EDIT HISTORY:

NEW VERSION

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
REQUIREMENTS

2.0 REQUIREMENTS

2.1 EQUIPMENT

THIS DIAGNOSTIC WILL RUN ON ALL PDP 11 FAMILY COMPUTERS WHICH HAVE  
EITHER A DL11 OR A DZ11 SERIAL LINE AND AN LCPO1 PRINTER.

2.2 STORAGE

THIS PROGRAM REQUIRES A PDP-11 SYSTEM WITH AT LEAST 28K WORDS OF  
MEMORY.

2.3 SOFTWARE

THIS PROGRAM REQUIRES XXDP+ OPERATING SYSTEM SOFTWARE, VERSION 1.2 OR  
LATER.

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
TEST OVERVIEW

3.0 TEST OVERVIEW

3.1 SECTION DESCRIPTIONS

THIS DIAGNOSTIC CONSISTS OF ONE SECTION, CONTAINING THREE TESTS, AS  
FOLLOWS:

1. SERIAL LINE TEST
2. COLOR PRINTER SELF TEST
3. PRINTER DISPLAY TEST

3.2 SERIAL LINE OPERATIONS

THE PROGRAM HAS BEEN DESIGNED TO ALLOW THE DIAGNOSTIC TO TEST THE LCPO1  
PRINTERS WHILE ATTACHED BY SERIAL LINE INTERFACES.

THE FOLLOWING DIALOGUE ALLOWS FOR SERIAL LINE SELECTION:

```
R CZLCP??  
CZLCP.BIN  
  
LCPO1 LINE PRINTER DIAGNOSTIC  
  
SERIAL LINE SELECTION MENU  
1 DL11 SERIAL LINE  
2 DZ11 SERIAL LINE  
TYPE MENU SELECTION <1>?
```

THE APPROPRIATE NUMBER (ONE OR TWO) SHOULD BE ENTERED BY THE OPERATOR.  
TYPING A CARRIAGE RETURN WILL RESULT IN SELECTION OF THE DEFAULT SERIAL  
LINE, WHICH IS THE DL11.

3.2.1 DL11 SUPPORT -

THE PROGRAM WILL SUPPORT DL11 OF THE FOLLOWING TYPE:

1. ALL UNIBUS DL11S
2. DLV11
3. DLV11-F

CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
TEST OVERVIEW

PAGE 6

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192  
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THE PROGRAM WILL PROMPT FOR INDIVIDUAL SETUP PARAMETERS AS THEY ARE REQUIRED BY EACH INTERFACE.

3.2.2 DZ11 SUPPORT -

THE PROGRAM WILL SUPPORT BOTH DZ11 AND THE DZV11. THE PROGRAM WILL PROMPT THE OPERATOR FOR THE REQUIRED SETUP PARAMETERS, THESE INCLUDE THE FOLLOWING:

1. CSR ADDRESS
2. THE DZ LINE NUMBER BEING USED (0-7).
3. THE DZ'S BAUD RATE
4. THE NUMBER OF STOP BITS
5. NUMBER OF DATA BITS
6. WHETHER OR NOT PARITY IS BEING USED
7. IF PARITY IS USED, IS IT ODD OR EVEN

4.0 ASSUMPTIONS

THE ONBOARD MICROCODE DIAGNOSTICS HAVE COMPLETE RESPONSIBILITY FOR DEVICE TEST COVERAGE. THE DIAGNOSTIC ONLY VERIFIES THE INTERFACE AND REPORTS ERRORS DETECTED BY THE MICROCODE DIAGNOSTICS.

5.0 OPERATING PROCEDURE

5.1 STARTING ADDRESS OR ADDRESSES

THE INITIAL STARTING ADDRESS TO RUN THE ENTIRE LCPO1 DIAGNOSTIC IS LOCATION 200(8). THE RESTART ADDRESS IS 300 (8).

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
OPERATING PROCEDURE

5.2 OPERATIONAL SWITCH SETTINGS - HARDWARE AND SOFTWARE

WHEN THE DIAGNOSTIC IS STARTED AT ADDRESS 200(8), IT WILL DETERMINE WHETHER OR NOT THE PROCESSOR HAS A HARDWARE (H/W) SWITCH REGISTER (SWR). IF THERE IS A H/W SWR, THE DIAGNOSTIC WILL USE BOTH THE HARDWARE REGISTER, AT LOCATION 177570, AND THE SOFTWARE (S/W) SWR LOCATED AT ADDRESS 176(8). IF A BIT IS SET IN EITHER REGISTER, EXECUTION WILL BE MODIFIED AS DESCRIBED IN THE 'SWITCH REGISTER BIT DEFINITIONS' SECTION OF THIS DOCUMENT.

5.2.1 CONTROL-G -

THE OPERATOR MAY CHANGE THESE REGISTER VALUES BY ENTERING A CONTROL-G AT THE CONSOLE TERMINAL. THE DIAGNOSTIC WILL PROMPT THE OPERATOR WITH THE MESSAGE:

H/W SWR = XXXXXX SWR = XXXXXX NEW SWR =

AFTER EXECUTION BEGINS, THE OPERATOR MAY CHANGE THE VALUE OF THE SWR, AT ANY TIME, BY ENTERING A CONTROL-G (G) AT THE CONSOLE.

IN RESPONSE TO THE PROMPTS, THE OPERATOR MAY ENTER UP TO SIX (6) OCTAL DIGITS. THE DIGITS MAY BE ANY COMBINATION OF :0,1,2,3,4,5,6,7, OR NO ENTRY AT ALL. ALL SWR VALUES ENTERED WILL BE TRUNCATED TO THE LOWER SIXTEEN (16) BITS. ENTERING MORE THAN SIX DIGITS OR A CHARACTER OTHER THAN A DIGIT RESULTS IN A "?" OUTPUT ON THE CONSOLE AND A REPEAT OF THE PROMPTING MESSAGE.

CARRIAGE RETURN (CR): ENTERS THE NEW SWR VALUE. IF NO DIGITS HAVE BEEN ENTERED, THE SWR VALUE REMAINS UNCHANGED.

5.2.2 CONTROL-U -

ERASES THE SWR VALUE BEING ENTERED. A CARRIAGE RETURN AND LINE FEED WILL BE OUTPUT AT THE CONSOLE. THE CORRECT SWR VALUE MAY THEN BE ENTERED.

5.2.3 CONTROL-H -

PRINTS THE HELP FILE ON THE CONSOLE TERMINAL. THE FOLLOWING INFORMATION IS DISPLAYED:

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
OPERATING PROCEDURE

HELP SWITCH REGISTER BIT DEFINITION

(NOTE: <CTRL>G - ALLOWS CHANGE TO "SOFTWARE" SWITCH REG)  
15, 14, 13, 12...2, 1, 0  
I I I I I I I--LOOP ON SLU TEST 1  
I I I I I I-----LOOP ON PRINTER "SELF" TEST  
I I I I I-----LOOP ON PRINTER DISPLAY TEST  
I I I I-----PAUSE ON ERROR, PAUSE AT END OF PASS  
I I I-----INHIBIT ERROR REPORTS  
I I-----INHIBIT TEST ERROR AND END OF PASS REPORTS  
I-----LOOP ON ERROR (OTHERWISE CONTINUE)

ENTERING ANY CHARACTER BEFORE A CONTROL-G (G) HAS BEEN ENTERED WILL  
RESULT IN A "?" OUTPUT AT THE CONSOLE.

NOTE

IT IS POSSIBLE FOR THE DIAGNOSTIC TO OUTPUT MESSAGES AT THE  
CONSOLE BEFORE THE NEW SWR VALUE HAS BEEN ENTERED. SHOULD THIS  
HAPPEN, THE OPERATOR SHOULD ENTER A CONTROL-U (U) AND THEN  
ENTER THE CORRECT SWR VALUE.

5.2.4 CONTROL-C -

ENTRY OF A 'CONTROL-C' COMBINATION ABORTS TESTING AND RESTARTS IT AT  
LOCATION 200 (OCTAL).

5.2.5 SWITCH REGISTER BIT DEFINITIONS -

BIT0 =1: LOOP ON SLU TEST #1.

BIT1 =1: LOOP ON PRINTER SELF TEST #2

BIT2 =1: LOOP ON THE PRINTER DISPLAY TEST #3

BIT12=1: HALT ON ERROR AND HALT ON END OF PASS, THE OPERATOR MAY CHOOSE TO  
CONTINUE OR PROCEED BY ENTERINNG THOSE COMMANDS. THE DEFAULT EXECUTION  
IS TO CONTINUE AFTER AN ERROR OR AN EOP INDICATION IS ENCOUNTERED.

BIT13=1: INHIBIT ERROR REPORTING.

BIT14=1: TEST HEADER AND END OF PASS MESSAGES ARE NOT DISPLAYED.

BIT15=1: WHEN AN ERROR IS ENCOUNTERED, LOOP ON ERROR, IF NO ERROR IS ENCOUNTERED  
EXECUTE TESTS CONTINUOUSLY.

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
DEFAULT SECTION TEST DESCRIPTIONS

6.0 TEST DESCRIPTIONS

6.1 TEST 1: SERIAL LINE TEST

THIS TEST IS DESIGNED TO SHOW THE OPERATOR THAT THE SERIAL LINE SETUP HAS BEEN COMPLETED CORRECTLY. THIS WILL UNCOVER MOST SETUP ERRORS, INCLUDING BASIC SERIAL LINE SETUP ERRORS.

FAILURE OF THIS TEST USUALLY SIGNIFIES THAT THE DIAGNOSTIC IS WORKING WITH INCORRECT INFORMATION. FOR INSTANCE, THE CSR ADDRESS SPECIFIED MAY BE WRONG. IF ALL OF THE PROGRAM INFORMATION WAS CORRECT, TEST FAILURE INDICATES THAT THE SERIAL LINE DEVICE FAILED.

THE TEST SEQUENCE OPERATES IN MAINTENANCE MODE, WITH THE LOOPBACK FEATURE SET. ERROR NUMBERS 2 AND 3, LISTED BELOW, DEFINE ERRORS ENCOUNTERED WHILE ATTEMPTING TO FLOAT A ONE THROUGH A FIELD OF ZEROS. ERROR NUMBERS 5 AND 6 WILL BE DISPLAYED IF AN ERROR IS ENCOUNTERED WHILE FLOATING A ZERO THROUGH THE ONES FIELD. SERIAL LINE LOOPBACK FAILURE, ERRORS 4 AND 7, WILL BE DISPLAYED IF THE BYTE RETURNED BY LOOPBACK DOES NOT COMPARE WITH EXPECTED DATA.

ASSUMPTIONS:

FUNCTIONAL COMMUNICATION INTERFACE

TEST STEPS:

1. CHECK FOR SLU ADDRESS VALIDITY
2. TEST THE SLU IN 'LOOPBACK' MAINTENANCE MODE  
IF PRESENCE DETETED APPROPRIATELY:
  - A. PERFORM REGISTER TEST - FLOATING ONE BIT  
IN ZEROS FIELD
  - B. PERFORM REGISTER TEST - FLOATING ZERO BIT  
IN ONES FIELD
3. INTERROGATE DEVICE - VERIFY PRESENCE AND DEVICE TYPE

ERRORS:

1. SERIAL LINE NOT AT THIS ADDRESS  
ERROR NUMBER 0001
2. TIMEOUT WAITING FOR OUTPUT DONE  
ERROR NUMBER 0002
3. TIMEOUT WAITING FOR INPUT RESPONSE  
ERROR NUMBER 0003
4. SERIAL LINE 'LOOPBACK' FAILED  
ERROR NUMBER 0004

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
DEFAULT SECTION TEST DESCRIPTIONS

5. TIMEOUT WAITING FOR OUTPUT DONE  
ERROR NUMBER 0005

6. TIMEOUT WAITING FOR INPUT RESPONSE  
ERROR NUMBER 0006

7. SERIAL LINE 'LOOPBACK' FAILED  
ERROR NUMBER 0007

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
DEFAULT SECTION TEST DESCRIPTIONS

6.2 TEST 2: COLOR PRINTER SELF TEST

THIS TEST SEQUENCE EXECUTES THE COLOR PRINTER SELF TEST AND MONITORS ITS EXECUTION. IF AN UNEXPECTED STATUS RESPONSE IS ENCOUNTERED, IT IS REPORTED AS AN ERROR. ADDITIONALLY, TIMEOUT ERRORS, ERROR NUMBER 1 AND 3, WILL OCCUR IF THE PRINTER MICROCODE DOES NOT RESPOND WITHIN THE ALLOTTED TIME PERIOD.

ASSUMPTIONS:

FUNCTIONAL COMMUNICATION INTERFACE

TEST STEPS:

1. INITIATE SELF TEST EXECUTION ( TRANSMIT ESCAPE SEQUENCE )
2. READ COLOR PRINTER STATUS
3. IF ERROR PRINT MESSAGE ELSE END OF TEST

ERRORS:

1. TIMEOUT WAITING FOR INPUT RESPONSE  
ERROR NUMBER 0010
2. UNEXPECTED RESPONSE TO 'POWER-UP' SELF TEST  
ERROR NUMBER 0011  
VERI  
CPU BAD  
000123 156743 023012 203457 143203 156427 012763 003450
3. TIMEOUT WAITING FOR INPUT RESPONSE  
ERROR NUMBER 0012

NOTE

THE LAST TWO LINES OF THE POWER-UP DIAGNOSTIC FAILURE MESSAGE (ITEM #2, ERROR #0011, ABOVE), WILL VARY ACCORDING TO THE VALUE RETURNED BY THE LCPO1. IN ALL INSTANCES A COMPONENT LOCATION ("CPU BAD") AND A PORTION OF THE "VERIFIED" MESSAGE WILL BE DISPLAYED, ALONG WITH A REGISTER DUMP.

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
DEFAULT SECTION TEST DESCRIPTIONS

6.3 TEST 3: PRINTER DISPLAY TEST

THIS TEST IS DESIGNED TO PRINT A "CANNED" DISPLAY FILE. THIS FILE IS PRINTED WHEN THE DIAGNOSTIC SENDS A SPECIAL ESCAPE SEQUENCE TO THE LCPO1'S CONTROLLER ("ESC", "[", "6", ";", "2", AND "Y"). THIS DISPLAY HAS BEEN TESTED AND WILL WORK UNLESS THERE IS A SOFTWARE SETUP ERROR OR A HARDWARE FAILURE. THE TEST PRINTS OUT A RADIANT DISPLAY.

TEST THREE IS ONLY EXECUTED ON THE FIRST TEST PASS. IF SUBSEQUENT TEST PASSES ARE SPECIFIED, IT IS NOT EXECUTED. SETTING BIT #2 IN THE SOFTWARE OR HARDWARE SWITCH REGISTER WILL CAUSE EXECUTION TO LOOP CONTINUOUSLY ON THIS TEST.

ASSUMPTIONS:

FUNCTIONAL COMMUNICATION INTERFACE  
WORKING LCPO1 SOFTWARE DRIVER  
WORKING LCPO1 PRINTER

TEST STEPS:

1. SEND ESCAPE SEQUENCE TO PRINTER TO REQUEST PRINT

ERRORS:  
NO DISTINCT ERROR MESSAGES ARE REQUIRED BY THIS TEST. THE OPERATOR IS ASKED TO VERIFY THE INTEGRITY OF THE PRINTOUT.

NOTE

THE DIAGNOSTIC DOES NOT WAIT FOR PRINT COMPLETION BEFORE CONTINUING. THE PRINT PROCESS TAKES ABOUT TWO MINUTES.

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CZLCP DIAGNOSTIC PROGRAM USER'S DOCUMENT  
END OF DOCUMENT

END OF DOCUMENT

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559
560      .LIST  SEQ,BIN,LOC
561      ;*****;
562      ;
563      .TITLE CZLCPA COLOR PRINTER DIAGNOSTIC
564      ;(DECSPEC-11-BDFAD-A-D)
565      ;
566      ; CZLCP-A-0
567      ; CZLCPA COLOR PRINTER DIAGNOSTIC
568      ; UNIT IS TEX
569      ;
570      ;COPYRIGHT (C) 1984 DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
571      ;
572      ;*****;
573      000000      R0=#0
574      000001      R1=#1
575      000002      R2=#2
576      000003      R3=#3
577      000004      R4=#4
578      000005      R5=#5
579      000006      R6=#6
580      000007      R7=#7
581      000006      SP=R6
582      000007      PC=R7
583
584      100000      BIT15 =100000
585      040000      BIT14 =40000
586      020000      BIT13 =20000
587      010000      BIT12 =10000
588      004000      BIT11 =4000
589      002000      BIT10 =2000
590      001000      BIT9 =1000
591      000400      BIT8 =400
592      000200      BIT7 =200
593      000100      BIT6 =100
594      000040      BIT5 =40
595      000020      BIT4 =20
596      000010      BIT3 =10
597      000004      BIT2 =4
598      000002      BIT1 =2
599      000001      BIT0 =1
600
601      000036      SL=36      ;START VFU LOAD
602      000037      EL=37      ;END VFU LOAD

```

```
604
605 000000      ;;;*** .PSECT ABS
606              .ENABLE AMA,ABS
607              .DSABLE GBL
608 000000
609            000000      BEGIN:
610              .=.+0
611
612
613            000030      .=BEGIN+30
614
615 000030 004332      TYP
616 000032 000340      340
617
618
619            000042      .=BEGIN+42
620
621 000042 000000      0
622
623            000046      .=BEGIN+46
624              LOGICAL
625              .=BEGIN+52
626 000052 040000      BIT14
627
628
629            000060      .=BEGIN+60
630 000060 004754      TKINT
631 000062 000300      ;KEYBOARD INTERRUPT ROUTINE
632
633
634            000100      .=BEGIN+100
635
636              LKSRV
637 000100 000340      ;LINE CLOCK SERVICE ROUTINE
638              340
639              CONVRT
640 000102 000340      340
641
642            000174      .=BEGIN+174
643 000174 000000      DISPREG: 0
644 000176 000000      SWREG: 0
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.SBTTL MACROS
;*****
;
;   -- MACROS --
;
;   ;MACRO FOR SETTING UP ERROR COUNT
;
;   ; $ERROR = CALL
;   ;   X = ERROR NUMBER
;   ;   Y = LOOP ADDRESS IF SWR BIT SET
;   .LIST ME
;
;   .MACRO $ERROR X,Y
ERR'X': MOV    #X,    ERCOUNT    ;SET UP ERROR COUNT X
;   .NLIST ME
;   N=N+1
;   .NLIST
;   .LIST ME
;   .LIST
;   JSR    #5,STAER    ;REPORT ERROR SET
;   .NLIST ME
;   .IF    NB Y
;   .NLIST
;   .LIST ME
;   .LIST
;
;   $TSWRG #100000    ;CK SW REG
;   BEQ    CN'X'      ;CONTINUE IF BIT 15 = 0
;   JMP    Y          ;OTHERWISE LOOP
;
;   CN'X':
;   .NLIST ME
;   .ENDC
;   .NLIST
;   .LIST ME
;   .LIST
;   .ENDM $ERROR
;
;   ;MACRO FOR PRINTING TEST NUMBER AT START OF TEST
;
;   .MACRO $PRTSN Y
;   EMT    +0
;   TYO'Y'
;   .ENDM $PRTSN
;   ;PRINT TEST NUMBER
;   ;TEST NUMBER MESSAGE
;
;   ; WAIT MACROS - -
;   ; Z = ERROR # (USUALLY "W")
;   ; X = ERROR JMP ADDRESS, IF NONE - DEFAULT LOOPS BACK TO WAIT'Z'
;   ; Y = LOOP ON ERROR, IF BIT 15 OF SWR SET
;   ; #T = 2ND PASS TIME (1 COUNT = ABOUT 1/2 SEC), IF NONE = 100 OCTAL
;
;   .MACRO $WAITI Z,X,Y,T
;   ;WAIT FOR INPUT, OR TIMEOUT
;
;   WAIT'Z':
;   .NLIST ME
;   .IF    NB T

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.NLIST
.LIST ME
.LIST
MOV #100,WORK ;LOAD CNTR
CMP #1,CYCCNT ;2ND PASS?
BNE WDD'Z' ;NO, LEAVE COUNT AS IS
MOV T,WORK ;LOAD CNTR WITH LONG CNT
.NLIST ME
.ENDC
.IF B T
.NLIST
.LIST ME
.LIST
MOV #100,WORK ;LOAD CNTR
.NLIST ME
.ENDC
.NLIST
.LIST ME
.LIST
WDD'Z': MOV #-1,WORKA ;LOAD COUNT
DEC WORK ;BUMP CNTR
BEQ WER'Z' ;ERROR IF TIMEOUT
WDE'Z': DEC WORKA ;BUMP COUNT
BEQ WDD'Z' ;LOOP IF COUNT 0
TSTB @DLLPS ;CK STATUS
BPL WDE'Z' ;LOOP TIL DONE
BR WEX'Z' ;CONTINUE
WER'Z': $TSWRG #20000 ;CK SW REG
BNE .+6 ;TEST FOR INHIBIT ERROR MSG
;BRANCH IF NO MSG WANTED
EMT +0
ETIM ;TIMED OUT ERROR
.NLIST ME
.IF NB Y
.NLIST
.LIST ME
.LIST
$ERROR \N,Y
.NLIST ME
.ENDC
.IF B Y
.NLIST
.LIST ME
.LIST
$ERROR \N
.NLIST ME
.ENDC
.IF B X
.NLIST
.LIST ME
.LIST
BR WAIT'Z' ;LOOP
.NLIST ME

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      .ENDC
      .IF      NB X
      .NLIST
      .LIST    ME
      .LIST
      .NLIST   JMP      X           ;EXIT
      .LIST    ME
      .ENDC
      .NLIST
      .LIST    ME
      .LIST
      WEX'Z':
      .NLIST   ME
      .LIST    W=W+1
      .NLIST
      .LIST    ME
      .LIST
      .ENDM   $WAITI

      ;MACRO FOR WAITING FOR OUPUT, DONE

      .MACRO  $WAITO  Z,X,Y

      WAIT'Z': MOV     #20,TIME      ;WAIT FOR OUPUT, OR TIMEOUT
      WDD'Z': MOV     #-1,TIMER      ;10 SEC CNTR
      .NLIST   DEC     TIME          ;LOAD COUNT
      .LIST    BEQ     WER'Z'        ;BUMP CNTR
      .LIST    WDE'Z': DEC     TIMER  ;ERROR IF TIMEOUT
      .LIST    BEQ     WDD'Z'        ;BUMP COUNT
      .LIST    TSTB   @LPS          ;LOOP IF COUNT 0
      .LIST    BPL    WDE'Z'        ;CK STATUS
      .LIST    BR     WEX'Z'        ;LOOP TIL DONE
      WER'Z':  $TSWRG #20000        ;CONTINUE
      .NLIST   BNE     .+6
      .LIST    EMT    +0
      .LIST    ETIMO
      .NLIST   ME
      .LIST    .IF     NB Y
      .NLIST
      .LIST    ME
      .LIST
      .NLIST   $ERROR \N,Y
      .LIST    ME
      .ENDC
      .IF      B Y
      .NLIST
      .LIST    ME
      .LIST
      .NLIST   $ERROR \N
      .LIST    ME

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      .ENDC
      .IF      B X
      .NLIST
      .LIST    ME
      .LIST
      .NLIST   BR      WAIT'Z'           ;LOOP
      .LIST    ME
      .ENDC
      .IF      NB X
      .NLIST
      .LIST    ME
      .LIST
      .NLIST   JMP      X               ;EXIT
      .LIST    ME
      .ENDC
      .NLIST
      .LIST    ME
      .LIST
      WEX'Z':
      .NLIST   ME
      .LIST    W=W+1
      .NLIST
      .LIST    ME
      .LIST
      .ENDM   $WAITO

      ;
      ;MACRO FOR ENABLING KEYBOARD INTERUPT
      ;
      .MACRO  $ENABLE
      .NLIST  ME
      ;;;000  CMP      #176,SWR           ;S/W SWR ?
      ;;;000  BNE      .+10              ;NO- CONTINUE
      .NLIST
      .LIST   ME
      .LIST
      BIS      #100,@TKS                ;ENABLE KEYBOARD INTERRUPT
      MOV      -(SP),-(SP)
      MOV      #0,2(SP)
      MOV      #.+6,(SP)
      RTI
      .ENDM   $ENABLE

      ;MACRO USED TO LOAD THE PSW WITH THE
      ;CORRECT PROCESSOR PRIORITY LEVEL
      ;
      .MACRO  $SETPSW
      MOV      PC,-(SP)                 ;MOVE PRESENT LOCATION TO STACK
      ADD      #6,(SP)                  ;SET UP FOR NEXT INSTRUCTION
      RTI
      .ENDM   $SETPSW           ;LOAD PSW

      ;
      ;MACRO USED TO PRINT MESSAGE TO LINE PRINTER

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; .MACRO $PRINT V  
MOV #'V',PRTMSG ;LOAD MESSAGE ADDRESS  
JSR %4,PRINE ;PRINT IT  
.ENDM $PRINT  
  
; .MACRO TO TYPE MESSAGE ON THE TERMINAL  
; .MACRO $TYPE G  
EMT +0 ;Call "TYP" interrupt  
G ;address of message  
.ENDM $TYPE  
  
; .MACRO TO TEST HARDWARE AND SOFTWARE SWITCH REGISTERS  
; .MACRO $TSWRG MSK  
CMP #176,SWR ;HW SWITCH REG THERE?  
BEQ .+12 ;NO, SKP HW CHECK  
BIT MSK,@HWSWR ;YES, CK HW REG  
BNE .+10 ;IF SET, SKP SW REG CK  
BIT MSK,SWREG ;OTHERWISE, ALSO CK SW REG  
.ENDM
```

```

957
958 .SBTTL VARIABLES
959 ;*****
960 ;
961 ;MEMORY LOCATIONS USED AS PROGRAM FLAGS AND COUNTERS
962 001054 000000
963 001056 000000
964 001060 000000
965 001062 000000
966 001064 000000
967
968 001066 000000
969 001070 000000
970 001072 000000
971
972 001074 000000
973 001076 000000
974 001100 000000
975 001102 000000
976 001104 000000
977 001106 000000
978
979 001110 000000
980 001112 000000
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982 001114 000000
983 001116 000000
984 001120 000000
985 001122 000000
986
987 001124 000000
988 001126 000000
989 001130 000000
990 001132 000000
991 001134 000000
992 001136 000000
993 001140 000000
994 001142 000000
995 001144 000000
996 001146 000000
997 001150 000000
998 001152 000000
999 001154 000000
1000 001156 000000
1001 001160 000000
1002 001162 000000
1003 001164 000000
1004 001166 000000

;*****
;MEMORY LOCATIONS USED AS PROGRAM FLAGS AND COUNTERS
;
SEG CNT: 0
CHR CNT: 0
CHR GEN: 0
LIN CNT: 0
CYC CNT: 0

DZTCR: .WORD 0
DZLPR: .WORD 0
DZLNE: .WORD 0

DLLPR: .WORD 0
DLLPS: .WORD 0
DLRBUF: .WORD 0
BRATE: .WORD 0
DLRATE: .WORD 0
DLHERE: .WORD 0

DZTCRA: .WORD 0
EIA: .WORD 0

DLTYPE: .WORD 0
DZRBUF: .WORD 0
DZCSRH: .WORD 0
MAINTB: .WORD 0

WORK: 0
WORKA: 0
TIME: 0
TIMER: 0
SAVE: 0
ERCOUNT: 0
STRCHR: 0
STRCNT: 0
LEGCHR: 0
NUMCHR: 0
OFFSET: 0
DIGITS: 0
SIGNAL: 0
SET: 0
CHAR: 0
OCT: 0
PASSA: 0
BUFF: .BLKB 80.

;HOLDS DZ'S TCR REGISTER
;HOLDS DZ'S LPR REGISTER
;HOLDS DZ'S LINE #

;HOLDS DL'S BAUD RATE BITS
;DL'S RECV REG
;DL'S RECV BUFFER
;HOLD BAUD RATE BITS
;(DL) HOLD BAUD RATE BITS
;SHOWS DL11 PRESENCE

;ADDRESS OF DZ DTR REGISTER
;LINE TYPE 0=20MA 1=EIA

;DL TYPE 0=ALL OTHERS 1=E/F
;DZ'S RECEIVER BUFFER ADDRESS
;HOLDS DZ'S CSR ADDRESS
;MAINTENANCE BIT, IF NOT 0
    
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1012 001306 004437 004314
1013 001312 005037 001064
1014 001316 005037 001154
1015 001322 000005
1016 001324 013746 000004
1017 001330 013746 000006
1018 001334 012737 001350 000004
1019 001342 005777 177444
1020 001346 000407
1021 001350
1022 001350 012737 000176 001004
1023 001356 012737 000174 001006
1024 001364 022626
1025 001366 012637 000006
1026 001372 012637 000004
1027 001376
      001376 052777 000100 177416
      001404 014646
      001406 012766 000000 000002
      001414 012716 001422
      001420 000002
1028 001422 005737 001164
1029 001426 001011
1030 001430 112737 000001 001164
1031 001436 104000
1032 001440 006153
1033 001442 104000
1034 001444 006167
1035 001446 104000
1036 001450 006230
1037 001452 004737 010234
1038 001456 000005
1039 001460 104000
1040 001462 006246

      .SBTTL SETUP SERIAL LINE PARAMETERS
      ;*****
      ;ROUTINE TO TEST THE MECH. OPERATION OF THE LXY11/21-LXV11
      ;
      SETUP: JSR      #4,TYPINT      ;PRESET POINTERS
              CLR      CYCCNT      ;CLEAR PASS COUNT
              CLR      SIGNAL      ;CTRL G FLAG
              RESET     ;CLEAR WORLD
              MOV      4,-(SP)      ;SAVE CURRENT VECTORS
              MOV      6,-(SP)
              MOV      #1,4
              TST      @HWSWR      ;SET UP TIMEOUT VECTOR
              BK       2#          ;TRY TO ACCESS HARDWARE SWR
              ;IF THERE, GO TO 2#
      1#:     MOV      #SWREG,SWR    ;POINT TO SOFTWARE SWR
              MOV      #DISPREG,DISPLAY ;POINT TO SOFTWARE DISPLAY
              CMP      (SP)+,(SP)+  ;RESTORE STACK
      2#:     MOV      (SP)+,6
              MOV      (SP)+,4
              #ENABLE
              BIS      #100,@TKS    ;ENABLE KEYBOARD INTERRUPT
              MOV      -(SP),-(SP)
              MOV      #0,2(SP)
              MOV      #.+6,(SP)
              RTI
              TST      PASSA
              BNE     3#
              MOVB    #1,PASSA    ;SKP
              EMT     +0
              MES1    ;TYPE DIAGNOSTIC TITLE
              EMT     +0
              MES2    ;TYPE NAME
              EMT     +0
              MES3
      3#:     JSR      #7,SETSER    ;CHECK FOR SERIAL LINE SELECTION
              RESET   ;REQUIRED INSURANCE
              EMT     +0
              MES4    ;TYPE RESTART ADDRESS INFO
  
```

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1066 001464 052777 000100 177330
1067 001472
      001472 022737 000176 001004
      001500 001404
      001502 032777 040000 177302
      001510 001003
      001512 032737 040000 000176
1068 001520 001002
1069 001522
      001522 104000
      001524 005571
1070
1071 001526 013746 000004
1072 001532 013746 000006
1073 001536 012737 001552 000004
1074 001544 105777 177230
1075 001550 000447
1076
1077 001552
1078 001552 022626
1079 001554 012637 000006
1080 001560 012637 000004
1081 001564
      001564 022737 000176 001004
      001572 001404
      001574 032777 020000 177210
      001602 001003
      001604 032737 020000 000176
1082 001612 001002
1083 001614 104000
1084 001616 006704
1085 001620
      001620 012737 000001 001136

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.SBTTL
.SBTTL TEST # DESCRIPTION
.SBTTL -----
.SBTTL TEST 1 SERIAL LINE UNIT TEST
*****
:
: Test 1 Serial Line Unit test
:
: Test 1-A
:
: - Insure SLU is there, at correct address.
:
: Test 1-B
:
: - If Loopback feature (echo) is present, Test the SLU:
:
: a - with floating one bit field
: b - with floating zero bit field
:
: CHECK FOR PRINTER (SLU) ON BUS
:
: .ENABL LSB
TEST1: BIS #100,@TKS ;ENABLE KEYBOARD
      $TSWRG #40000 ;CK SW REG
      CMP #176,SWR ;HW SWITCH REG THERE?
      BEQ .+12 ;NO, SKP HW CHECK
      BIT #40000,@HWSWR ;YES, CK HW REG
      BNE .+10 ;IF SET, SKP SW REG CK
      BIT #40000,SWREG ;OTHERWISE, ALSO CK SW REG
      BNE 1$ ;IF SET, SKIP TST # HDR MSG
      $PRTSN 1
      EMT +0 ;PRINT TEST NUMBER
      TY01 ;TEST NUMBER MESSAGE
1$: MOV @#4,-(SP) ;SAVE VECTORS
     MOV @#6,-(SP) ;SAVE
     MOV @2$,4 ;RELOAD VECTOR
     TSTB @LPS ;IS PRINTER THERE?
     BR 4$ ;YES, SKIP TRAP PROCESSING
2$: CMP (SP),-(SP) ;IF YES, NEVER GET HERE.
     MOV (SP),6 ;RESTORE STACK
     MOV (SP),4 ;RESTORE VECTORS
     $TSWRG #20000 ;RESTORE
     CMP #176,SWR ;CK SW REG
     BEQ .+12 ;HW SWITCH REG THERE?
     BIT #20000,@HWSWR ;NO, SKP HW CHECK
     BNE .+10 ;YES, CK HW REG
     BIT #20000,SWREG ;IF SET, SKP SW REG CK
     BNE .+6 ;OTHERWISE, ALSO CK SW REG
     EMT +0 ;IF INHIBIT ERR MSG
ERR1: ERMS1 ;SLU NOT THERE
      $ERROR \N,1$ ;NOTHING THERE
      MOV #1, ERCOUNT ;SET UP ERROR COUNT 1

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001626 004537 004606          JSR      #5,STAER          ;REPORT ERROR SET
001632                          $TSWRG #100000          ;CK SW REG
001632 022737 000176 001004    CMP      #176,SWR          ;HW SWITCH REG THERE?
001640 001404                    BEQ      .+12           ;NO, SKP HW CHECK
001642 032777 100000 177142    BIT      #100000,@MWSWR  ;YES, CK HW REG
001650 001003                    BNE      .+10           ;IF SET, SKP SW REG CK
001652 032737 100000 000176    BIT      #100000,SWREG  ;OTHERWISE, ALSO CK SW REG
001660 001402                    BEQ      CN1           ;CONTINUE IF BIT 15 = 0
001662 000137 001526          JMP      1#           ;OTHERWISE LOOP
001666                          CN1:
1086                          BR      SETUP
1087 001666 000607
1088                          ;
1089                          ; YES, SLU IS HERE
1090                          ;
1091 001670 012637 000006    4#:     MOV      (SP)+,6          ;RESTORE VECTORS
1092 001674 012637 000004    MOV      (SP)+,4          ;RESTORE
  
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1101
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1103 001700 005737 001122
1104 001704 001002
1105 001706 000137 003016
1106
1107
1108
1109
1110
1111
1112
1113 001712 053777 001122 177060
1114 001720 012700 000001
1115 001724 010037 001134
1116
1117 001730
      001730 012737 000020 001130
      001736 012737 177777 001132
      001744 005337 001130
      001750 001407
      001752 005337 001132
      001756 001767
      001760 105777 177014
      001764 100372
      001766 000442
      001770
      001770 022737 000176 001004
      001776 001404
      002000 032777 020000 177004
      002006 001003
      002010 032737 020000 000176
      002016 001002
      002020 104000
      002022 006007
      002024
      002024 012737 000002 001136
      002032 004537 004606
      002036
      002036 022737 000176 001004
      002044 001404
      002046 032777 100000 176736
      002054 001003
      002056 032737 100000 000176
      002064 001402
      002066 000137 001712

*****
:
:   Test 1-B
:
:   - If Loopback feature (echo) is present, Test the SLU:
:
:       a - with floating one bit field
:       b - with floating zero bit field
:
:   TST    MAINIB      ;NONZERO IF LOOPBACK FEATURE PRESENT
:   BNE    9$          ;HERE, CONTINUE
:   JMP    40$         ;NOT HERE, SKIP SUBTEST
:
-----
:
:   Test 1-B-a
:
:   FLOAT A ONE BIT THRU ALL ZERO BYTE
:
:9$:   BIS    MAINTB,@LPS      ;SET MAINTENANCE (LOOPBACK) BIT
:      MOV    #1,RO           ;SET BIT #0
:10$:  MOV    RO,SAVE         ;SAVE IT
:
:12$:  $WAITO \W,.9$
:
:      WAIT1: MOV    #20,TIME      ;WAIT FOR OUPUT, OR TIMEOUT
:      WDD1:  MOV    #-1,TIMER     ;10 SEC CNTR
:           DEC    TIME           ;LOAD COUNT
:           BEQ    WER1           ;BUMP CNTR
:           DEC    TIMER          ;ERROR IF TIMEOUT
:           BEQ    WDD1           ;BUMP COUNT
:           TSTB  @LPS           ;LOOP IF COUNT 0
:           BPL  WDE1             ;CK STATUS
:           BR    WEX1            ;LOOP TIL DONE
:           $TSWRG #20000        ;CONTINUE
:           CMP    #176,SWR       ;CK SW REG
:           BEQ    .+12           ;HW SWITCH REG THERE?
:           BIT    #20000,@HWSWR  ;NO, SKP HW CHECK
:           BNE    .+10           ;YES, CK HW REG
:           BIT    #20000,SWREG   ;IF SET, SKP SW REG CK
:           BNE    .+6            ;OTHERWISE, ALSO CK SW REG
:           EMT    +0             ;TEST FOR INHIBIT ERROR MSG
:           ETIMO                ;BRANCH IF NO MSG WANTED
:
:           ;TIMED OUT ERROR
:
:      ERR2: $ERROR \N,9$
:           MOV    #2, ERCOUNT    ;SET UP ERROR COUNT 2
:           JSR    #5,STAER       ;REPORT ERROR SET
:
:      $TSWRG #100000            ;CK SW REG
:      CMP    #176,SWR          ;HW SWITCH REG THERE?
:      BEQ    .+12              ;NO, SKP HW CHECK
:      BIT    #100000,@HWSWR    ;YES, CK HW REG
:      BNE    .+10              ;IF SET, SKP SW REG CK
:      BIT    #100000,SWREG     ;OTHERWISE, ALSO CK SW REG
:      BEQ    CN2                ;CONTINUE IF BIT 15 = 0
:      JMP    9$                ;OTHERWISE LOOP

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002266 004537 004606          JSR      #5,STAER          ;REPORT ERROR SET
002272
002272 022737 000176 001004    $TSWRG #100000          ;CK SW REG
002300 001404          CMP      #176,SWR      ;HW SWITCH REG THERE?
002302 032777 100000 176502    BEQ     .+12           ;NO, SKP HW CHECK
002310 001003          BIT     #100000,@HWSWR ;YES, CK HW REG
002312 032737 100000 000176    BNE     .+10           ;IF SET, SKP SW REG CK
002320 001402          BIT     #100000,SWREG ;OTHERWISE, ALSO CK SW REG
002322 000137 001712          BEQ     CN4            ;CONTINUE IF BIT 15 = 0
002326          JMP     9$            ;OTHERWISE LOOP
1129 002326 013700 001134    CN4:   MOV     SAVE,RO      ;RESTORE, RO
1130 002332 000137 001730    JMP     12$           ;TRY AGAIN
1131
1132 002336 000241          16$:   CLC              ;CLEAR CARRY
1133 002340 006100          ROL     RO            ;SHIFT BIT
1134 002342 105700          TSTB   RO
1135 002344 100402          BMI     .+6
1136 002346 000137 001724    JMP     10$           ;NOT FINISHED
1137
1138
1139
1140
1141
1142
1143
1144 002352 012700 000176
1145 002356 142700 000200
1146 002362 010037 001134
1147
1148 002366
20$:   MOV     #176,RO      ;SET ALL EXCEPT BIT #0
      BICB   #200,RO      ;CLR BIT #7
      MOV     RO,SAVE     ;SAVE IT
22$:   $WAITO \W,,20$
      ;WAIT FOR OUPUT, OR TIMEOUT
      ;10 SEC CNTR
      ;LOAD COUNT
      ;BUMP CNTR
      ;ERROR IF TIMEOUT
      ;BUMP COUNT
      ;LOOP IF COUNT 0
      ;CK STATUS
      ;LOOP TIL DONE
      ;CONTINUE
      ;CK SW REG
      ;HW SWITCH REG THERE?
      ;NO, SKP HW CHECK
      ;YES, CK HW REG
      ;IF SET, SKP SW REG CK
      ;OTHERWISE, ALSO CK SW REG
      ;TEST FOR INHIBIT ERROR MSG
      ;BRANCH IF NO MSG WANTED
      ;TIMED OUT ERROR
002366 012737 000020 001130 WAIT3: MOV     #20,TIME
002374 012737 177777 001132 WDD3:  MOV     #-1,TIMER
002402 005337 001130          DEC     TIME
002406 001407          BEQ     WER3          ;BUMP CNTR
002410 005337 001132          DEC     TIMER        ;ERROR IF TIMEOUT
002414 001767          BEQ     WDD3         ;BUMP COUNT
002416 105777 176356          TSTB   @LPS         ;LOOP IF COUNT 0
002422 100372          BPL     WDE3         ;CK STATUS
002424 000442          BR     WEX3         ;LOOP TIL DONE
002426          WER3: $TSWRG #20000 ;CONTINUE
002426 022737 000176 001004    CMP     #176,SWR     ;CK SW REG
002434 001404          BEQ     .+12         ;HW SWITCH REG THERE?
002436 032777 020000 176346    BIT     #20000,@HWSWR ;NO, SKP HW CHECK
002444 001003          BNE     .+10         ;YES, CK HW REG
002446 032737 020000 000176    BIT     #20000,SWREG ;IF SET, SKP SW REG CK
                                ;OTHERWISE, ALSO CK SW REG
002454 001002          BNE     .+6         ;TEST FOR INHIBIT ERROR MSG
002456 104000          EMT     +0         ;BRANCH IF NO MSG WANTED
002460 006007          ETIMO
                                ;TIMED OUT ERROR
002462
002462 012737 000005 001136 ERR5: $ERROR \N,20$
002470 004537 004606          MOV     #5, ERCCOUNT ;SET UP ERROR COUNT 5
                                JSR     #5,STAER    ;REPORT ERROR SET
002474          $TSWRG #100000    ;CK SW REG

```

```

002474 022737 000176 001004      CMP      #176,SWR      ;HW SWITCH REG THERE?
002502 001404                      BEQ      .+12         ;NO, SKP HW CHECK
002504 032777 100000 176300      BIT      #100000,@HWSWR ;YES, CK HW REG
002512 001003                      BNE      .+10         ;IF SET, SKP SW REG CK
002514 032737 100000 000176      BIT      #100000,SWREG ;OTHERWISE, ALSO CK SW REG
002522 001402                      BEQ      CN5          ;CONTINUE IF BIT 15 = 0
002524 000137 002356                      JMP      20$         ;OTHERWISE LOOP
002530                                CNS:
002530 000716                      BR       WAIT3              ;LOOP
002532                                WEX3:
1149 002532 110077 176244      MOV      RO,@LPB          ;XMIT BYTE
1150                                24$:  $WAITI  \W,,20$
1151 002536                                WAIT4:  ;WAIT FOR INPUT, OR TIMEOUT
002536 012737 000100 001124      MOV      #100,WORK        ;LOAD CNTR
002544 012737 177777 001126      WDD4:  MOV      #-1,WORKA    ;LOAD COUNT
002552 005337 001124                      DEC      WORK            ;BUMP CNTR
002556 001407                      BEQ      WER4            ;ERROR IF TIMEOUT
002560 005337 001126      WDE4:  DEC      WORKA        ;BUMP COUNT
002564 001767                      BEQ      WDD4            ;LOOP IF COUNT 0
002566 105777 176304      TSTB    @DLLPS           ;CK STATUS
002572 100372                      BPL      WDE4            ;LOOP TIL DONE
002574 000442                      BR       WEX4            ;CONTINUE
002576                                WER4:  $TSWRG #20000        ;CK SW REG
002576 022737 000176 001004      CMP      #176,SWR        ;HW SWITCH REG THERE?
002604 001404                      BEQ      .+12         ;NO, SKP HW CHECK
002606 032777 020000 176176      BIT      #20000,@HWSWR  ;YES, CK HW REG
002614 001003                      BNE      .+10         ;IF SET, SKP SW REG CK
002616 032737 020000 000176      BIT      #20000,SWREG   ;OTHERWISE, ALSO CK SW REG
002624 001002                      BNE      .+6          ;TEST FOR INHIBIT ERROR MSG
002626 104000                      EMT      +0            ;BRANCH IF NO MSG WANTED
002630 005731                      ETIM
                                ;TIMED OUT ERROR
002632                                ERR6:  $ERROR  \N,20$
002632 012737 000006 001136      MOV      #6, ERCCOUNT    ;SET UP ERROR COUNT 6
002640 004537 004606      JSR      #5,STAER        ;REPORT ERROR SET
002644                                $TSWRG #100000        ;CK SW REG
002644 022737 000176 001004      CMP      #176,SWR        ;HW SWITCH REG THERE?
002652 001404                      BEQ      .+12         ;NO, SKP HW CHECK
002654 032777 100000 176130      BIT      #100000,@HWSWR ;YES, CK HW REG
002662 001003                      BNE      .+10         ;IF SET, SKP SW REG CK
002664 032737 100000 000176      BIT      #100000,SWREG  ;OTHERWISE, ALSO CK SW REG
002672 001402                      BEQ      CN6          ;CONTINUE IF BIT 15 = 0
002674 000137 002356                      JMP      20$         ;OTHERWISE LOOP
002700                                CN6:
002700 000716                      BR       WAIT4              ;LOOP
002702                                WEX4:
1152                                WEX4:
1153 002702 117701 176172      MOV      @DLRBUF,R1      ;GET BYTE IN

```

```

1154 002706 120001
1155 002710 001431      CMPB   R0,R1      ;SAME?
1156                    BEQ    26$      ;OK
1157 002712 104000
1158 002714 006756      EMT
1159 002716            $ERMS2   +0
      002716 012737 000007 001136 ERR7: $ERROR \N,20$      ;"LOOPBACK FAILED" MSG
      002724 004537 004606            MOV   #7,   ERCOUNT ;LOOPBACK FAILED
                                      JSR   #5,STAER ;SET UP ERROR COUNT 7
                                      ;REPORT ERROR SET
      002730
      002730 022737 000176 001004      $TSWRG #100000      ;CK SW REG
      002736 001404            CMP   #176,SWR      ;HW SWITCH REG THERE?
      002740 032777 100000 176044      BEQ   .+12         ;NO, SKP HW CHECK
      002746 001003            BIT   #100000,@HWSWR ;YES, CK HW REG
      002750 032737 100000 000176      BNE   .+10         ;IF SET, SKP SW REG CK
      002756 001402            BIT   #100000,SWREG ;OTHERWISE, ALSO CK SW REG
      002760 000137 002356            BEQ   CN7          ;CONTINUE IF BIT 15 = 0
      002764                    JMP   20$          ;OTHERWISE LOOP
1160 002764 013700 001134      CN7: MOV   SAVE,R0      ;RESTORE, R0
1161 002770 000137 002366      JMP   22$          ;TRY AGAIN
1162
1163 002774 000261      26$: SEC
1164 002776 006100      ROL   R0          ;SET CARRY
1165 003000 105700      TSTB  R0          ;SHIFT BIT
1166 003002 100002      BPL
1167 003004 000137 002356      JMP   .+6
1168 003010 043777 001122 175762      BIC   MAINTB,@LPS ;NOT FINISHED
1169                    ;CLEAR MAINTENANCE (LOOPBACK) BIT
1170 003016      ;
1171 003016      40$:
      003016 022737 000176 001004      59$: $TSWRG #1      ;CK SW REG
      003024 001404            CMP   #176,SWR      ;HW SWITCH REG THERE?
      003026 032777 000001 175756      BEQ   .+12         ;NO, SKP HW CHECK
      003034 001003            BIT   #1,@HWSWR      ;YES, CK HW REG
      003036 032737 000001 000176      BNE   .+10         ;IF SET, SKP SW REG CK
1172 003044 001402            BIT   #1,SWREG      ;OTHERWISE, ALSO CK SW REG
1173 003046 000137 001464      BEQ   TEST2       ;CONTINUE IF = 0
1174                    JMP   TEST1       ;IF SET, LOOP ON TEST
1175
1176

```

```

1178 .SBTTL TEST 2 COLOR PRINTER 'SELF' TEST
1179 ;*****
1180 ;
1181 ; Test 2 Initialization Test
1182 ;
1183 ; -A Invoke "Confidence (Self) Test" of Color Printer
1184 ;
1185 ; -B Monitor and report unexpected response:
1186 ;
1187 ; Issue request for device "state" or "status" and check for
1188 ; correct response:
1189 ;
1190 ; "VERIFIED" message = I'm OK
1191 ; Anything else = I'm Not OK
1192 ;
1193 ;
1194 003052 TEST2: $TSWRG #40000 ;CK SW REG
003052 022737 000176 001004 CMP #176,SWR ;HW SWITCH REG THERE?
003060 001404 BEQ .+12 ;NO, SKP HW CHECK
003062 032777 040000 175722 BIT #40000,@HWSWR ;YES, CK HW REG
003070 001003 BNE .+10 ;IF SET, SKP SW REG CK
003072 032737 040000 000176 BIT #40000,SWREG ;OTHERWISE, ALSO CK SW REG
1195 003100 001002 BNE 61$ ;IF SET, SKIP TST # HDR MSG
1196 003102 $PRTSN 2 ;PRINT TEST NUMBER
003102 104000 EMT +0 ;TEST NUMBER MESSAGE
003104 005630 TY02

; SEND "ESCAPE" SEQUENCE TO THE PRINTER
1200 ;
1201 ;
1202 003106 61$: $PRINT LCPS ;INVOKE CONFIDENCE TEST
003106 012737 005542 004312 MOV #LCPS,PRMSG ;LOAD MESSAGE ADDRESS
003114 004437 004250 JSR #4,PRINE ;PRINT IT

; EXPECT "VERIFIED" MESSAGE FROM PRINTER
1203 ;
1204 ;
1205 ;
1206 ;
1207 ;
1208 ;
1209 003120 62$: MOV #BUFF,R3 ;GET RESPONSE
1210 003124 105013 CLRB (R3) ;INPUT BUFFER ADDRESS
1211 003126 012701 005556 MOV #LCP7,R1 ;NULL BYTE
1212 003132 111100 MOVB (R1),R0 ;EXPECTED STRING ADDRESS
1213 003134 001002 BNE .+6 ;GET EXPECTED CHAR
1214 003136 000137 003604 JMP 69$ ;END OF MSG, EXIT
1215 003142 $WAITI \W.,TEST2,#600 ;WAIT FOR INPUT, OR TIMEOUT

003142 WAIT5: MOV #100,WORK ;LOAD CNTR
003142 012737 000100 001124 CMP #1,CYCCNT ;2ND PASS?
003150 022737 000001 001064 BNE WDD5 ;NO, LEAVE COUNT AS IS
003156 001003 MOV #600,WORK ;LOAD CNTR WITH LONG CNT
003160 012737 000600 001124 WDD5: MOV #-1,WORKA ;LOAD COUNT
003166 012737 177777 001126 DEC WORK ;BUMP CNTR
003174 005337 001124 BEQ WERS ;ERROR IF TIMEOUT
003200 001407 WDE5: DEC WORKA ;BUMP COUNT
003202 005337 001126

```

```

003206 001767
003210 105777 175662
003214 100372
003216 000442
003220
003220 022737 000176 001004 WERS: $TSWRG #20000 ;CK SW REG
003226 001404 CMP #176,SWR ;HW SWITCH REG THERE?
003230 032777 020000 175554 BEQ .+12 ;NO, SKP HW CHECK
003236 001003 BIT #20000,@HWSWR ;YES, CK HW REG
003240 032737 020000 000176 BNE .+10 ;IF SET, SKP SW REG CK
;OTHERWISE, ALSO CK SW REG
003246 001002 BIT #20000,SWREG ;TEST FOR INHIBIT ERROR MSG
;BRANCH IF NO MSG WANTED
003250 104000
003252 005731 EMT +0
ETIM ;TIMED OUT ERROR
003254
003254 012737 000010 001136 ERR10: $ERROR \N,TEST2
003262 004537 004606 MOV #10, ERCOUNT ;SET UP ERROR COUNT 10
JSR #5,STAER ;REPORT ERROR SET
003266
003266 022737 000176 001004 $TSWRG #100000 ;CK SW REG
003274 001404 CMP #176,SWR ;HW SWITCH REG THERE?
003276 032777 100000 175506 BEQ .+12 ;NO, SKP HW CHECK
003304 001003 BIT #100000,@HWSWR ;YES, CK HW REG
003306 032737 100000 000176 BNE .+10 ;IF SET, SKP SW REG CK
003314 001402 BIT #100000,SWREG ;OTHERWISE, ALSO CK SW REG
003316 000137 003052 BEQ CN10 ;CONTINUE IF BIT 15 - 0
003322 000707 BR WAIT5 ;LOOP
003324
1216 003324 117702 175550 WEX5:
1217 003330 110223 MOV B @DLRBUF,R2 ;GET CHAR IN
1218 003332 105013 MOV B R2,(R3)+ ;STORE IT
1219 003334 112100 CLRB (R3) ;NULL NEXT BYTE
1220 003336 120002 MOV B (R1)+,R0 ;GET EXPECTED CHAR
1221 003340 001674 CMPB R0,R2 ;COMPARE
1222 BEQ 64$ ;OK, WAIT FOR ANOTHER
;
; IGNORE UP TO 4 GARBAGE BYTES. LOOKING FOR "V"
1225 003342 020327 001172 CMP R3,#BUFF+4 ;R3 POINTS TO GARBAGE STORED
1226 003346 003003 BGT 66$ ;MORE THAN 4 MISCOMPARES
1227 003350 105741 TSTB -(R1) ;RESET TO BEGINING OF MSG
1228 003352 000137 003132 JMP 64$ ;TRY AGAIN
1229
1230 003356 104000 66$: EMT +0
1231 003360 007120 ERMS4 ;UNEXPECTED RESPONSE
1232 003362
003362 012737 000011 001136 ERR11: $ERROR \N
003370 004537 004606 MOV #11, ERCOUNT ;SET UP ERROR COUNT 11
JSR #5,STAER ;REPORT ERROR SET
1233
1234 ; Print incomplete "VERIFIED" message from "Power-up" diagnostic
1235 ;
1236 003374 104000 EMT +0
1237 003376 001166 BUFF ;Stored message

```

```

1238 003400 012737 000005 001062      MOV      #5,LINCNT      ;Load line count
1239                                     ;
1240                                     ; Type all subsequent info sent by printer = error info
1241                                     ;
1242 003406      67$:      $WAITI  \W,79$,TEST?
                                ;WAIT FOR INPUT, OR TIMEOUT
                                ;
                                ;
003406      WAIT6:
003406 012737 000100 001124      MOV      #100,WORK      ;LOAD CNTR
003414 012737 177777 001126      WDD6:    MOV      #-1,WORKA
                                ;LOAD COUNT
003422 005337 001124      DEC      WORK           ;BUMP CNTR
003426 001407      BEQ      WER6          ;ERROR IF TIMEOUT
003430 005337 001126      WDE6:    DEC      WORKA    ;BUMP COUNT
003434 001767      BEQ      WDD6          ;LOOP IF COUNT 0
003436 105777 175434      TSTB    @DLLPS        ;CK STATUS
003442 100372      BPL      WDE6          ;LOOP TIL DONE
003444 000443      BR      WEX6          ;CONTINUE
003446      WER6:    $TSWRG  #20000      ;CK SW REG
003446 022737 000176 001004      CMP      #176,SWR      ;HW SWITCH REG THERE?
003454 001404      BEQ      .+12          ;NO, SKP HW CHECK
003456 032777 020000 175326      BIT      #20000,@HWSWR ;YES, CK HW REG
003464 001003      BNE      .+10          ;IF SET, SKP SW REG CK
003466 032737 020000 000176      BIT      #20000,SWREG  ;OTHERWISE, ALSO CK SW REG
                                ;TEST FOR INHIBIT ERROR MSG
                                ;BRANCH IF NO MSG WANTED
003474 001002      BNE      .+6
003476 104000      EMT
003500 005731      ETIM      +0
                                ;TIMED OUT ERROR
003502
003502 012737 000012 001136      ERR12:  $ERROR  \N,TEST2
003510 004537 004606      MOV      #12,  ERCOUNT ;SET UP ERROR COUNT 12
                                ;REPORT ERROR SET
                                ;
003514      $TSWRG  #100000      ;CK SW REG
003514 022737 000176 001004      CMP      #176,SWR      ;HW SWITCH REG THERE?
003522 001404      BEQ      .+12          ;NO, SKP HW CHECK
003524 032777 100000 175260      BIT      #100000,@HWSWR ;YES, CK HW REG
003532 001003      BNE      .+10          ;IF SET, SKP SW REG CK
003534 032737 100000 000176      BIT      #100000,SWREG ;OTHERWISE, ALSO CK SW REG
003542 001402      BEQ      CN12          ;CONTINUE IF BIT 15 = 0
003544 000137 003052      JMP      TEST2         ;OTHERWISE LOOP
003550      CN12:
003550 000137 003604      JMP      79$           ;EXIT
003554      WEX6:
1243
1244 003554 117737 175320 004464      MOVB    @DLRBUF,TYPDAT ;Character from printer
1245 003562 004737 004400      JSR      #7,TYPD        ;Type it
1246 003566 022737 000015 004464      CMP      #15,TYPDAT    ; CR?
1247 003574 001304      BNE      67$           ;No, loop
1248
1249 003576 005337 001062      DEC      LINCNT        ;Bump line count
1250 003602 001301      BNE      67$           ;Loop if not done
1251
1252
1253 003604      69$:
1254 003604      79$:      $TSWRG  #2           ;CK SW REG

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	003604	022737	000176	001004		CMP	#176,SWR	;HW SWITCH REG THERE?
	003612	001404				BEQ	+.12	;NO, SKP HW CHECK
	003614	032777	000002	175170		BIT	#2,@HWSWR	;YES, CK HW REG
	003622	001003				BNE	+.10	;IF SET, SKP SW REG CK
	003624	032737	000002	000176		BIT	#2,SWREG	;OTHERWISE, ALSO CK SW REG
1255	003632	001402				BEQ	TEST3	;CONTINUE IF = 0
1256	003634	000137	003052			JMP	TEST2	;IF SET, LOOP ON TEST
1257								
1258								

```

1260 .SBTTL TEST 3 PRINTER DISPLAY TEST
1261 ;*****
1262 ;
1263 ;
1264 ; Test 3 Display Test
1265 ;
1266 ; -A Send "Escape Sequence" to color printer
1267 ; to initiate Pattern display
1268 ;
1269 003640 005737 001064 TEST3: TST CYCCNT ;CK PASS COUNT
1270 003644 001416 BEQ 82$ ;IF 1ST PASS, EXECUTE TEST ALWAYS
1271
1272 003646 $TSWRG #4 ;ONLY IF LOOP ON TST BIT, CONTINUE
003646 022737 000176 001004 CMP #176,SWR ;HW SWITCH REG THERE?
003654 001404 BEQ .+12 ;NO, SKP HW CHECK
003656 032777 000004 175126 BIT #4,@HWSWR ;YES, CK HW REG
003664 001003 BNE .+10 ;IF SET, SKP SW REG CK
003666 032737 000004 000176 BIT #4,SWREG ;OTHERWISE, ALSO CK SW REG
1273 003674 001002 BNE 82$ ;SET, CONTINUE TEST
1274 003676 000137 004070 JMP TSEND ;OTHERWISE, EXIT>>>>>>>>>
1275
1276 003702 82$: $TSWRG #40000 ;CK SW REG
003702 022737 000176 001004 CMP #176,SWR ;HW SWITCH REG THERE?
003710 001404 BEQ .+12 ;NO, SKP HW CHECK
003712 032777 040000 175072 BIT #40000,@HWSWR ;YES, CK HW REG
003720 001003 BNE .+10 ;IF SET, SKP SW REG CK
003722 032737 040000 000176 BIT #40000,SWREG ;OTHERWISE, ALSO CK SW REG
1277 003730 001002 BNE 83$ ;IF SET, SKIP TST # HDR MSG
1278 003732 $PRTSN 3
003732 104000 EMT .0 ;PRINT TEST NUMBER
003734 005673 TY03 ;TEST NUMBER MESSAGE
1279
1280 ;
1281 ; DELAY FOR A SEC
1282 ;
1283 003736 012737 000004 001124 83$: MOV #4,WORK ;2 SEC CNTR
1284 003744 012737 177777 001126 84$: MOV #-1,WORKA ;LOAD COUNT
1285 003752 005337 001124 DEC WORK ;BUMP CNTR
1286 003756 001404 BEQ 87$ ;TIMEOUT
1287 003760 005337 001126 86$: DEC WORKA ;BUMP COUNT A
1288 003764 001767 BEQ 84$ ;LOOP IF COUNT 0
1289 003766 000774 BR 86$ ;LOOP TIL DONE
1290
1291 ;
1292 ; SEND "ESCAPE" SEQUENCE TO THE PRINTER
1293 ;
1294 003770 87$:
1295
1296 003770 $PRINT LCP4 ;INVOKE DISPLAY TEST
003770 012737 005533 004312 MOV #LCP4,PRMSG ;LOAD MESSAGE ADDRESS
003776 004437 004250 JSR #4,PRINE ;PRINT IT
1297
1298 ;
1299 ; DELAY FOR A COUPLE OF MINUTES
1300 ;
1301 004002 012737 000400 001124 93$: MOV #400,WORK ;TWO MIN CNTR
1302 004010 012737 177777 001126 94$: MOV #-1,WORKA ;LOAD COUNT
    
```

```
1303 004016 005337 001124          DEC      WORK          ;BUMP CNTR
1304 004022 001404                   BEQ      99$           ;TIMEOUT
1305 004024 005337 001126          96$:    DEC      WORKA  ;BUMP COUNT A
1306 004030 001767                   BEQ      94$           ;LOOP IF COUNT 0
1307 004032 000774                   BR       96$           ;LOOP TIL DONE
1308
1309
1310 004034                   ;
      004034 022737 000176 001004    99$:    $TSWRG #4       ;CK SW REG
      004042 001404                   CMP      #176,SWR     ;HW SWITCH REG THERE?
      004044 032777 000004 174740    BEQ      .+12         ;NO, SKP HW CHECK
      004052 001003                   BIT      #4,@HWSWR   ;YES, CK HW REG
      004054 032737 000004 000176    BNE      .+10         ;IF SET, SKP SW REG CK
1311 004062 001402                   BIT      #4,SWREG    ;OTHERWISE, ALSO CK SW REG
1312 004064 000137 003640          BEQ      TSEND       ;CONTINUE IF = 0
1313                                JMP      TEST3       ;IF SET, LOOP ON TEST
1314
1315                                .DSABL LSB
```

```

1317
1318
1319
1320
1321
1322
1323 004070 005237 001064
1324 004074
      004074 022737 000176 001004
      004102 001404
      004104 032777 040000 174700
      004112 001003
      004114 032737 040000 000176
1325 004122 001045
1326 004124 004537 004466
1327 004130 001064
1328 004132 006475
1329 004134 000004
1330 004136 104000
1331 004140 006457
1332 004142
      004142 022737 000176 001004
      004150 001404
      004152 032777 010000 174632
      004160 001003
      004162 032737 010000 000176
1333 004170 001002
1334 004172 000137 001464
1335
1336 004176 104000
1337 004200 006416
1338 004202 105777 174614
1339 004206 100375
1340 004210 117700 174602
1341 004214 142700 000140
1342 004220 122700 000004
1343 004224 001004
1344 004226 004737 014066
1345
1346 004232 000137 001306
1347
1348 004236 000137 001464
1349

.SBTTL
.SBTTL END OF TEST SEQUENCE
:*****
:
: END OF TEST SEQUENCE. WAIT FOR KEY INPUT.
:
TSEND:  INC      CYCCNT      ;BUMP PASS COUNT
        $TSWRG  #40000      ;CK SW REG
        CMP     #176,SWR    ;HW SWITCH REG THERE?
        BEQ     .+12        ;NO, SKP HW CHECK
        BIT     #40000,@HWSR ;YES, CK HW REG
        BNE     .+10        ;IF SET, SKP SW REG CK
        BIT     #40000,SWREG ;OTHERWISE, ALSO CK SW REG
        BNE     TSRST       ;DON'T PRINT IF = SET
        JSR     #5,CONV     ;CONVERT PASS #
        CYCCNT
        MES9
        &
        MT      +0
        MES8
        $TSWRG  #10000      ;CK SW REG
        CMP     #176,SWR    ;HW SWITCH REG THERE?
        BEQ     .+12        ;NO, SKP HW CHECK
        BIT     #10000,@HWSR ;YES, CK HW REG
        BNE     .+10        ;IF SET, SKP SW REG CK
        BIT     #10000,SWREG ;OTHERWISE, ALSO CK SW REG
        BNE     TSEAB       ;PAUSE IF = SET
        JMP     TEST1       ;LOOP TO BEGINING OF TEST

TSEAB:  EMT      +0
        MES7
TSEDA:  TSTB     @TKS
        BPL     TSEDA
        MOVB    @TKB,RO
        BICB    #140,RO
        CMPB    #4,RO
        BNE     TSRST
        JSR     #7,CLRTTY
        ;ANY KEY TO RESTART
        ;KEY INPUT?
        ;IF NOT LOOP
        ;GET INPUT CHAR
        ;CLR UPPER 2 BITS
        ;CTRL D, S, D, OR d
        ;IF NOT
        ;CLR PENDING CHARACTERS

TSRSS:  JMP      SETUP
TSRST:  JMP      TEST1
    
```

```

1351 .SBTTL MISC. SUBROUTINES
1352 ;*****
1353 ;
1354 ; MISC. ROUTINES
1355 ;
1356 ;*****
1357 ;
1358 ; ROUTINE TO OUTPUT ASCII MESSAGES ON THE LINE PRINTER
1359 ;
1360 004242 012737 006570 004312 PRNNT: MOV #MES14,PRMSG ;PRINT TEST NUMBER
1361 004250 004737 014122 PRINE: JSR #7,ERCHK ;TEST FOR ERROR
1362 004254 100007 BPL RINT ;BRANCH IF OK
1363 004256 104000 EMT +0
1364 004260 007305 ERMS6 ;STATUS ERROR
1365 004262 012737 000013 001136 ERR13: MOV #13, ERRCOUNT ;SET UP ERROR COUNT 13
1366 004270 004537 004606 JSR #5,STAER ;REPORT ERROR SET
1367 004274 013737 001000 001020 RINT: MOV LPS,TPS ;SET VECTORS -
1368 004302 013737 001002 001014 MOV LPB,TPB ;TO PRINT ON LINE PRINTER
1369 004310 104000 EMT +0 ;PRINT
1370 004312 006570 PRTMSG: MES14 ;MESSAGE
1371 004314 012737 177564 001020 TYPINT: MOV #177564,TPS ;RESET VECTORS
1372 004322 012737 177566 001014 MOV #177566,TPB ;FOR TTY
1373 004330 000204 RTS #4 ;RETURN
1374 ;*****
1375 ;
1376 ; INTERRUPT CALLED ROUTINE TO OUTPUT ASCII MESSAGES ON TELETYPE PRINTER
1377 ;
1378 ; EMT +0
1379 ; POINTER TO MESSAGE
1380 ;
1381 004332 011600 TYP: MOV @#6,#0 ;GET ADDR. THAT CONTAINS MESS.
1382 004334 062716 000002 ADD #2,@#6 ;SET UP EXIT
1383 004340 011000 MOV @#0,#0 ;ADDRESS OF MESSAGE IN RO
1384 004342 112037 004464 TYPA: MOV (0),TYPDAT ;GET CHARACTER
1385 004346 001001 BNE TYPC ;BRANCH IF NOT DONE
1386 004350 000002 RTI ;EXIT
1387 004352 122737 000045 004464 TYPC: CMPB #45,TYPDAT ;CHECK FOR "*"
1388 004360 001426 BEQ TYPF ;BRANCH IF "*"
1389 004362 122737 000043 004464 CMPB #43,TYPDAT ;CHECK FOR "@"
1390 004370 001427 BEQ TYPG ;BRANCH IF "@"
1391 004372 004737 004400 JSR #7,TYPD ;TYPE CHARACTER IN TYPDAT
1392 004376 000761 BR TYPA ;NEXT CHAR IN MESSAGE
1393 004400 113777 004464 174406 TYPD: MOV TYPDAT,@TPB ;OUTPUT CHARACTER TO PRINTER
1394 004406 023737 001020 001120 CMP TPS,DZCSRH ;ARE WE REALLY TALKING TO A DZ
1395 004414 001004 BNE TYPD0 ;DR, IF NOT DZ
1396 004416 005777 174376 TST @TPS ;IF DZ BIT 15 IS READY BIT NOT BIT 7
1397 004422 100375 BPL .-4 ;WAIT UNTIL DONE IS SET
1398 004424 000403 BR TYPD01 ;SKIP OTHER "TSTB"
1399 004426 105777 174366 TYPD0: TSTB @TPS
1400 004432 100375 BPL .-4
1401 004434 000207 TYPD01: RTS #7 ;CHAR. TYPED EXIT
1402 004436 112737 000012 004464 TYPF: MOVB #12,TYPDAT ;OUTPUT LF
1403 004444 004737 004400 JSR #7,TYPD ;GO TYPE CHAR.
1404 004450 112737 000015 004464 TYPG: MOVB #15,TYPDAT ;OUTPUT CR
1405 004456 004737 004400 JSR #7,TYPD ;GO TYPE CHAR.

```

```

1406 004462 000727
1407 004464 000000
1408
1409
1410
1411
1412
1413
1414
1415
1416
1417
1418
1419 004466 010137 004600
1420 004472 010237 004602
1421 004476 010337 004604
1422
1423 004502 013537 004576
1424 004506 012501
1425 004510 012502
1426 004512 060201
1427 004514 013703 004576
1428 004520 042703 177770
1429 004524 062703 000060
1430 004530 110341
1431 004532 000241
1432 004534 006037 004576
1433 004540 000241
1434 004542 006037 004576
1435 004546 000241
1436 004550 006037 004576
1437 004554 005302
1438 004556 001356
1439 004560 013701 004600
1440 004564 013702 004602
1441 004570 013703 004604
1442
1443 004574 000205
1444
1445 004576 000000
1446 004600 000000
1447 004602 000000
1448 004604 000000
1449
1450
1451
1452
1453
1454 004606 010537 004752
1455 004612 004537 004466
1456 004616 001136
1457 004620 006104
1458 004622 000003
1459 004624
      004624 022737 000176 001004
      004632 001404
      004634 032777 020000 174150

```

```

          BR      TYPDAT: 0          TYPDA
          ;*****
          ;ROUTINE TO CONVERT OCTAL TO ASCII
          ;
          ;ENTER ROUTINE AS FOLLOWS
          ;   JSR      #5,CONV
          ;   XXXXXX=ADDRESS OF NUMBER TO BE CONVERTED
          ;   XXXXXX=ADDRESS OF ASCII MESSAGE
          ;   XXXXXX=NUMBER OF OCTAL NO.'S TO BE CONVERTED
          ;
CONV:     MOV      R1,CONR1          ;SAVE REG
          MOV      R2,CONR2          ;SAVE REG
          MOV      R3,CONR3          ;SAVE REG
          ;
          MOV      @5+,ACNVX         ;ADDRSS OF NO. TO BE CONVERTED
          MOV      (5)+,#1          ;ADDRESS OF MESSAGE
          MOV      (5)+,#2          ;NUMBER OF ASCII CHARACTERS
          ADD      #2,#1            ;FIRST CHAR ADDRESS
ACVN:     MOV      ACNVX,#3          ;STORE NUMBER
          BIC      #177770,#3       ;ISOLATE LEAST SIGNIFICANT BIT
          ADD      #60,#3           ;SET UP ASCII CHARACTER
          MOVB     #3,-(1)          ;STORE CHARACTER
          CLC
          ROR      ACNVX            ;GET NEXT SIGNIFICANT BIT ...
          CLC
          ROR      ACNVX
          CLC
          ROR      ACNVX
          DEC      #2               ;-1 FROM ASCII CHAR. CNT
          BNE     ACVN              ;CONVERT NEXT CHARACTER
          MOV      CONR1,R1         ;RESTORE REG
          MOV      CONR2,R2         ;RESTORE REG
          MOV      CONR3,R3         ;RESTORE REG
          RTS      #5               ;EXIT! CONVERSION DONE
          ;
ACNVX:   0                          ;WORK REGISTER
CONR1:   0
CONR2:   0
CONR3:   0
          ;*****
          ;ROUTINE TO REPORT ERROR COUNT
          ;
STAER:   MOV      #5,STARN          ;SAVE R5
          JSR      #5,CONV          ;CONVERT OCTAL TO ASCII
          ERCOUNT
          HED2
          3
          $TSWRG #20000            ;CK SW REG
          CMP     #176,SWR         ;HW SWITCH REG THERE?
          BEQ     +12              ;NO, SKP HW CHECK
          BIT     #20000,@HWSWR    ;YES, CK HW REG

```

```

004642 001003
004644 032737 020000 000176      BNE      .+10      ;IF SET, SKP SW REG CK
1460      BIT      #20000,SWREG      ;OTHERWISE, ALSO CK SW REG
1461 004652 001002      BNE      .+6      ;TEST FOR INHIBIT ERROR MSG
1462 004654 104000      EMT      +0      ;BRANCH IF SET
1463 004656 000063      HED1      ;TYPE ERROR MESSAGE
1464
1465 004660      $TSWRG #10000      ;CK SW REG
004660 022737 000176 001004      CMP      #176,SWR      ;HW SWITCH REG THERE?
004666 001404      BEQ      .+12      ;NO, SKP HW CHECK
004670 032777 010000 174114      BIT      #10000,@HWSWR ;YES, CK HW REG
004676 001003      BNE      .+10      ;IF SET, SKP SW REG CK
004700 032737 010000 000176      BIT      #10000,SWREG ;OTHERWISE, ALSO CK SW REG
1466      ;TEST FOR HALT ON ERROR
1467 004706 001416      BEQ      STEXT      ;BRANCH IF NO HALT WANTED
1468      ;HALT ON ERROR
1469 004710 104000      ;PRINT IT
1470 004712 006504      EMT      +0
1471      MES10
1472 004714 105777 174102      STEDA: TSTB @TKS      ;KEY INPUT?
1473 004720 100375      BPL      STEDA      ;IF NOT LOOP
1474 004722 117705 174070      MOVB @TKB,R5      ;GET INPUT CHAR
1475 004726 142705 000140      BICB #140,R5      ;CLR UPPER 2 BITS
1476 004732 122705 000004      CMPB #4,R5      ;CTRL D, ↑, D, OR ↓
1477 004736 001002      BNE      STEXT      ;IF NOT
1478 004740 004737 014066      JSR      #7,CLRTTY ;CLR PENDING CHARACTERS
1479
1480 004744 013705 004752      STEXT: MOV      STARN,#5 ;RESTORE R5
1481 004750 000205      RTS      #5      ;RETURN
1482      .EVEN
1483 004752 000000      STARN: .WORD 0      ;RETURN STORAGE

```

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1485 .SBTTL KEYBOARD INTERRUPT ROUTINE
1486 ;*****
1487 ;
1488 ;KEYBOARD INTERRUPT ROUTINE
1489 ;FOR ACCESS TO THE S/W SWITCH REGISTER
1490 ;
1491
1492 004754 010046 TKINT: MOV #0,-(SP) ;SAVE REGISTERS
1493 004756 010146 MOV #1,-(SP) ;
1494 004760 010246 MOV #2,-(SP) ;
1495 004762 010346 MOV #3,-(SP) ;
1496 004764 010446 MOV #4,-(SP) ;
1497 004766 010546 MOV #5,-(SP) ;
1498
1499
1500 :::000 TST SIGNAL ;PREVIOUS CONTROL-G INPUT ?
1501 004770 017737 174022 001160 :::000 BEQ CNTRLG ;'O-
1502 004776 042737 177600 001160 MOV @TKB,CHAR ;GET INPUT CHARACTER
1503 005004 022737 000007 001160 BIC #177600,CHAR ;STRIP OFF PARITY BIT
1504 005012 001527 CMP #7,CHAR ;CONTROL-G INPUT?
1505 005014 022737 000015 001160 BEQ TYP SWR ;YES-PRINT HEADER
1506 005022 001466 CMP #15,CHAR ;CARRIAGE RETURN ?
1507 005024 022737 000025 001160 BEQ DGTS ;YES-TERMINATE SWR CHANGE
1508 005032 001557 CMP #25,CHAR ;CONTROL-U INPUT ?
1509 005034 022737 000010 001160 BEQ TK4 ;YES-CLEAR PREVIOUS ENTRY
1510 005042 001576 CMP #10,CHAR ;CONTROL-H INPUT ?
1511 BEQ TKHLP ;YES-PRINT HELP
1512 005044 022737 000003 001160 CMP #3,CHAR ;CONTROL-C INPUT ?
1513 005052 001564 BEQ TK9 ;YES-ABORT
1514
1515 005054 023727 001160 000060 CMP CHAR,#60 ;ILLEGAL # CHECK: LESS THAN 60 ?
1516 005062 100001 BPL TK1 ;NO-CONTINUE
1517 005064 000466 BR WT3 ;YES-PRINT "?"
1518 005066 022737 000067 001160 TK1: CMP #67,CHAR ;ILLEGAL # CHECK: GREATER THAN 67 ?
1519 005074 100001 BPL TK2 ;NO-CONTINUE
1520 005076 000461 BR WT3 ;YES-PRINT "?"
1521 005100 005237 001152 TK2: INC DIGITS ;NEXT DIGIT OF SWR INPUT
1522 005104 022737 000006 001152 CMP #6,DIGITS ;MORE THAN SIX DIGITS ?
1523 005112 100453 BMI WT3 ;YES-PRINT "?"
1524 005114 105777 173700 WT2: TSTB @TPS ;TTY PRINTER READY ?
1525 005120 100375 BPL WT2 ;NO-WAIT
1526 005122 013777 001160 173664 MOV CHAR,@TPB ;PRINT CHARACTER
1527 005130 162737 000060 001160 SUB #60,CHAR ;CONVERT TO OCTAL
1528 005136 022737 000001 001152 CMP #1,DIGITS ;FIRST DIGIT ?
1529 005144 001411 BEQ TK5 ;YES-CONTINUE
1530 005146 000241 CLC ;ROTATE LEFT THREE
1531 005150 006137 001162 ROL OCT ;TIMES
1532 005154 000241 CLC ;THIS WILL SHIFT
1533 005156 006137 001162 ROL OCT ;SWR VALUE ONE
1534 005162 000241 CLC ;PLACE LEFT
1535 005164 006137 001162 ROL OCT ;OCTAL.
1536 005170 063737 001160 001162 TK5: ADD CHAR,OCT ;NEW VALUE OF SWR
1537 005176 000503 BR TK6 ;RETURN FROM INTERRUPT
1538 005200 005737 001152 DGTS: TST DIGITS ;SWR VALUE CHANGED ?
1539 005204 001470 BEQ TK3 ;NO-RETURN ,NO CHANGE TO SWR
1540 005206 013737 001162 000176 MOV OCT,SWREG ;YES-ENTER NEW SWR VALUE
1541 005214 000464 BR TK3 ;RETURN FROM INTERRUPT

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1542 005216 017737 173574 001160 CNTRLG: MOV @TKB,CHAR ;GET CHARACTER
1543 005224 042737 177600 001160 BIC #177600,CHAR ;STRIP OFF PARITY BIT
1544 005232 022737 000007 001160 CMP #7,CHAR ;CONTROL-G INPUT ?
1545 005240 001414 BEQ TYP5WR ;YES-PRINT HEADER
1546 005242 105777 173552 WT3: TSTB @TPS ;TTY PRINTER READY ?
1547 005246 100375 BPL WT3 ;NO-WAIT
1548 005250 013777 001160 173536 MOV CHAR,@TPB ;PRINT CHARACTER
1549 005256 104000 EMT +0 ;PRINT "?"
1550 005260 006614 MES22
1551 005262 005737 001154 TST SIGNAL ;BAD VALUE ?
1552 005266 001001 BNE TYP5WR ;YES-PRINT HEADER
1553 005270 000442 BR TK7 ;RETURN FROM INTERRUPT
1554 005272 012737 000001 001154 TYP5WR: MOV #1,SIGNAL ;SET FLAG: CONTROL-G ENTERED
1555 005300 104000 EMT +0
1556 005302 006612 MES21 ;CR
1557 005304 022737 000176 001004 CMP #176,SWR ;H/W SW REG THERE?
1558 005312 001411 BEQ TYP5WX ;NO, SKIP H/W REG DUMP
1559 005314 104000 EMT +0
1560 005316 006656 MES26 ;H/W SW REG HDR
1561 005320 004537 004466 JSR #5,CONV
1562 005324 177570 177570 MES27
1563 005326 006672 6
1564 005330 000006 EMT +0
1565 005332 104000 MES27
1566 005334 006672 TYP5WX: EMT +0 ;PRINT HEADER
1567 005336 104000 MES23
1568 005340 006620 JSR #5,CONV ;CONVERT SWR VALUE TO ASCII
1569 005342 004537 004466 176
1570 005346 000176 MES25
1571 005350 006647 6
1572 005352 000006 EMT +0 ;PRINT SWR VALUE
1573 005354 104000 MES25
1574 005356 006647 EMT +0 ;PRINT HEADER
1575 005360 104000 MES24
1576 005362 006630 BR TK7 ;RETURN FROM INTERRUPT
1577 005364 000404 TK3: CLR SIGNAL ;CLEAR CONTROL-G FLAG
1578 005366 005037 001154 TK4: EMT +0 ;PRINT LINE FEED AND CARRIAGE RETURN
1579 005372 104000 MES21
1580 005374 006612 TK7: CLR DIGITS ;CLEAR DIGIT COUNT
1581 005376 005037 001152 CLR OCT ;CLEAR SWR INPUT
1582 005402 005037 001162 TK6: MOV (SP)+,#5 ;RESTORE REGISTERS
1583 005406 012605 MOV (SP)+,#4
1584 005410 012604 MOV (SP)+,#3
1585 005412 012603 MOV (SP)+,#2
1586 005414 012602 MOV (SP)+,#1
1587 005416 012601 MOV (SP)+,#0
1588 005420 012600 RTI ;RETURN FROM INTERRUPT
1589 005422 000002 ;
1590 ;
1591 005424 012746 000340 TK9: MOV #340,-(SP) ;ABORT AND GO TO 200, RESTART
1592 005430 012746 005440 MOV #.+10,-(SP)
1593 005434 000137 001306 JMP SETUP
1594 ;
1595 ; Help - reached by <ctrl>H
1596 ;
1597 005440 104000 TKHLP: EMT +0
1598 005442 007350 HLP0

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1599	005444	104000	EMT	+0
1600	005446	007420	HLP1	
1601	005450	104000	EMT	+0
1602	005452	007514	HLP2	
1603	005454	104000	EMT	+0
1604	005456	007541	HLP3	
1605	005460	104000	EMT	+0
1606	005462	007611	HLP4	
1607	005464	104000	EMT	+0
1608	005466	007672	HLP4A	
1609	005470	104000	EMT	+0
1610	005472	007752	HLP5	
1611	005474	104000	EMT	+0
1612	005476	010040	HLP6	
1613	005500	104000	EMT	+0
1614	005502	010100	HLP7	
1615	005504	104000	EMT	+0
1616	005506	010163	HLP8	
1617	005510	000726	BR	TK3
1618				

```

1620 .SBTTL LOCAL MESSAGES
1621 .NLIST BEX
1622 .EVEN
1623 ;*****
1624 ;
1625 ;   DEVICE "ESCAPE SEQUENCES"
1626 ;
1627 ;   AND OPERATOR MESSAGES.
1628 ;
1629 005512      033      133      143  DAR1:  .ASCIZ  <33>\[c\           ;What are you?
1630 005516      033      133      060  DAR2:  .ASCIZ  <33>\[0c\          ;What are you?
1631 005523      033      133      077  LCP3:  .ASCIZ  <33>\[??;0c\       ;<answer> I am a LCPO (Color printer).
1632 005533      033      133      066  LCP4:  .ASCIZ  <33>\[6;2y\       ;Display pattern
1633 005542      033      133      066  LCP5:  .ASCIZ  <33>\[6;1y\       ;Run Confidence test on clr ptr.
1634 005551      033      133      065  DAR6:  .ASCIZ  <33>\[5n\          ;Report your status.
1635 005556      126      105      122  LCP7:  .ASCIZ  \VERIFIED\       ;<answer> I'm OK (Color Printer).
1636 005567      021      000      DAR9:  .ASCIZ  <21>              ;XON
1637 005571      045      124      105  TY01:  .ASCIZ  \*TEST 1, SERIAL LINE UNIT TEST\
1638 005630      045      124      105  TY02:  .ASCIZ  \*TEST 2, COLOR PRINTER 'SELF' TEST\
1639 005673      045      124      105  TY03:  .ASCIZ  \*TEST 3, PRINTER DISPLAY TEST\
1640
1641
1642 005731      045      105      122  ETIM:  .ASCIZ  \*ERROR - TIMEOUT, WAITING FOR INPUT, RESPONSE\
1643 006007      045      105      122  ETIMO: .ASCIZ  \*ERROR - TIMEOUT, WAITING FOR OUTPUT, DONE$\
1644 006063      045      040      055  HED1:  .ASCII  /* - ERROR NUMBER /
1645 006104      040      040      040  HED2:  .ASCIZ  / * /
1646 006114      045      123      124  MESDD: .ASCIZ  /*STARTING EVFU PRINTING TESTS*/
1647 006153      045      045      103  MES1:  .ASCIZ  \*CZLCP-A-0\
1648 006167      045      103      132  MES2:  .ASCIZ  \*CZLCP0 COLOR PRINTER DIAGNOSTIC\
1649 006230      045      125      116  MES3:  .ASCIZ  \*UNIT IS TEX*\
1650 006246      045      122      105  MES4:  .ASCIZ  \*RESTART ADDRESS 200*\
1651 006274      045      116      157  MES5:  .ASCIZ  \*Now begins the Color Printer Diagnostic*\
1652 006347      045      103      157  MES6:  .ASCIZ  \*Color Printer Diagnostic Completed*\
1653 .EVEN
1654 006416      045      120      162  MES7:  .ASCIZ  \*Press Any Key to Restart test..\
1655 006457      045      105      116  MES8:  .ASCII  \*END OF PASS: \
1656 006475      040      040      040  MES9:  .ASCIZ  \ * \
1657 006504      045      120      101  MES10: .ASCIZ  \*PAUSE (HALT) ON ERROR, Press Any Key to Continue..\
1658
1659 .EVEN
1660 006570      012      012      124  MES14: .ASCIZ  <12><12>\TEST NUMBER \
1661 006607      040      040      000  MES20A: .ASCIZ  / /
1662 .EVEN
1663 006612      045      000      MES21: .ASCIZ  /*/
1664 006614      040      077      045  MES22: .ASCIZ  / ?*/
1665 006620      123      127      122  MES23: .ASCIZ  /*SWR = /
1666 006630      040      040      040  MES24: .ASCIZ  / NEW SWR = /
1667 006647      040      040      040  MES25: .ASCIZ  / /
1668 006656      050      110      057  MES26: .ASCIZ  \ (H/W SWR = \
1669 006672      040      040      040  MES27: .ASCIZ  \ ) , \
1670 .EVEN
1671 006704      045      105      122  ERMS1: .ASCIZ  \*ERROR - SERIAL LINE NOT AT THIS ADDRESS*\
1672 006756      045      105      122  ERMS2: .ASCIZ  \*ERROR - SERIAL LINE "LOOPBACK" FAILED*\
1673 007026      045      105      122  ERMS3: .ASCIZ  \*ERROR - UNEXPECTED RESPONSE, TO "WHAT ARE YOU?" REQUEST*\
1674 007120      045      105      122  ERMS4: .ASCIZ  \*ERROR - UNEXPECTED RESPONSE, TO "POWER-UP" (SELF) TEST*\
1675 007211      045      105      122  ERMS5: .ASCIZ  \*ERROR - UNEXPECTED RESPONSE, TO "POWER-UP" STATUS REQUEST*\
1676 007305      045      117      125  ERMS6: .ASCIZ  \*OUTPUT, SERIAL LINE STATUS ERROR*\
    
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```
1677
1678 007350 045 045 040 hlp0: .asciz \*\ HELP, Switch Register Bit definition\
1679 007420 045 040 040 hlp1: .asciz \* (Note: <CTRL>G - Allows change to "Software" Switch Reg)\
1680 007514 045 061 065 hlp2: .asciz \*15)14,13,12...2,1,0\
1681 007541 045 040 174 hlp3: .asciz \* ) ) ) ) ) ) )_Loop on SLU Test 1\
1682 007611 045 040 174 hlp4: .asciz \* ) ) ) ) ) ) )_Loop on Printer "Self" Test 2\
1683 007672 045 040 174 hlp4a: .asciz \* ) ) ) ) ) ) )_Loop on Printer Display Test 3\
1684 007752 045 040 174 hlp5: .asciz \* ) ) ) )_Pause on Error, and Pause at End of Pass\
1685 010040 045 040 174 hlp6: .asciz \* ) ) )_Inhibit Error Reports\
1686 010100 045 040 174 hlp7: .asciz \* ) )_Inhibit Test Number and End of Pass Reports\
1687 010163 045 040 174 hlp8: .asciz \* )_Loop On Error (otherwise continue)\
```

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1689          .SBTTL SERIAL LINE SETUP ROUTINES
1690          .EVEN
1691          ;*****
1692          ;
1693          ;           THIS SUBROUTINE SETS UP THE SERIAL LINE INTERFACE IF THERE IS ONE
1694          ;
1695          ;*****
1696 010234    SETSER:
1697 010234    CLR      DZCSRH          ;CLEAR DZ'S CSR HOLDER
1698 010240    CLR      DZTCR          ;CLEAR PSEUDO DZ TCR REG
1699 010244    CLR      DZLPR          ;CLEAR PSEUDO DZ LPR REG
1700 010250    CLR      DLHERE         ;CLEAR DL'S PRESENCE AREA
1701 010254    CLR      BRATE          ;CLEAR DZ'S BAUD RATE HOLDER
1702 010260    20$:   ; CMP      SERSW,#1      ;HAVE WE ALREADY SET UP SLU
1703          ;           BNE      30$          ;BR, NOT SET UP
1704          ;           JMP      200$         ;LEAVE ROUTINE ALREADY SET UP
1705 010260    042777 000100 170534 30$:   BIC      #100,@TKS      ;SHUT OFF IE IN TTY
1706          ;           MOV      #1,SERSW     ;SET SW TO BEEN SET UP
1707 010266    012737 000010 001122      MOV      #10,MAINTB    ;PRELOAD BIT 3 SET
1708 010274    104000          ;           EMT      +0          ;PRINT MESSAGE CALL
1709 010276    015723          ;           MENU1         ;
1710 010300    104000          ;           EMT      +0          ;PRINT MESSAGE CALL
1711 010302    015760          ;           MENU2         ;
1712 010304    104000          ;           EMT      +0          ;PRINT MESSAGE CALL
1713 010306    016006          ;           MENU3         ;
1714 010310    104000          ;           EMT      +0          ;PRINT MESSAGE CALL
1715 010312    016034          ;           MENU4         ;
1716 010314    105777 170502          40$:   TSTB     @TKS          ;READ TTY'S STATUS
1717 010320    100375          ;           BPL      40$          ;BR, IF NOT DONE
1718 010322    117700 170470          ;           MOVB     @TKB,#0      ;PICK UP CHAR. TYPED
1719 010326    105777 170466          42$:   TSTB     @TPS          ;CHECK FOR BUSY
1720 010332    100375          ;           BPL      42$          ;LOOP IF TTY IS BUSY (BR)
1721 010334    110077 170454          ;           MOVB     #0,@TPB     ;ECHO CHARACTER TO TTY
1722 010340    042700 177700          ;           BIC      #177700,#0  ;ONLY 6 BITS ALLOWED
1723 010344    120027 000061          ;           CMPB     #0,#61      ;WAS IT AN ASCII 1
1724 010350    001422          ;           BEQ      47$          ;BR, IF IT WAS (DL11 SEL.)
1725 010352    120027 000062          ;           CMPB     #0,#62      ;WAS IT AN ASCII 2
1726 010356    001007          ;           BNE      45$          ;
1727 010360    004737 013642          ;           JSR      #7,GETCR     ;GO GET LF OR CR
1728 010364    020027 123456          ;           CMP      #0,#123456  ;CHECK FOR BAD INPUT
1729 010370    001733          ;           BEQ      30$          ;TRY AGAIN BAD INPUT (NOT CR)
1730 010372    000137 011340          ;           JMP      300$        ;BR, IF IT WAS (DZ11 SEL.)
1731 010376    122700 000012          45$:   CMPB     #12,#0        ;CHK FOR <LF> DEFAULT
1732 010402    001412          ;           BEQ      49$          ;BR, IF DEFAULT (DL11 SEL.)
1733 010404    122700 000015          ;           CMPB     #15,#0      ;CHK FOR <CR> DEFAULT
1734 010410    001407          ;           BEQ      49$          ;BR, IF DEFAULT (DL11 SEL.)
1735 010412    000137 010260          ;           JMP      30$          ;WASN'T CORRECT TYPE-IN
1736          ;
1737          ;           IT'S A DL11
1738          ;
1739 010416    004737 013642          47$:   JSR      #7,GETCR     ;GO GET LF OR CR
1740 010422    020027 123456          ;           CMP      #0,#123456  ;CHECK FOR BAD INPUT
1741 010426    001714          ;           BEQ      30$          ;TRY AGAIN BAD INPUT (NOT CR)
1742 010430    012737 000001 001106 49$:   MOV      #1,DLHERE     ;SHOW DEC PRESENCE
1743 010436    005037 001102          ;           CLR      BRATE        ;JUST TO BE SURE
1744 010442    004737 014066          ;           JSR      #7,CLRTTY    ;PICK UP PENDING CHARACTERS
1745 010446    012737 000004 001122      MOV      #4,MAINTB    ;PRELOAD BIT # 2
    
```

1746	010454	104000				EMT	+0			
1747	010456	016070				MENUD1				;PRINT MESSAGE CALL
1748	010460	104000				EMT	+0			
1749	010462	016156				MENUD2				;PRINT MESSAGE CALL
1750	010464	104000				EMT	+0			
1751	010466	016221				MENUD3				;PRINT MESSAGE CALL
1752	010470	104000				EMT	+0			
1753	010472	016263				MENUD4				;PRINT MESSAGE CALL
1754	010474	105777	170322		51#:	TSTB	@TKS			;READ TTY'S STATUS
1755	010500	100375				BPL	51#			;BR, IF NOT DONE
1756	010502	117700	170310			MOVB	@TKB,#0			;PICK UP CHAR. TYPED
1757	010506	105777	170306		52#:	TSTB	@TPS			;CHECK FOR BUSY
1758	010512	100375				BPL	52#			;LOOP IF TTY IS BUSY (BR)
1759	010514	110077	170274			MOVB	#0,@TPB			;ECHO CHARACTER TO TTY
1760	010520	042700	177700			BIC	#177700,#0			;ONLY 6 BITS ALLOWED
1761	010524	120027	000061			CMPB	#0,#61			;WAS IT AN ASCII 1
1762	010530	001424				BEQ	54#			;BR, IF IT WAS (DL11 SEL.)
1763	010532	120027	000062			CMPB	#0,#62			;WAS IT AN ASCII 2
1764	010536	001011				BNE	53#			
1765	010540	004737	013642			JSR	#7,GETCR			;GO GET LF OR CR
1766	010544	020027	123456			CMP	#0,#123456			;CHECK FOR BAD INPUT
1767	010550	001727				BEQ	49#			;TRY AGAIN BAD INPUT (NOT CR)
1768	010552	005037	001122			CLR	MAINTB			;NO MAINT FEATURE
1769	010556	000137	010614			JMP	55#			;BR
1770	010562	122700	000012		53#:	CMPB	#12,#0			;CHK FOR <LF> DEFAULT
1771	010566	001412				BEQ	55#			;BR, IF DEFAULT (DL11 SEL.)
1772	010570	122700	000015			CMPB	#15,#0			;CHK FOR <CR> DEFAULT
1773	010574	001407				BEQ	55#			;BR, IF DEFAULT (DL11 SEL.)
1774	010576	000137	010430			JMP	49#			;WASN'T CORRECT TYPE-IN
1775										
1776	010602	004737	013642		54#:	JSR	#7,GETCR			;GO GET LF OR CR
1777	010606	020027	123456			CMP	#0,#123456			;CHECK FOR BAD INPUT
1778	010612	001706				BEQ	49#			;TRY AGAIN BAD INPUT (NOT CR)
1779	010614	012737	000001	001106	55#:	MOV	#1,DLHERE			;SHOW DEC PRESENCE
1780	010622	005037	001102			CLR	BRATE			;JUST TO BE SURE
1781	010626	004737	014066			JSR	#7,CLRTTY			;PICK UP PENDING CHARACTERS
1782										
1783	010632	104000				EMT	+0			;PRINT MESSAGE TO TTY
1784	010634	016317				DLCSRM				
1785	010636	105777	170160		56#:	TSTB	@TKS			;CHK TTY IN STATUS
1786	010642	100375				BPL	56#			;WAIT FOR DONE
1787	010644	117700	170146			MOVB	@TKB,#0			;PICK UP CHARACTER TYPED IN
1788	010650	105777	170144		57#:	TSTB	@TPS			;CHECK FOR BUSY
1789	010654	100375				BPL	57#			;LOOP IF TTY IS BUSY (BR)
1790	010656	110077	170132			MOVB	#0,@TPB			;ECHO CHARACTER
1791	010662	042700	177700			BIC	#177700,#0			;ONLY 6 BIT PASS
1792	010666	122700	000012			CMPB	#12,#0			;WAS DEFAULT SEL. <LF>
1793	010672	001551				BEQ	60#			;BR, IF DEFAULT SELECTED
1794	010674	122700	000015			CMPB	#15,#0			;WAS DEFAULT SEL. <CR>
1795	010700	001546				BEQ	60#			;BR, IF DEFAULT SELECTED
1796	010702	122700	000061			CMPB	#61,#0			;WAS IT AN ASCII 1
1797	010706	001403				BEQ	59#			;BR, IT WAS A 1
1798	010710	122700	000067			CMPB	#67,#0			;WAS IT AN ASCII 7
1799	010714	001332				BNE	54#			;BR, IF IT WASN'T A 1 OR 7
1800	010716	005037	001124		59#:	CLR	WORK			;CLEAR WORK AREA
1801	010722	052737	100000	001124		BIS	#100000,WORK			;ALL THAT FOR BIT 15
1802	010730	004737	013560			JSR	#7,GETOCT			;GO GET AN OCTAL NUMBER

1803	010734	020027	123456	CMP	%0,#123456	
1804	010740	001720		BEQ	54‡	;CHECK FOR NON-OCTAL #
1805	010742	000241		CLC		;BR, IN NO GOOD #
1806		000014		.REPT	12.	;CLEAR CARRY FOR ROTATE
1807				ROL	%0	
1808				.ENDR		;ROTATE RO
	010744	006100		ROL	%0	;ROTATE RO
	010746	006100		ROL	%0	;ROTATE RO
	010750	006100		ROL	%0	;ROTATE RO
	010752	006100		ROL	%0	;ROTATE RO
	010754	006100		ROL	%0	;ROTATE RO
	010756	006100		ROL	%0	;ROTATE RO
	010760	006100		ROL	%0	;ROTATE RO
	010762	006100		ROL	%0	;ROTATE RO
	010764	006100		ROL	%0	;ROTATE RO
	010766	006100		ROL	%0	;ROTATE RO
	010770	006100		ROL	%0	;ROTATE RO
	010772	006100		ROL	%0	;ROTATE RO
1809	010774	060037	001124	ROL	%0	;ROTATE RO
1810	011000	004737	013560	ADD	%0,WORK	; "OR" THE BITS IN
1811	011004	020027	123456	JSR	%7,GETOCT	;GO GET AN OCTAL NUMBER
1812	011010	001674		CMP	%0,#123456	;CHECK FOR NON-OCTAL #
1813	011012	000241		BEQ	54‡	;BR, IN NO GOOD #
1814		000011		CLC		;CLEAR CARRY FOR ROTATE
1815				.REPT	9.	
1816				ROL	%0	;ROTATE RO
				.ENDR		
	011014	006100		ROL	%0	;ROTATE RO
	011016	006100		ROL	%0	;ROTATE RO
	011020	006100		ROL	%0	;ROTATE RO
	011022	006100		ROL	%0	;ROTATE RO
	011024	006100		ROL	%0	;ROTATE RO
	011026	006100		ROL	%0	;ROTATE RO
	011030	006100		ROL	%0	;ROTATE RO
	011032	006100		ROL	%0	;ROTATE RO
	011034	006100		ROL	%0	;ROTATE RO
1817	011036	060037	001124	ROL	%0	;ROTATE RO
1818	011042	004737	013560	ADD	%0,WORK	; "OR" THE BITS IN
1819	011046	020027	123456	JSR	%7,GETOCT	;GO GET AN OCTAL NUMBER
1820	011052	001653		CMP	%0,#123456	;CHECK FOR NON-OCTAL #
1821	011054	000241		BEQ	54‡	;BR, IN NO GOOD #
1822		000006		CLC		;CLEAR CARRY FOR ROTATE
1823				.REPT	6	
1824				ROL	%0	;ROTATE RO
				.ENDR		
	011056	006100		ROL	%0	;ROTATE RO
	011060	006100		ROL	%0	;ROTATE RO
	011062	006100		ROL	%0	;ROTATE RO
	011064	006100		ROL	%0	;ROTATE RO
	011066	006100		ROL	%0	;ROTATE RO
	011070	006100		ROL	%0	;ROTATE RO
1825	011072	060037	001124	ROL	%0	;ROTATE RO
1826	011076	004737	013560	ADD	%0,WORK	; "OR" THE BITS IN
1827	011102	020027	123456	JSR	%7,GETOCT	;GO GET AN OCTAL NUMBER
1828	011106	001635		CMP	%0,#123456	;CHECK FOR NON-OCTAL #
1829	011110	000241		BEQ	54‡	;BR, IN NO GOOD #
1830		000003		CLC		;CLEAR CARRY FOR ROTATE
1831				.REPT	3	
1832				ROL	%0	;ROTATE RO
				.ENDR		

011112	006100				ROL	#0			
011114	006100				ROL	#0			;ROTATE R0
011116	006100				ROL	#0			;ROTATE R0
1833	011120	060037	001124		ADD	#0,WORK			;ROTATE R0
1834	011124	004737	013560		JSR	#7,GETOCT			; "OR" THE BITS IN
1835	011130	020027	123456		CMP	#0,#123456			;GO GET AN OCTAL NUMBER
1836	011134	001622			BEQ	54#			;CHECK FOR NON-OCTAL #
1837	011136	060037	001124		ADD	#0,WORK			;BR, IN NO GOOD #
1838	011142	013737	001124	001076	MOV	WORK,DLLPS			; "OR" THE BITS IN
1839	011150	013737	001124	001100	MOV	WORK,DLRBUF			;ADDRESS OF DL'S RECV STATUS
1840	011156	062737	000002	001100	ADD	#2,DLRBUF			;ADDRESS OF DL'S RECV BUF
1841	011164	013737	001124	001000	MOV	WORK,LPS			;ADDRESS OF DL'S RECV BUFFER
1842	011172	062737	000004	001000	ADD	#4,LPS			;NEW ADDRESS FOR CSR
1843	011200	013737	001000	001002	MOV	LPS,LPB			;MUS, POINT TO TRANSMITTER BUF
1844	011206	062737	000002	001002	ADD	#2,LPB			;GET STATUS ADDRESS
1845	011214	000426			BR	65#			;POINT TO DATA BUFFER ADDRESS
1846	011216	013737	001032	001000	MOV	DLCSRC,LPS	60#:		;SKIP OVER DEFAULT
1847	011224	062737	000004	001000	ADD	#4,LPS			;MOVE DEFAULT CSR IN
1848	011232	013737	001032	001076	MOV	DLCSRC,DLLPS			;TRANSMITTER STATUS
1849	011240	013737	001032	001100	MOV	DLCSRC,DLRBUF			;ADDRESS OF DL'S RECV STATUS
1850	011246	062737	000002	001100	ADD	#2,DLRBUF			;ADDRESS OF DL'S RECV BUF
1851	011254	013737	001000	001002	MOV	LPS,LPB			;ADDRESS OF DL'S RECV BUFFER
1852	011262	062737	000002	001002	ADD	#2,LPB			;SET UP THE DATA BUFFER
1853	011270	000407			BR	67#			;SET TO CORRECT ADDRESS
1854	011272	004737	013642		JSR	#7,GETCR	65#:		;SKIP OVER CR GET
1855	011276	020027	123456		CMP	#0,#123456			;GO GET LF OR CR
1856	011302	001004			BNE	66#			;CHECK FOR BAD INPUT
1857	011304	000137	010602		JMP	54#			;BR, IF CR RECEIVED (GOOD)
1858	011310	004737	014066		JSR	#7,CLRTTY	67#:		;JMP, IF BAD CHARACTER RECD.
1859	011314						66#:		;PICK UP PENDING CHARACTERS
1860	011314	004737	014364		JSR	#7,DLSET			
1861	011320	004737	014066		JSR	#7,CLRTTY	96#:		;FIND OUT WHAT TYPE DL11
1862	011324	052777	000100	167470	BIS	#100,@TKS	99#:		;PICK UP PENDING CHARACTERS
1863	011332	104000			EMT	.0			;TURN BACK ON
1864	011334	016543			DLCRLF				;MESSAGE ADDRESS
1865	011336	000207			RTS	#7	200#:		;MESSAGE ADDRESS
1866									;RETURN TO CALLEE
1867									
1868									
1869	011340								
1870	011340	004737	014066				300#:		
1871	011344	104000			JSR	#7,CLRTTY	350#:		;PICK UP PENDING CHARACTERS
1872	011346	016431			EMT	.0			;PRINT MESSAGE TO TTY
1873	011350	005037	001106		DZCSRH				
1874	011354	105777	167442		CLR	DLHERE			
1875	011360	100375			TSTB	@TKS	355#:		;JUST TO BE SURE
1876	011362	117700	167430		BPL	355#			;CHK TTY IN STATUS
1877	011366	105777	167426		MOVB	@TKB,#0			;WAIT FOR DONE
1878	011372	100375			TSTB	@TPS	356#:		;PICK UP CHARACTER TYPED IN
1879	011374	110077	167414		BPL	356#			;CHECK FOR BUSY
1880	011400	042700	177700		MOVB	#0,@TPB			;LOOP IF TTY IS BUSY (BR)
1881	011404	122700	000012		BIC	#177700,#0			;ECHO CHARACTER
1882	011410	001545			CMPB	#12,#0			;ONLY 6 BIT PASS
1883	011412	122700	000015		BEQ	360#			;WAS DEFAULT SEL. <LF>
1884	011416	001542			CMPB	#15,#0			;BR, IF DEFAULT SELECTED
1885	011420	122700	000061		BEQ	360#			;WAS DEFAULT SEL. <CR>
1886	011424	001403			CMPB	#61,#0			;BR, IF DEFAULT SELECTED
					BEQ	357#			;WAS IT AN ASCII 1
									;BR, IT WAS A 1



1917	011624	020027	123456			CMP	#0,#123456		
1918	011630	001643				BEQ	350‡		;CHECK FOR NON-OCTAL 0
1919	011632	000241				CLC			;BR, IN NO GOOD 0
1920		000003				.REPT	3		;CLEAR CARRY FOR ROTATE
1921						ROL	#0		
1922						.ENDR			;ROTATE RO
	011634	006100				ROL	#0		;ROTATE RO
	011636	006100				ROL	#0		;ROTATE RO
	011640	006100				ROL	#0		;ROTATE RO
1923	011642	060037	001124			ADD	#0,WORK		;ROTATE RO
1924	011646	004737	013560			JSR	#7,GETOCT		; "OR" THE BITS IN
1925	011652	020027	123456			CMP	#0,#123456		;GO GET AN OCTAL NUMBER
1926	011656	001630				BEQ	350‡		;CHECK FOR NON-OCTAL 0
1927	011660	060037	001124			ADD	#0,WORK		;BR, IN NO GOOD 0
1928	011664	013737	001124	001000		MOV	WORK,LPS		; "OR" THE BITS IN
1929	011672	013737	001000	001002		MOV	LPS,LPB		;NEW ADDRESS FOR CSR
1930	011700	062737	000006	001002		ADD	#6,LPB		;GET STATUS ADDRESS
1931	011706	004737	013642			JSR	#7,GETCR		;POINT TO DATA BUFFER ADDRESS
1932	011712	020027	123456			CMP	#0,#123456		;GO GET LF OR CR
1933	011716	001013				BNE	365‡		;CHECK FOR BAD INPUT
1934	011720	000137	011340			JMP	350‡		;BR, IF CR RECEIVED (GOOD)
1935	011724	013737	001040	001000	360‡:	MOV	DZCSRC,LPS		;JMP, IF NO CR (BAD)
1936	011732	013737	001000	001002		MOV	LPS,LPB		;MOVE DEFAULT CSR IN
1937	011740	062737	000006	001002		ADD	#6,LPB		;SET UP THE DATA BUFFER
1938	011746				365‡:				;SET TO CORRECT BUFFER
1939	011746	013746	000004			MOV	#4,-(SP)		;IS DZ LINE VALID???
1940	011752	013746	000006			MOV	#6,-(SP)		;SAVE VECTORS
1941	011756	012737	011772	000004		MOV	#372‡,4		;SAVE
1942	011764	105777	167010			TSTB	&LPS		;RELOAD VECTOR
1943	011770	000411				BR	374‡		;IS PRINTER THERE?
1944									;YES, SKIP TRAP PROCESSING
1945	011772				372‡:				
1946	011772	022626				CMP	(SP)+,(SP)+		;IF YES, NEVER GET HERE.
1947	011774	012637	000006			MOV	(SP)+,6		;RESTORE STACK
1948	012000	012637	000004			MOV	(SP)+,4		;RESTORE VECTORS
1949	012004	104000				EMT	+0		;RESTORE
1950	012006	006704				ERMS1			
1951	012010	000137	010260			JMP	30‡		;SLU NOT THERE
1952									;TRY AGAIN
1953									
1954									; YES, SLU IS HERE
1955	012014	012637	000006						
1956	012020	012637	000004		374‡:	MOV	(SP)+,6		;RESTORE VECTORS
1957						MOV	(SP)+,4		;RESTORE
1958	012024	012777	000020	166746		MOV	#20,&LPS		
1959	012032	013737	001000	001120	367‡:	MOV	LPS,DZCSRH		;SET MASTER CLEAR IN DZ11
1960	012040	032777	000020	166732	366‡:	BIT	#20,&LPS		;HOLD CSR ADDRESS FOR LATER
1961	012046	001374				BNE	366‡		;WAIT FOR MC TO DROP
1962	012050	004737	014066			JSR	#7,CLRTTY		;BR, IF MASTER CLEAR IS SET
1963	012054				369‡:				;PICK UP PENDING CHARACTERS
1964									
1965									
1966									
1967	012054	005037	001124						
1968	012060	004737	014066		395‡:	CLR	WORK		;CLEAR THE WORK AREA
1969	012064	104000				JSR	#7,CLRTTY		;PICK UP PENDING CHARACTERS
1970	012066	016547				EMT	+0		;CALL PRINTER
						DZLINE			;MESSAGE ADDRESS

1971	012070	105777	166726	470\$:	TSTB	@TKS			
1972	012074	100375			BPL	470\$			;CHK TTY IN STATUS
1973	012076	117700	166714		MOV8	@TKB,%0			;WAIT FOR DONE
1974	012102	105777	166712	480\$:	TSTB	@TPS			;PICK UP CHARACTER TYPED IN
1975	012106	100375			BPL	480\$			;CHECK FOR BUSY
1976	012110	110077	166700		MOV8	%0,@TPB			;LOOP UNTIL NOT BUSY
1977	012114	042700	177700		BIC	#177700,%0			;ECHO CHARACTER
1978	012120	122700	000012		CMP8	#12,%0			;ONLY 6 BIT PASS
1979	012124	001425			BEQ	490\$			;WAS DEFAULT SEL. <LF>
1980	012126	122700	000015		CMP8	#15,%0			;BR, IF DEFAULT SELECTED
1981	012132	001422			BEQ	490\$			;WAS DEFAULT SEL. <CR>
1982	012134	005037	001124		CLR	WORK			;BR, IF DEFAULT SELECTED
1983	012140	042700	177700		BIC	#177700,%0			;CLEAR WORK AREA
1984	012144	120027	000070		CMP8	%0,%70			;ONLY 6 BIT PASS
1985	012150	002341			BGE	395\$			;ERROR IF 8 OR MORE
1986	012152	120027	000060		CMP8	%0,%60			
1987	012156	002736			BLT	395\$			;ERROR IF LESS THAN 0
1988	012160	042700	177770		BIC	#177770,%0			
1989	012164	060037	001124		ADD	%0,WORK			;ONLY THREE BITS PASS
1990	012170	013737	001124	001072	MOV	WORK,DZLNE			; "OR" THE BITS IN
1991	012176	000406			BR	495\$			;SET UP NEW LINE NUMBER
1992	012200	005037	001072		BR	495\$			;SKIP OVER DEFAULT
1993	012204	052737	000001	001066	CLR	DZLNE			;SET WITH DEFAULT VECTOR
1994	012212	000423			BIS	#1,DZTCR			;SET LINE 0 POSITION
1995	012214				BR	498\$			;SKIP OVER CR GET STUFF
1996	012214	053737	001072	001070	BIS	DZLNE,DZLPR			;SET LINE NUMBER UP
1997	012222	013703	001072		MOV	DZLNE,%3			;NUMBER OF LOOPS
1998	012226	062703	000001		ADD	#1,%3			;SET UP COUNTER FOR SOB
1999	012232	005001			CLR	#1			;CLEAR WORK AREA
2000	012234	000261			SEC				;SET CARRY BIT
2001	012236	006101			ROL	#1			;MOV BIT INTO POSITION
2002	012240	000241		496\$:	CLC				;DON'T SHIFT IN CARRY
2003	012242	077303			SOB	#3,496\$			;KEEP GOING IF NOT ZERO
2004	012244	010137	001066		MOV	#1,DZTCR			;BIT FOR LINE NUMBER
2005	012250	004737	013642		JSR	#7,GETCR			;GO GET LF OR CR
2006	012254	020027	123456		CMP	%0,#123456			;CHECK FOR BAD INPUT
2007	012260	001675			BEQ	395\$			;TRY AGAIN BAD INPUT (NOT CR)
2008									
2009									
2010									
2011	012262	004737	014066						
2012	012266	104000		498\$:	JSR	#7,CLRTTY			;PICK UP PENDING CHARACTERS
2013	012270	016615			EMT	*0			;CALL TO THE TTY PRINTER
2014	012272	004737	014066		LN1				;BAUD RATE MENU PRINTOUTS
2015	012276	104000			JSR	#7,CLRTTY			;PICK UP PENDING CHARACTERS
2016	012300	016701			EMT	*0			;CALL TO THE TTY PRINTER
2017	012302	004737	014066		LN2				;BAUD RATE MENU PRINTOUTS
2018	012306	104000			JSR	#7,CLRTTY			;PICK UP PENDING CHARACTERS
2019	012310	016722			EMT	*0			;CALL TO THE TTY PRINTER
2020	012312	004737	014066		LN3				;BAUD RATE MENU PRINTOUTS
2021	012316	104000			JSR	#7,CLRTTY			;PICK UP PENDING CHARACTERS
2022	012320	016743			EMT	*0			;CALL TO THE TTY PRINTER
2023	012322	004737	014066		LN4				;BAUD RATE MENU PRINTOUTS
2024	012326	104000			JSR	#7,CLRTTY			;PICK UP PENDING CHARACTERS
2025	012330	016764			EMT	*0			;CALL TO THE TTY PRINTER
2026	012332	004737	014066		LN5				;BAUD RATE MENU PRINTOUTS
2027	012336	104000			JSR	#7,CLRTTY			;PICK UP PENDING CHARACTERS
					EMT	*0			;CALL TO THE TTY PRINTER



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2085 012616 023727 001124 000000 527$: CMP WORK,#0
2086 012624 001616 BEQ 498$ ;CHECK FOR NOT SET
2087 012626 004737 013642 JSR #7,GETCR ;BR, IF NUMBERS NOT VALID
2088 012632 020027 123456 CMP #0,#123456 ;GO GET LF OR CR
2089 012636 001611 BEQ 498$ ;CHECK FOR BAD INPUT
2090 012640 530$: ;TRY AGAIN BAD INPUT (NOT CR)
2091 012640 013737 001124 001102 540$: MOV WORK,BRATE ;STORE BAUD RATE FOR LATER
2092 012646 053737 001124 001070 BIS WORK,DZLPR ;PUT BAUD RATE IN PLACE
2093 ;
2094 ;
2095 ; THIS CODE SETS UP THE NUMBER OF STOP BITS
2096 012654 600$:
2097 012654 004737 014066 JSR #7,CLRTTY ;PICK UP PENDING CHARACTERS
2098 012660 104000 EMT +0 ;CALL PRINT ROUTINE
2099 012662 017153 STOPM ;"TYPE NUMBER OF STOP BITS ETC."
2100 012664 105777 166132 604$: TSTB @TKS ;CK TTY IN STATUS
2101 012670 100375 BPL 604$ ;WAIT FOR DONE
2102 012672 117700 166120 MOVB @TKB,#0 ;PICK UP CHARACTER
2103 012676 105777 166116 607$: TSTB @TPS ;CHECK FOR BUSY
2104 012702 100375 BPL 607$ ;LOOP IF TTY IS BUSY (BR)
2105 012704 110077 166104 MOVB #0,@TPB ;ECHO CHARACTER
2106 012710 042700 177700 BIC #177700,#0 ;ONLY 6 BIT PASS
2107 012714 122700 000012 CMPB #12,#0 ;CHK FOR <LF> DEFAULT
2108 012720 001413 BEQ 610$ ;BR, IF DEFAULT (ONE STOP BIT)
2109 012722 122700 000015 CMPB #15,#0 ;CHK FOR <CR> DEFAULT
2110 012726 001410 BEQ 610$ ;BR, IF DEFAULT (ONE STOP BIT)
2111 012730 122700 000061 CMPB #61,#0 ;WAS AN ASCII 1 TYPED
2112 012734 001011 BNE 620$ ;BR, IF IT WASN'T A ONE
2113 012736 004737 013642 JSR #7,GETCR ;GO GET LF OR CR
2114 012742 020027 123456 CMP #0,#123456 ;CHECK FOR BAD INPUT
2115 012746 001742 BEQ 600$ ;TRY AGAIN BAD INPUT (NOT CR)
2116 012750 042737 000040 001070 610$: BIC #40,DZLPR ;1 STOP BIT = 0
2117 012756 000413 BR 630$ ;SKIP OVER
2118 012760 122700 000062 620$: CMPB #62,#0 ;CHECK FOR A TWO
2119 012764 001333 BNE 600$ ;BR, IF NOT A TWO (ERROR)
2120 012766 004737 013642 JSR #7,GETCR ;GO GET LF OR CR
2121 012772 020027 123456 CMP #0,#123456 ;CHECK FOR BAD INPUT
2122 012776 001726 BEQ 600$ ;TRY AGAIN BAD INPUT (NOT CR)
2123 013000 052737 000040 001070 630$: BIS #40,DZLPR ;2 STOP BIT = 1
2124 013006 004737 014066 JSR #7,CLRTTY ;PICK UP PENDING CHARACTERS
2125 013006
2126 ;
2127 ; THIS CODE SETS UP THE NUMBER OF DATA BITS
2128 ;
2129 013012 700$:
2130 013012 004737 014066 JSR #7,CLRTTY ;PICK UP PENDING CHARACTERS
2131 013016 104000 EMT +0 ;CALL PRINT ROUTINE
2132 013020 017224 DATAM ;"TYPE NUMBER OF DATA BITS ETC."
2133 013022 105777 165774 704$: TSTB @TKS ;CK TTY IN STATUS
2134 013026 100375 BPL 704$ ;WAIT FOR DONE
2135 013030 117700 165762 MOVB @TKB,#0 ;PICK UP CHARACTER
2136 013034 105777 165760 707$: TSTB @TPS ;CHECK FOR BUSY
2137 013040 100375 BPL 707$ ;LOOP IF TTY IS BUSY (BR)
2138 013042 110077 165746 MOVB #0,@TPB ;ECHO CHARACTER
2139 013046 042700 177700 BIC #177700,#0 ;ONLY 6 BIT PASS
2140 013052 122700 000012 CMPB #12,#0 ;CHK FOR <LF> DEFAULT
2141 013056 001407 BEQ 710$ ;BR, IF DEFAULT (7 DATA BITS)
    
```

```

2142 013060 122700 000015          CMPB    #15,#0
2143 013064 001404          BEQ     710$
2144 013066 122700 000067          CMPB    #67,#0
2145 013072 001016          BNE     720$
2146 013074 000404          BR      715$
2147 013076 052737 000020 001070 710$:  BIS     #20,DZLPR
2148 013104 000424          BR      730$
2149 013106 052737 000020 001070 715$:  BIS     #20,DZLPR
2150 013114 004737 013642          JSR     #7,GETCR
2151 013120 020027 123456          CMP     #0,#123456
2152 013124 001732          BEQ     700$
2153 013126 000413          BR      730$
2154 013130 122700 000070          720$:  CMPB    #70,#0
2155 013134 001326          BNE     700$
2156 013136 004737 013642          JSR     #7,GETCR
2157 013142 020027 123456          CMP     #0,#123456
2158 013146 001721          BEQ     700$
2159 013150 052737 000030 001070          BIS     #30,DZLPR
2160 013156          BR      730$:
2161 013156 004737 014066          JSR     #7,CLRTTY
2162          ;
2163          ;
2164          ;
2165 013162          800$:
2166 013162 004737 014066          JSR     #7,CLRTTY
2167 013166 104000          EMT     +0
2168 013170 017275          PARITY
2169 013172 105777 165624          804$:  TSTB    @TKS
2170 013176 100375          BPL     804$
2171 013200 117700 165612          MOVB    @TKB,#0
2172 013204 105777 165610          807$:  TSTB    @TPS
2173 013210 100375          BPL     807$
2174 013212 110077 165576          MOVB    #0,@TPB
2175 013216 042700 177600          BIC     #177600,#0
2176 013222 122700 000012          CMPB    #12,#0
2177 013226 001427          BEQ     825$
2178 013230 122700 000015          CMPB    #15,#0
2179 013234 001424          BEQ     825$
2180 013236 122700 000131          CMPB    #131,#0
2181 013242 001011          BNE     820$
2182 013244 004737 013642          810$:  JSR     #7,GETCR
2183 013250 020027 123456          CMP     #0,#123456
2184 013254 001742          BEQ     800$
2185 013256 052737 000100 001070          BIS     #100,DZLPR
2186 013264 000415          BR      830$
2187 013266 122700 000116          820$:  CMPB    #116,#0
2188 013272 001333          BNE     800$
2189 013274 004737 013642          JSR     #7,GETCR
2190 013300 020027 123456          CMP     #0,#123456
2191 013304 001726          BEQ     800$
2192 013306 042737 000100 001070 825$:  BIC     #100,DZLPR
2193 013314 000137 013462          JMP     950$
2194 013320          830$:
2195 013320 004737 014066          JSR     #7,CLRTTY
2196          ;
2197          ;
2198          ;
    
```

```

;CHK FOR <CR> DEFAULT
;BR, IF DEFAULT (7 DATA BITS)
;WAS AN ASCII 7 TYPED
;BR, IF IT WASN'T A SEVEN
;SKIP OVER
;7 DATA BITS = 10
;SKIP OVER CR GET
;7 DATA BITS = 10
;GO GET LF OR CR
;CHECK FOR BAD INPUT
;TRY AGAIN BAD INPUT (NOT CR)
;SKIP OVER
;CHECK FOR A EIGHT
;BR, IF NOT A EIGHT (FRROR)
;GO GET LF OR CR
;CHECK FOR BAD INPUT
;TRY AGAIN BAD INPUT (NOT CP)
;8 DATA BITS = 30
    
```

THIS CODE SETS UP PARITY BITS

```

;PICK UP PENDING CHARACTERS
;CALL PRINT ROUTINE
;"IS PARITY SELECTED "
;CK TTY IN STATUS
;WAIT FOR DONE
;PICK UP CHARACTER
;CHECK FOR BUSY
;LOOP IF TTY IS BUSY (BR)
;ECHO CHARACTER
;ONLY 7 BIT PASS
;CHK FOR <LF> DEFAULT
;BR, IF DEFAULT (NO)
;CHK FOR <CR> DEFAULT
;BR, IF DEFAULT (NO)
;WAS AN ASCII Y TYPED
;BR, IF IT WASN'T A Y
;GO GET LF OR CR
;CHECK FOR BAD INPUT
;TRY AGAIN BAD INPUT (NOT CR)
;YES PARITY IS USED
;SKIP OVER
;CHECK FOR A N
;BR, IF NOT A N (ERROR)
;GO GET LF OR CR
;CHECK FOR BAD INPUT
;TRY AGAIN BAD INPUT (NOT CR)
;NO PARITY
;NO MORE PARITY ?
    
```

THIS CODE SETS UP THE ODD EVEN PARITY BIT

2199	013324										
2200	013324	004737	014066			900\$:					
2201	013330	104000					JSR	#7,CLRTTY			
2202	013332	017340					EMT	+0			;PICK UP PENDING CHARACTERS
2203	013334	105777	165462				PARITZ				;CALL PRINT ROUTINE
2204	013340	100375				904\$:	TSTB	@TKS			; "IS PARITY ODD OR EVEN"
2205	013342	117700	165450				BPL	904\$			;CK TTY IN STATUS
2206	013346	105777	165446				MOVB	@TKB,#0			;WAIT FOR DONE
2207	013352	100375				907\$:	TSTB	@TPS			;PICK UP CHARACTER
2208	013354	110077	165434				BPL	907\$			;CHECK FOR BUSY
2209	013360	042700	177600				MOVB	#0,@TPB			;LOOP IF TTY IS BUSY (BR)
2210	013364	122700	000012				BIC	#177600,#0			;ECHO CHARACTER
2211	013370	001413					CMPB	#12,#0			;ONLY 7 BIT PASS
2212	013372	122700	000015				BEQ	910\$			;CHK FOR <LF> DEFAULT
2213	013376	001410					CMPB	#15,#0			;BR, IF DEFAULT (ODD)
2214	013400	122700	000117				BEQ	910\$			;CHK FOR <CR> DEFAULT
2215	013404	001011					CMPB	#117,#0			;BR, IF DEFAULT (ODD)
2216	013406	004737	013642				BNE	920\$			;WAS AN ASCII 0 TYPED
2217	013412	020027	123456				JSR	#7,GETCR			;BR, IF IT WASN'T A ONE
2218	013416	001742					CMP	#0,#123456			;GO GET LF OR CR
2219	013420	042737	000200	001070		910\$:	BEQ	900\$			;CHECK FOR BAD INPUT
2220	013426	000413					BIC	#200,DZLPR			;TRY AGAIN BAD INPUT (NOT CR)
2221	013430	122700	000105				BR	930\$			;ODD PARITY = 0
2222	013434	001333				920\$:	CMPB	#105,#0			;SKIP OVER
2223	013436	004737	013642				BNE	900\$			;CHECK FOR A E
2224	013442	020027	123456				JSR	#7,GETCR			;BR, IF NOT A TWO (ERROR)
2225	013446	001726					CMP	#0,#123456			;GO GET LF OR CR
2226	013450	052737	000200	001070			BEQ	900\$			;CHECK FOR BAD INPUT
2227	013456						BIS	#200,DZLPR			;TRY AGAIN BAD INPUT (NOT CR)
2228	013456	004737	014066			930\$:					;EVEN PARITY = 1
2229							JSR	#7,CLRTTY			
2230	013462										;PICK UP PENDING CHARACTERS
2231						950\$:					
2232											
2233	013462	013703	001000								
2234	013466	062703	000006				MOV	LPS,#3			;GET STATUS REGISTER ADDRESS
2235	013472	010337	001002				ADD	#6,#3			;POINT TO TRANS BUFFER ADDR
2236	013476	013703	001000				MOV	#3,LPB			;PRINTER DATA BUFFER ADDR
2237	013502	062703	000002				MOV	LPS,#3			;GET STATUS REG ADDRESS
2238	013506	010337	001116				ADD	#2,#3			;POINT TO LPR REGISTER
2239	013512	052737	010000	001070			MOV	#3,DZRBUF			;ADDRESS OF RECEIVER BUFFER
2240	013520	013713	001070				BIS	#10000,DZLPR			;SET RECEIVER ON BIT
2241	013524	052777	000040	165246			MOV	DZLPR,(#3)			;SET SPEED, LINE, PARITY ETC
2242	013532	062703	000002				BIS	#40,@LPS			;SET MASTER SCAN ENABLE
2243	013536	113713	001066				ADD	#2,#3			;POINT TO TCR REGISTER
2244	013542	010337	001110				MOVB	DZTCR,(#3)			;SET TRANS LINE NUMBER
2245	013546	062737	000001	001110			MOV	#3,DZTCRA			;ADDRESS FOR DTR CHECK
2246							ADD	#1,DZTCRA			;POINT TO UPPER HALF
2247											
2248	013554	000137	011324				SHOULD BE ALL SET				
							JMP	99\$			;RETURN TO CALLEE

```

2250
2251
2252
2253
2254
2255
2256 013560
2257 013560 105777 165236
2258 013564 100375
2259 013566 117700 165224
2260 013572 105777 165222
2261 013576 100375
2262 013600 110077 165210
2263 013604 042700 177700
2264 013610 120027 000070
2265 013614 002007
2266 013616 120027 000060
2267 013622 002404
2268 013624 042700 177770
2269 013630 000137 013640
2270 013634 012700 123456
2271 013640 000207
2272
2273
2274
2275
2276 013642
2277 013642 105777 165154
2278 013646 100375
2279 013650 117700 165142
2280 013654 105777 165140
2281 013660 100375
2282 013662 110077 165126
2283 013666 042700 177700
2284 013672 120027 000015
2285 013676 001405
2286 013700 120027 000012
2287 013704 001402
2288 013706 012700 123456
2289 013712 004737 014066
2290 013716 000207
2291 013720 004737 014066
2292 013724 104000
2293 013726 015613
2294 013730 104000
2295 013732 015643
2296 013734 104000
2297 013736 015654
2298 013740 104000
2299 013742 015667
2300 013744 105777 165052
2301 013750 100375
2302 013752 117700 165040
2303 013756 105777 165036
2304 013762 100375
2305 013764 110077 165024
2306 013770 042700 177700

;*****
;
; OTHER SUBROUTINES
;
GETOCT:
1$: TSTB @TKS ;CK TTY IN STATUS
    BPL 1$ ;WAIT FOR DONE
    MOVB @TKB,%0 ;PICK UP CHARACTER
5$: TSTB @TPS ;CHECK FOR BUSY
    BPL 5$ ;LOOP IF TTY IS BUSY (BR)
    MOVB %0,@TPB ;ECHO CHARACTER
    BIC #177700,%0 ;ONLY 6 BIT PASS
    CMPB %0,#70 ;ERROR IF 8 OR MORE
    BGE 10$
    CMPB %0,#60 ;ERROR IF LESS THAN 0
    BLT 10$
    BIC #177770,%0 ;ONLY THREE BITS PASS
    JMP 20$ ;OCTAL # OK
10$: MOV #123456,%0 ;WAS NOT OCTAL #
20$: RTS #7
;*****
;
; THIS ROUTINE WAITS FOR A CR OR LF
;
GETCR:
1$: TSTB @TKS ;CK TTY IN STATUS
    BPL 1$ ;WAIT FOR DONE
    MOVB @TKB,%0 ;PICK UP CHARACTER
5$: TSTB @TPS ;CHECK FOR BUSY
    BPL 5$ ;LOOP IF TTY IS BUSY (BR)
    MOVB %0,@TPB ;ECHO CHARACTER
    BIC #177700,%0 ;ONLY 6 BIT PASS
    CMPB %0,#15 ;WAS IT A CR
    BEQ 20$ ;BR, IF IT WAS
    CMPB %0,#12 ;WAS IT A LF
    BEQ 20$ ;BR, IF IT WAS
10$: MOV #123456,%0 ;WAS NOT OCTAL #
20$: JSR #7,CLRTTY ;CLEAR OUT ANY WAITING CHARA
    RTS #7
EIACHK: JSR #7,CLRTTY ;PICK UP PENDING CHARACTERS
    EMT +0 ;CALL TO THE TTY PRINTER
    MENU10 ;"LINE TYPE"
    EMT +0 ;CALL TO THE TTY PRINTER
    MENU20 ;" 1 EIA"
    EMT +0 ;CALL TO THE TTY PRINTER
    MENU30 ;" 20MA"
    EMT +0 ;CALL TO THE TTY PRINTER
    MENU40 ;"SERIAL LINE TYPE <1>?"
1$: TSTB @TKS ;CHK TTY IN STATUS
    BPL 1$ ;WAIT FOR DONE
    MOVB @TKB,%0 ;PICK UP CHARACTER TYPED IN
5$: TSTB @TPS ;CHECK FOR BUSY
    BPL 5$ ;LOOP UNTIL NOT BUSY
    MOVB %0,@TPB ;ECHO CHARACTER
    BIC #177700,%0 ;ONLY 6 BIT PASS
    
```

```

2307 013774 122700 000012          CMPB    #12,#0          ;WAS DEFAULT SEL. <LF>
2308 014000 001426                BEQ     20$             ;BR, IF DEFAULT SELECTED
2309 014002 122700 000015          CMPB    #15,#0          ;WAS DEFAULT SEL. <CR>
2310 014006 001423                BEQ     20$             ;BR, IF DEFAULT SELECTED
2311 014010 042700 177770          BIC     #177770,#0      ;ONLY THREE BITS PASS
2312 014014 122700 000001          CMPB    #1,#0           ;CHECK FOR A "1" TYPED
2313 014020 001006                BNE     10$            ;BR, IF IT WASN'T A ONE
2314 014022 012737 000001 001112  MOV     #1,EIA          ;SET FOR EIA
2315 014030 004737 013642          JSR     #7,GETCR        ;WAIT FOR CR
2316 014034 000413                BR      100$           ;EXIT
2317 014036 122700 000002          BR      100$           ;CHECK FOR 20MA
2318 014042 001340                CMPB    #2,#0           ;BR, NEITHER
2319 014044 005037 001112          BNE     1$             ;SET TO 20 MA
2320 014050 004737 013642          CLR     EIA            ;WAIT FOR CR
2321 014054 000403                JSR     #7,GETCR        ;EXIT
2322 014056 012737 000001 001112  BR      100$           ;CR = DEFAULT = EIA
2323 014064 000207                MOV     #1,EIA          ;EXIT SUBROUTINE
2324                                RTS     #7
2325
2326                                ;*****
2327                                ;
2328                                ; THIS SUBROUTINE PICKS CHARACTERS OUT OF THE TTY RECEIVE BUFFER
2329                                ; I.E. GETS RID OF THE "EXTRA" ONES
2330                                ;
2331 014066                                CLRTTY:
2332 014066 012703 040000          MOV     #40000,#3      ;BIG COUNTER
2333 014072 105777 164724          1$: TSTB  @TKS          ;CHECK FOR RECEIVER DONE SET
2334 014076 100007                BPL     5$             ;BR, IF DONE IS NOT SET
2335 014100 117700 164712          MOVB   @TKB,#0        ;PICK UP THE CHARACTER
2336 014104 105777 164710          3$: TSTB  @TPS          ;CHECK FOR TRANSMITTER READY
2337 014110 100375                BPL     3$             ;WAIT UNTIL READY
2338 014112 110077 164676          MOVB   #0,@TPB        ;ECHO THE "EXTRA" CHARACTER
2339 014116 077313                SOB     #3,1$          ;LOOP COUNTER
2340 014120 000207                RTS     #7             ;RETURN TO CALLEE

```

```

2342
2343
2344
2345
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2347
2348
2349
2350
2351 014122
2352 014122 005737 001102
2353 014126 001403
2354 014130 005737 014144
2355 014134 000207
2356 014136 005777 164636
2357 014142 000774
2358 014144 000200
2359
2360
2361
2362
2363
2364
2365
2366
2367
2368
2369 014146
2370 014146 005737 001106
2371 014152 001047
2372 014154 005737 001102
2373 014160 001416
2374 014162 005737 001112
2375 014166 001404
2376 014170 137737 164714 001066
2377 014176 001465
2378 014200 037727 164574 000200 5$:
2379 014206 001006 10$:
2380 014210 005777 164564 20$:
2381 014214 000207 50$:
2382 014216 105777 164556
2383 014222 000774
2384 014224 017705 164666 60$:
2385 014230 042705 177700
2386 014234 120527 000023
2387 014240 001363
2388 014242 037727 164532 000200 70$:
2389 014250 001774
2390 014252 017705 164640
2391 014256 042705 177700
2392 014262 120527 000021
2393 014266 001365
2394 014270 000747
2395 014272 032777 000200 164576 80$:
2396 014300 001746
2397 014302 117705 164572
2398 014306 042705 177700

;*****
;
; TEST FOR ERROR,
; THIS ROUTINE TAKES THE PLACE OF ALL THE "TST @LPS" CODES.
; THIS WAS REQUIRED FOR THE DZ11. IF THE DZ IS NOT SELECTED
; THE ROUTINE SIMPLY DOES THE "TST @LPS" AND RETURNS. IF THERE
; IS A DZ11 IT ONLY CHECKS A DUMMY WORD TO SHOW NO ERROR.
; THERE ARE NO TRANSMIT ERRORS ON THE DZ11.
ERCHK:
    TST     BRATE
    BEQ     50$ ;CHECK FIRST FOR DZ
    TST     TSTWRD ;BR, IF NO DZ SELECTED
    RTS     *7 ;DUMMY CONDITION CODE SETUP
50$:     TST     @LPS ;RETURN WITH NO MINUS SET
    BR      20$ ;NOT DZ SO DO REGULAR CHECK
TSTWRD: .WORD 000200 ;RETURN WITH CODES ETC
;NO MINUS BIT SET
;*****
;
; TEST FOR READY,
; THIS ROUTINE TAKES THE PLACE OF ALL THE "TSTB @LPS" CODES.
; THIS WAS REQUIRED FOR THE DZ11. IF THE DZ IS NOT SELECTED
; THE ROUTINE SIMPLY DOES THE "TSTB @LPS" AND RETURNS. IF THERE
; IS A DZ11 IT CHECKS THE REAL READY BIT (BIT15).
; THE ROUTINE DOES A "TST @LPS" WHICH SETS THE CORRECT CONDITION
; CODES
ERCHKB:
    TST     DLHERE
    BNE     80$ ;ARE WE TALKING TO A DL
    TST     BRATE ;BR, IF DL IS BEING USED
    BEQ     50$ ;CHECK FIRST FOR DZ
    TST     EIA ;BR, IF NO DZ SELECTED
    BEQ     5$ ;WHAT MODE ARE WE IN
    BITB    @DZTCRA,DZTCR ;BR, IF IN 20 MA MODE
    BEQ     100$ ;IS DATA TERMINAL READY SET
    BIT     @LPS,#200 ;BR IF IT IS NOT SET (ERROR)
    BNE     60$ ;RECEIVER DONE SET
    TST     @LPS ;BR, IF RECVR HAS CHARACTER
    RTS     *7 ;LOOKS AT REAL READY BIT
50$:     TSTB    @LPS ;RETURN WITH NO MINUS SET
    BR      20$ ;NOT DZ SO DO REGULAR CHECK
    MOV     @DZRBUF,#5 ;RETURN WITH CODES ETC
    BIC     #177700,#5 ;PICK UP CHARACTER
    CMPB    #5,#23 ;ONLY 6 BITS PASS
    BNE     10$ ;CHK FOR XOFF (CNTL S)
    BIT     @LPS,#200 ;BR, IF NOT XOFF (RETURN)
    BEQ     70$ ;LOOK FOR ANOTHER CHARACTER
    MOV     @DZRBUF,#5 ;WAIT HERE FOR NEXT CHARACTER
    BIC     #177700,#5 ;IT ARRIVED
    CMPB    #5,#21 ;ONLY SIX BITS PASS
    BNE     70$ ;WAS IT XON (CNTL Q)
    BR      10$ ;BR, IF IT WASN'T XON (LOOP)
    BIT     #200,@DLLPS ;IT WAS XON RETURN
    BEQ     50$ ;HAVE WE RECEIVED A RECV CHARA
    MOVB    @DLRBUF,#5 ;BR, IF WE HAVE NOT
    BIC     #177700,#5 ;PICK UP THE CHARACTER
    ;ONLY SIX BITS

```



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2413
2414
2415
2416
2417
2418
2419
2420 014364
2421 014364 104000
2422 014366 015302
2423 014370 104000
2424 014372 015335
2425 014374 104000
2426 014376 015365
2427 014400 104000
2428 014402 015421
2429 014404 105777 164412
2430 014410 100375
2431 014412 117700 164400
2432 014416 105777 164376
2433 014422 100375
2434 014424 110077 164364
2435 014430 042700 177700
2436 014434 122700 000012
2437 014440 001416
2438 014442 122700 000015
2439 014446 001413
2440 014450 120027 000061
2441 014454 001421
2442 014456 120027 000062
2443 014462 001350
2444 014464 004737 013642
2445 014470 020027 123456
2446 014474 001743
2447 014476 004737 014066
2448 014502 000207
2449 014504 004737 013642
2450 014510 020027 123456
2451 014514 001403
2452 014516 000767
2453 014520
2454 014520 004737 013642
2455 014524 104000
2456 014526 015455
2457 014530 012737 000001 001102
2458 014536 105777 164260
2459 014542 100375
2460 014544 117700 164246
2461 014550 105777 164244
2462 014554 100375
2463 014556 110077 164232
2464 014562 042700 177600
2465 014566 122700 000012
2466 014572 001741
2467 014574 122700 000015
2468 014600 001736
2469 014602 122700 000131

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*****
;
; THIS ROUTINE CHECKS FOR DL11S THAT NEED ADDITIONAL PROGRAMMING
; FEATURES I.E. PROGRAMMABLE BAUD RATES ON THE DLV11-E/F MODULES.
;
DLSET:
    EMT +0 ;PRINT CALL
    DLASK1 ;"DL11 TYPE MENU"
    EMT +0 ;PRINT MESSAGE CALL
    DLASK2 ;"1 DLV11-F OR DLV11-E"
    EMT +0 ;PRINT MESSAGE CALL
    DLASK3 ;"2 DLV11, DL11 OR DLV11-J"
    EMT +0 ;PRINT MESSAGE CALL
    DLASK4 ;"ENTER MENU SELECTION"
40$: TSTB @TKS ;READ TTY'S STATUS
    BPL 40$ ;BR, IF NOT DONE
    MOVB @TKB,%0 ;PICK UP CHAR. TYPED
45$: TSTB @TPS ;CHECK FOR BUSY
    BPL 45$ ;LOOP IF TTY IS BUSY (BR)
    MOVB %0,@TPB ;ECHO CHARACTER TO TTY
    BIC @177700,%0 ;ONLY 6 BITS ALLOWED
    CMPB @12,%0 ;CHK FOR <LF> DEFAULT
    BEQ 75$ ;BR, IF DEFAULT (NO)
    CMPB @15,%0 ;CHK FOR <CR> DEFAULT
    BEQ 75$ ;BR, IF DEFAULT (NO)
    CMPB %0,@61 ;WAS IT AN ASCII 1
    BEQ 100$ ;BR, IF IT WAS (DL11 SEL.)
    CMPB %0,@62 ;WAS IT AN ASCII 2
    BNE 40$
    JSR %7,GETCR ;GO GET LF OR CR
    CMP %0,@123456 ;CHECK FOR BAD INPUT
    BEQ 40$ ;TRY AGAIN BAD INPUT (NOT CR)
75$: JSR %7,CLRTTY ;CLEAR OUT THE TTY
    RTS %7 ;RETURN TO CALLEE
76$: JSR %7,GETCR ;LOOK FOR CR
    CMP %0,@123456 ;WAS THERE AN ERROR
    BEQ 105$ ;BR, IF AN ERROR RESTART
    BR 75$ ;EXIT NO ERROR
100$: JSR %7,GETCR
105$: EMT +0 ;GET CR
    DLASK5 ;CALL PRINT ROUTINE
    MOV @1,BRATE ;"DOES DL HAVE PROG BAUD RATE"
110$: TSTB @TKS ;SWITCH FOR BAUD RATE NEEDED
    BPL 110$ ;CK TTY IN STATUS
    MOVB @TKB,%0 ;WAIT FOR DONE
115$: TSTB @TPS ;PICK UP CHARACTER
    BPL 115$ ;CHECK FOR BUSY
    MOVB %0,@TPB ;LOOP IF TTY IS BUSY (BR)
    BIC @177600,%0 ;ECHO CHARACTER
    CMPB @12,%0 ;ONLY 7 BIT PASS
    BEQ 75$ ;CHK FOR <LF> DEFAULT
    CMPB @15,%0 ;BR, IF DEFAULT (NO)
    BEQ 75$ ;CHK FOR <CR> DEFAULT
    CMPB @131,%0 ;BR, IF DEFAULT (NO)
    ;WAS AN ASCII Y TYPED

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270	014606	001412			BEQ	497\$		
2471	014610	122700	000116	120\$:	CMPB	#116,#0		;BR, IF IT WASN'T A Y
2472	014614	001343			BNE	105\$		;CHECK FOR A N
2473	014616	004737	013642		JSR	#7,GETCR		;BR, IF NOT A N (ERROR)
2474	014622	020027	123456		CMP	#0,#123456		;GO GET LF OR CR
2475	014626	001736			BEQ	105\$		;CHECK FOR BAD INPUT
2476	014630	000137	014476		JMP	75\$		;TRY AGAIN BAD INPUT (NOT CR)
2477	014634	004737	013642	497\$:	JSR	#7,GETCR		;EXIT ROUTINE
2478	014640	020027	123456		CMP	#0,#123456		;GO GET LF OR CR
2479	014644	001727			BEQ	105\$		;CHECK FOR BAD INPUT
2480	014646	004737	014066	498\$:	JSR	#7,CLRTTY		;TRY AGAIN BAD INPUT (NOT CR)
2481	014652	104000			EMT	*0		;PICK UP PENDING CHARACTERS
2482	014654	016647			LN1A			;CALL TO THE TTY PRINTER
2483	014656	004737	014066		JSR	#7,CLRTTY		;BAUD RATE MENU PRINTOUTS
2484	014662	104000			EMT	*0		;PICK UP PENDING CHARACTERS
2485	014664	016701			LN2			;CALL TO THE TTY PRINTER
2486	014666	004737	014066		JSR	#7,CLRTTY		;BAUD RATE MENU PRINTOUTS
2487	014672	104000			EMT	*0		;PICK UP PENDING CHARACTERS
2488	014674	016722			LN3			;CALL TO THE TTY PRINTER
2489	014676	004737	014066		JSR	#7,CLRTTY		;BAUD RATE MENU PRINTOUTS
2490	014702	104000			EMT	*0		;PICK UP PENDING CHARACTERS
2491	014704	016743			LN4			;CALL TO THE TTY PRINTER
2492	014706	004737	014066		JSR	#7,CLRTTY		;BAUD RATE MENU PRINTOUTS
2493	014712	104000			EMT	*0		;PICK UP PENDING CHARACTERS
2494	014714	016764			LN5			;CALL TO THE TTY PRINTER
2495	014716	004737	014066		JSR	#7,CLRTTY		;BAUD RATE MENU PRINTOUTS
2496	014722	104000			EMT	*0		;PICK UP PENDING CHARACTERS
2497	014724	017005			LN6			;CALL TO THE TTY PRINTER
2498	014726	104000			EMT	*0		;BAUD RATE MENU PRINTOUTS
2499	014730	017026			LN7			;CALL TO THE TTY PRINTER
2500	014732	004737	014066		JSR	#7,CLRTTY		;BAUD RATE MENU PRINTOUTS
2501	014736	104000			EMT	*0		;PICK UP PENDING CHARACTERS
2502	014740	017047			LN8			;CALL TO THE TTY PRINTER
2503	014742	104000			EMT	*0		;BAUD RATE MENU PRINTOUTS
2504	014744	017070			LN8A			;CALL TO SUBROUTINE
2505	014746	004737	014066		JSR	#7,CLRTTY		; "8" =19200 BAUD"
2506	014752	104000			EMT	*0		;PICK UP PENDING CHARACTERS
2507	014754	017111			LN10			;CALL TO THE TTY PRINTER
2508	014756	105777	164040	500\$:	TSTB	@TKS		;BAUD RATE MENU PRINTOUTS
2509	014762	100375			BPL	500\$		;CHK TTY IN STATUS
2510	014764	117700	164026		MOVB	@TKB,#0		;WAIT FOR DONE
2511	014770	105777	164024	505\$:	TSTB	@TPS		;PICK UP CHARACTER TYPED IN
2512	014774	100375			BPL	505\$		;CHECK FOR BUSY
2513	014776	110077	164012		MOVB	#0,@TPB		;LOOP UNTIL NOT BUSY
2514	015002	042700	177700		BIC	#177700,#0		;ECHO CHARACTER
2515	015006	122700	000012		CMPB	#12,#0		;ONLY 6 BIT PASS
2516	015012	001475			BEQ	544\$		;WAS DEFAULT SEL. <LF>
2517	015014	122700	000015		CMPB	#15,#0		;BR, IF DEFAULT SELECTED
2518	015020	001472			BEQ	544\$		;WAS DEFAULT SEL. <CR>
2519	015022	005037	001124		CLR	WORK		;BR, IF DEFAULT SELECTED
2520	015026	042700	177760		BIC	#177760,#0		;CLEAR WORK AREA
2521	015032	122700	000001		CMPB	#1,#0		;ONLY FOUR BITS PASS
2522	015036	001003			BNE	510\$		;CHECK FOR A "1" TYPED
2523	015040	012737	040000	001124	MOV	#40000,WORK		;BR, IF IT WASN'T A ONE
2524	015046			510\$:				;SET FOR 150 BAUD
2525	015046	122700	000002		CMPB	#2,#0		;CHECK FOR A TWO TYPED
2526	015052	001003			BNE	520\$		;BR, IF IT WASN'T A '2

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2527 015054 012737 050000 001124      MOV      #50000,WORK      ;SET FOR 300 BAUD
2528 015062      520$:
2529 015062 122700 000003      CMPB     #3,#0           ;CHECK FOR A THREE TYPED
2530 015066 001003      BNE     521$           ;BR, IF IT WASN'T A "3"
2531 015070 012737 060000 001124      MOV      #60000,WORK      ;SET FOR 600 BAUD
2532 015076      521$:
2533 015076 122700 000004      CMPB     #4,#0           ;CHECK FOR A FOUR TYPED
2534 015102 001003      BNE     522$           ;JR, IF IT WASN'T A "4"
2535 015104 012737 070000 001124      MOV      #70000,WORK      ;SET FOR 1200 BAUD
2536 015112      522$:
2537 015112 122700 000005      CMPB     #5,#0           ;CHECK FOR A FIVE TYPED
2538 015116 001003      BNE     523$           ;BR, IF IT WASN'T A "5"
2539 015120 012737 120000 001124      MOV      #120000,WORK     ;SET FOR 2400 BAUD
2540 015126      523$:
2541 015126 122700 000006      CMPB     #6,#0           ;CHECK FOR A SIX TYPED
2542 015132 001003      BNE     524$           ;BR, IF IT WASN'T A "6"
2543 015134 012737 140000 001124      MOV      #140000,WORK     ;SET FOR 4800 BAUD
2544 015142      524$:
2545 015142 122700 000007      CMPB     #7,#0           ;CHECK FOR A SEVEN TYPED
2546 015146 001003      BNE     525$           ;BR, IF IT WASN'T A "7"
2547 015150 012737 160000 001124      MOV      #160000,WORK     ;SET FOR 9600 BAUD
2548 015156      525$:
2549 015156 122700 000010      CMPB     #8,#0           ;WAS AN ASCII EIGHT TYPED
2550 015162 001015      BNE     526$           ;IT WASN'T AN EIGHT
2551 015164 012737 170000 001124      MOV      #170000,WORK     ;SET FOR 19200KC
2552 015172 004737 013642      JSR     #7,GETCR        ;GO GET LF OR CR
2553 015176 020027 123456      CMP     #0,#123456      ;CHECK FOR BAD INPUT
2554 015202 001621      BEQ     498$           ;BR, IF CR RECEIVED (GOOD)
2555 015204 000415      BR     530$           ;LEAVE
2556 015206 012737 160000 001124      MOV      #160000,WORK     ;DEFAULT IS 9600
2557 015214 000411      BR     530$           ;LEAVE
2558 015216      526$:
2559 015216 023727 001124 000000      527$: CMP     WORK,#0       ;CHECK FOR NOT SET
2560 015224 001610      BEQ     498$           ;BR, IF NUMBERS NOT VALID
2561 015226 004737 013642      JSR     #7,GETCR        ;GO GET LF OR CR
2562 015232 020027 123456      CMP     #0,#123456      ;CHECK FOR BAD INPUT
2563 015236 001603      BEQ     498$           ;TRY AGAIN BAD INPUT (NOT CR)
2564 015240      530$:
2565 015240 013737 001124 001102      540$: MOV      WORK,BRATE     ;STORE BAUD RATE FOR LATER
2566 015246 053737 001124 001074      BIS     WORK,DLLPR      ;PUT BAUD RATE IN PLACE
2567      ;
2568      ;
2569 015254 013703 001000      MOV     LPS,#3         ;GET STATUS REG ADDRESS
2570 015260 062703 000002      ADD     #2,#3         ;POINT TO LPR REGISTER
2571 015264 052737 004000 001074      BIS     #4000,DLLPR     ;SET PBR ENB BIT
2572 015272 013713 001074      MOV     DLLPR,(#3)     ;SET SPEED, LINE, PARITY ETC
2573      ;
2574      ;
2575 015276 000137 014476      JMP     75$           ;NO MORE DL QUESTIONS
  
```



ACNVX	004576	DLCSRC	001032	HLP4A	007672	MES6	006347	TK9	005424
ACVN	004514	DLCSRM	016317	HLP5	007752	MES7	006416	TPB	001014
BEGIN	000000	DLHERE	001106	HLP6	010040	MES8	006457	TPS	001020
BIT0	= 000001	DLLPR	001074	HLP7	010100	MES9	006475	TSEAB	004176
BIT1	= 000002	DLLPS	001076	HLP8	010163	N	= 000014	TSEDA	004202
BIT10	= 0020C0	DLRATE	001104	HWSWR	001012	NOP	= 000240	TSEND	004070
BIT11	= 040000	DLRBUF	001100	LCP3	005523	NUMCHR	001146	TSRSS	004232
BIT12	= 100000	DLSET	014364	LCP4	005533	OCT	001162	TSRST	004236
BIT13	= 020000	DLTYPE	001114	LCP5	005542	OFFSET	001150	TSTWRD	014144
BIT14	= 040000	DLVEC	001042	LCP7	005556	PARITY	017275	TY01	005571
BIT15	= 100000	DLVECM	016364	LEGCHR	001144	PARITZ	017340	TY02	005630
BIT2	= 000004	DZCSR	001036	LINCNT	001062	PASSA	001164	TY03	005673
BIT3	= 000010	DZCSR	001040	LKS	001030	PLKS	001026	TYP	004332
BIT4	= 000020	DZCSRH	001120	LN1	016615	PRINE	004250	TYPA	004342
BIT5	= 000040	DZCSRH	016431	LN1A	016647	PRNNT	004242	TYPC	004352
BIT6	= 000100	DZLINE	016547	LN10	017111	PRMSG	004312	TYPD	004400
BIT7	= 000200	DZLNE	001072	LN2	016701	PSW	001010	TYPDAT	004464
BIT8	= 000400	DZLPR	001070	LN3	016722	PTRC	001046	TYPDO	004426
BIT9	= 001000	DZRBUF	001116	LN4	016743	PTRDTR	015536	TYPD01	004434
BRATE	001102	DZTCR	001066	LN5	016764	PTRPSW	001052	TYPF	004436
BUFF	001166	DZTCRA	001110	LN6	017005	PTRVEC	001050	TYPG	004450
CHAR	001160	DZVEC	001044	LN7	017026	RINT	004274	TYPINT	004314
CHRCNT	001056	DZVECM	016476	LN8	017047	R6	= 000006	TYPSWR	005272
CHRGEN	001060	EIA	001112	LN8A	017070	R7	= 000007	TYPSWX	005336
CLRTTY	014066	EIACHK	013720	LPB	001002	SAVE	001134	W	= 000007
CNTRLG	005216	EL	= 000037	LPS	001000	SEGCNT	001054	WAIT1	001730
CN1	001666	ERCHK	014122	LSTADR	017410	SET	001156	WAIT2	002100
CN10	003322	ERCHKB	014146	M	= 000002	SETSER	010234	WAIT3	002366
CN12	003550	ERCOUN	001136	MAINTB	001122	SETUP	001306	WAIT4	002536
CN2	002072	ERMS1	006704	MENUD1	016070	SIGNAL	001154	WAIT5	003142
CN3	002242	ERMS2	006756	MENUD2	016156	SL	= 000036	WAIT6	003406
CN4	002326	ERMS3	007026	MENUD3	016221	STAER	004606	WDD1	001736
CN5	002530	ERMS4	007120	MENUD4	016263	STARN	004752	WDD2	002106
CN6	002700	ERMS5	007211	MENU1	015723	START	000200 G	WDD3	002374
CN7	002764	ERMS6	007305	MENU10	015613	STEDA	004714	WDD4	002544
CONR1	004600	ERR1	001620	MENU2	015760	STEXT	004744	WDD5	003166
CONR2	004602	ERR10	003254	MENU20	015643	STOPM	017153	WDD6	003414
CONR3	004604	ERR11	003362	MENU3	016006	STRCHR	001140	WDE1	001752
CONV	004466	ERR12	003502	MENU30	015654	STRCNT	001142	WDE2	002122
CSBR	001024	ERR13	004262	MENU4	016034	SWR	001004	WDE3	002410
CYCCNT	001064	ERR2	002024	MENU40	015667	SWREG	000176	WDE4	002560
DAR1	005512	ERR3	002174	MESDD	006114	TEST1	001464	WDE5	003202
DAR2	005516	ERR4	002260	MES1	006153	TEST2	003052	WDE6	003430
DAR6	005551	ERR5	002462	MES10	006504	TEST3	003640	WER1	001770
DAR9	005567	ERR6	002632	MES14	006570	TIME	001130	WER2	002140
DATAM	017224	ERR7	002716	MES2	006167	TIMER	001132	WER3	002426
DGTS	005200	ETIM	005731	MES20A	006607	TKB	001016	WER4	002576
DIGITS	001152	ETIMO	006007	MES21	006612	TKHLP	005440	WER5	003220
DISPLA	001006	GETCR	013642	MES22	006614	TKINT	004754	WER6	003446
DISPRE	000174	GETOCT	013560	MES23	006620	TKS	001022	WEX1	002074
DLASK1	015302	HED1	006063	MES24	006630	TK1	005066	WEX2	002244
DLASK2	015335	HED2	006104	MES25	006647	TK2	005100	WEX3	002532
DLASK3	015365	HLP0	007350	MES26	006656	TK3	005366	WEX4	002702
DLASK4	015421	HLP1	007420	MES27	006672	TK4	005372	WEX5	003324
DLASK5	015455	HLP2	007514	MES3	006230	TK5	005170	WEX6	003554
DL CRLF	016543	HLP3	007541	MES4	006246	TK6	005406	WORK	001124
DLCSR	001034	HLP4	007611	MES5	006274	TK7	005376	WORKA	001126

WT2 005114 WT3 005242

. ABS. 017412 000  
000000 001

ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 4362 WORDS ( 18 PAGES)

DYNAMIC MEMORY: 7630 WORDS ( 29 PAGES)

ELAPSED TIME: 00:01:37

CZLCPA,CZLCPA/-SP/CR=CZLCPA

SYMBOL CROSS REFERENCE

CREF V01

SYMBOL	VALUE	REFERENCES
ACNVX	004576	*25-1423
ACVN	004514	#25-1427 25-1427 *25-1432 *25-1434 *25-1436 #25-1445
BEGIN	000000	#15-608 25-1438 15-613 15-619 15-623 15-625 15-629 15-634 15-642 16-652
BIT0	= 00C001	16-662 #14-599
BIT1	= 000002	#14-598
BIT10	= 002000	#14-589
BIT11	= 004000	#14-588
BIT12	= 010000	#14-587
BIT13	= 020000	#14-586
BIT14	= 040000	#14-585 15-626
BIT15	= 100000	#14-584
BIT2	= 000004	#14-597
BIT3	= 000010	#14-596
BIT4	= 000020	#14-595
BIT5	= 000040	#14-594
BIT6	= 000100	#14-593
BIT7	= 000200	#14-592
BIT8	= 000400	#14-591
BIT9	= 001000	#14-590
BRATE	001102	#18-975 *28-1701 *28-1743 *28-1780 *28-2091 30-2352 30-2372 *31-2457 *31-2565
BUFF	001166	#18-1004 22-1209 22-1225 22-1237
CHAR	001160	#18-1001 *26-1501 *26-1502 26-1503 26-1505 26-1507 26-1509 26-1512 26-1515
CHRCNT	001056	26-1518 *26-1527 26-1536 *26-1542 *26-1543 26-1544 26-1548
CHRCNT	001056	#18-963
CHRCNT	001060	#18-964
CLRTTY	014066	24-1344 25-1478 28-1744 28-1781 28-1858 28-1861 28-1870 28-1962 28-1968
		28-2011 28-2014 28-2017 28-2020 28-2023 28-2026 28-2029 28-2032 28-1968
		28-2097 28-2125 28-2130 28-2161 28-2166 28-2195 28-2029 28-2032 28-2035
		29-2291 #29-2331 31-2447 31-2480 31-2483 31-2486 28-2200 28-2228 29-2289
		31-2500 31-2505
CNTRLG	005216	#26-1542
CN1	001666	20-1085 #20-1085
CN10	003322	22-1215 #22-1215
CN12	003550	22-1242 #22-1242
CN2	002072	21-1117 #21-1117
CN3	002242	21-1120 #21-1120
CN4	002326	21-1128 #21-1128
CN5	002530	21-1148 #21-1148
CN6	002700	21-1151 #21-1151
CN7	002764	21-1159 #21-1159
CONR1	004600	*25-1419 25-1439 #25-1446
CONR2	004602	*25-1420 25-1440 #25-1447
CONR3	004604	*25-1421 25-1441 #25-1448
CONV	004466	24-1326 #25-1419 25-1455 26-1561 26-1569
CSBR	001024	#16-686
CYCCNT	001064	#18-966 *19-1013 22-1215 23-1269 *24-1323 24-1327
DAR1	005512	#27-1629
DAR2	005516	#27-1630
DAR6	005551	#27-1634
DAR9	005567	#27-1636
DATAM	017224	28-2132 #32-2620

SYMBOL CROSS REFERENCE

CREF V01

SYMBOL	VALUE	REFERENCES
DGTS	005200	26-1506 #26-1538
DIGITS	001152	#18-998 *26-1521 26-1522 26-1528 26-1538 *26-1581
DISPLA	001006	#16-679 *19-1023
DISPRE	000174	#15-643 19-1023
DLASK1	015302	31-2422 #32-2584
DLASK2	015335	31-2424 #32-2585
DLASK3	015365	31-2426 #32-2586
DLASK4	015421	31-2428 #32-2587
DLASK5	015455	31-2456 #32-2588
DLCRLF	016543	28-1864 #32-2606
DLCRSR	001034	#16-691
DLCSRC	001032	#16-690 28-1846 28-1848 28-1849
DLCSRM	016317	28-1784 #32-2602
DLHEPE	001106	#18-977 *28-1700 *28-1742 *28-1779 *28-1873 30-2370
DL.LPR	001074	#18-972 *31-2566 *31-2571 31-2572
DLLPS	001076	#18-973 21-1120 21-1151 22-1215 22-1242 *28-1838 *28-1848 30-2395 30-2401
DLRATE	001104	#18-976
DLRBUF	001100	#18-974 21-1122 21-1153 22-1216 22-1244 *28-1839 *28-1840 *28-1849 *28-1850
		30-2397 30-2403
DLSET	014364	28-1860 #31-2420
DLTYPE	001114	#18-982
DLVEC	001042	#16-694
DLVECM	016364	#32-2603
DZCSR	001036	#16-692
DZCSRC	001040	#16-693 28-1935
DZCSRH	001120	#18-984 25-1394 *28-1697 *28-1959
DZCSRM	016431	28-1872 #32-2604
DZLINE	016547	28-1970 #32-2607
DZLNE	001072	#18-970 *28-1990 *28-1992 28-1996 28-1997
DZLPR	001070	#18-969 *28-1699 *28-1996 *28-2092 *28-2116 *28-2123 *28-2147 *28-2149 *28-2159
		*28-2185 *28-2192 *28-2219 *28-2226 *28-2239 28-2240
DZRBUF	001116	#18-983 *28-2238 30-2384 30-2390
DZTCR	001066	#18-968 *28-1698 *28-1993 *28-2004 28-2243 30-2376
DZTCRA	001110	#18-979 *28-2244 *28-2245 30-2376
DZVEC	001044	#16-695
DZVECM	016476	#32-2605
EIA	001112	#18-980 *29-2314 *29-2319 *29-2322 30-2374
EIACHK	013720	#29-2291
EL	000037	#14-602
ERCHK	014122	25-1361 #30-2351
ERCHK8	014146	#30-2369 30-2411
ERCOUN	001136	#18-992 *20-1085 *21-1117 *21-1120 *21-1128 *21-1148 *21-1151 *21-1159 *22-1215
		*22-1232 *22-1242 *25-1365 25-1456
ERMS1	006704	20-1084 #27-1671 28-1950
ERMS2	006756	21-1127 21-1158 #27-1672
ERMS3	007026	#27-1673
ERMS4	007120	22-1231 #27-1674
ERMS5	007211	#27-1675
ERMS6	007305	25-1364 #27-1676
ERR1	001620	#20-1085
ERR10	003254	#22-1215
ERR11	003362	#22-1232

SYMBOL CROSS REFERENCE		CREF V01									
SYMBOL	VALUE	REFERENCES									
ERR12	003502	#22-1242									
ERR13	004262	#25-1365									
ERR2	002024	#21-1117									
ERR3	002174	#21-1120									
ERR4	002260	#21-1128									
ERR5	002462	#21-1148									
ERR6	002632	#21-1151									
ERR7	002716	#21-1159									
ETIM	005731	21-1120	21-1151	22-1215	22-1242	#27-1642					
ETIMO	006007	21-1117	21-1148	#27-1643							
GETCR	013642	28-1727	28-1739	28-1765	28-1776	28-1854	28-1931	28-2005	28-2078	28-2087	
		28-2113	28-2120	28-2150	28-2156	28-2182	28-2189	28-2216	28-2223	28-2276	
		29-2315	29-2320	31-2444	31-2449	31-2454	31-2473	31-2477	31-2552	31-2561	
GETOCT	013560	28-1802	28-1810	28-1818	28-1826	28-1834	28-1892	28-1900	28-1908	28-1916	
		28-1924	#29-2256								
HED1	006063	25-1463	#27-1644								
HED2	006104	25-1457	#27-1645								
HLP0	007350	26-1598	#27-1678								
HLP1	007420	26-1600	#27-1679								
HLP2	007514	26-1602	#27-1680								
HLP3	007541	26-1604	#27-1681								
HLP4	007611	26-1606	#27-1682								
HLP4A	007672	26-1608	#27-1683								
HLP5	007752	26-1610	#27-1684								
HLP6	010040	26-1612	#27-1685								
HLP7	010100	26-1614	#27-1686								
HLP8	010163	26-1616	#27-1687								
HWSWR	001012	#16-681	19-1019	20-1067	20-1081	20-1085	21-1117	21-1117	21-1120	21-1120	
		21-1128	21-1148	21-1148	21-1151	21-1151	21-1159	21-1171	21-1194	22-1215	
		22-1215	22-1242	22-1242	22-1254	23-1272	23-1276	23-1310	24-1324	24-1332	
		25-1459	25-1465								
LCP3	005523	#27-1631									
LCP4	005533	23-1296	#27-1632								
LCP5	005542	22-1202	#27-1633								
LCP7	005556	22-1211	#27-1635								
LEGCHR	001144	#18-995									
LINCNT	001062	#18-965	*22-1238	*22-1249							
LKS	001030	#16-688									
LN1	016615	28-2013	#32-2608								
LN1A	016647	31-2482	#32-2609								
LN10	017111	28-2037	31-2507	#32-2618							
LN2	016701	28-2016	31-2485	#32-2610							
LN3	016722	28-2019	31-2488	#32-2611							
LN4	016743	28-2022	31-2491	#32-2612							
LN5	016764	28-2025	31-2494	#32-2613							
LN6	017005	28-2028	31-2497	#32-2614							
LN7	017026	28-2031	31-2499	#32-2615							
LN8	017047	28-2034	31-2502	#32-2616							
LN8A	017070	31-2504	#32-2617								
LPB	001002	#16-674	21-1118	21-1149	25-1368	*28-1843	*28-1844	*28-1851	*28-1852	*28-1929	
		*28-1930	*28-1936	*28-1937	*28-2235						
LPS	001000	#16-669	20-1074	21-1113	21-1117	21-1148	21-1168	25-1367	*28-1841	*28-1842	



SYMBOL CROSS REFERENCE

CREF V01

SYMBOL	VALUE	REFERENCES	CREF	V01						
PRTMSG	004312	*22-1202	*23-1296	*25-1360	#25-1370					
PSW	001010	#16-680								
PTRC	001046	#16-696								
PTRDTR	015536	30-2409	#32-2589							
PTRPSW	001052	#16-698								
PTRVEC	001050	#16-697								
RINT	004274	25-1362	#25-1367							
R6	=#000006	#14-579	14-581							
R7	=#000007	#14-580	14-582							
SAVE	001134	#18-991	*21-1115	21-1129	*21-1146	21-1160				
SEGCNT	001054	#18-962								
SET	001156	#18-1000								
SETSER	010234	19-1037	#28-1696							
SETUP	001306	16-660	#19-1012	20-1087	24-1346	26-1593				
SIGNAL	001154	#18-999	*19-1014	26-1551	*26-1554	*26-1578				
SL	= 000036	#14-601								
STAER	004606	20-1085	21-1117	21-1120	21-1128	21-1148	21-1151	21-1159	22-1215	22-1232
STARN	004752	22-1242	25-1365	#25-1454						
START	000200	*25-1454	25-1480	#25-1483						
STEDA	004714	#16-651	32-2627							
STEXT	004744	#25-1472	25-1473							
STOPM	017153	25-1467	25-1477	#25-1480						
STRCHR	001140	28-2099	#32-2619							
STRCNT	001142	#18-993								
SWR	001004	#18-994								
		#16-678	*19-1022	20-1067	20-1081	20-1085	21-1117	21-1117	21-1120	21-1120
		21-1128	21-1148	21-1148	21-1151	21-1151	21-1159	21-1171	22-1194	22-1215
		22-1215	22-1242	22-1242	22-1254	23-1272	23-1276	23-1310	24-1324	24-1332
		25-1459	25-1465	26-1557						
SWREG	000176	#15-644	19-1022	20-1067	20-1081	20-1085	21-1117	21-1117	21-1120	21-1120
		21-1128	21-1148	21-1148	21-1151	21-1151	21-1159	21-1171	22-1194	22-1215
		22-1215	22-1242	22-1242	22-1254	23-1272	23-1276	23-1310	24-1324	24-1332
		25-1459	25-1465	*26-1540						
TEST1	001464	16-663	#20-1066	21-1173	24-1334	24-1348				
TEST2	003052	21-1172	#22-1194	22-1215	22-1242	22-1256				
TEST3	003640	22-1255	#23-1269	23-1312						
TIME	001130	#18-989	*21-1117	*21-1117	*21-1148	*21-1148				
TIMER	001132	#18-990	*21-1117	*21-1117	*21-1148	*21-1148				
TKB	001016	#16-683	24-1340	25-1474	26-1501	26-1542	28-1718	28-1756	28-1787	28-1876
		28-1973	28-2040	28-2102	28-2135	28-2171	28-2205	29-2259	29-2279	29-2302
		29-2335	31-2431	31-2460	31-2510					
TKHLP	005440	26-1510	#26-1597							
TKINT	004754	15-630	#26-1492							
TKS	001022	#16-685	19-1027	20-1066	24-1338	25-1472	28-1705	28-1716	28-1754	28-1785
		28-1862	28-1874	28-1971	28-2038	28-2100	28-2133	28-2169	28-2203	29-2257
		29-2277	29-2300	29-2333	31-2429	31-2458	31-2508			
TK1	005066	26-1516	#26-1518							
TK2	005100	26-1519	#26-1521							
TK3	005366	26-1539	26-1541	#26-1578	26-1617					
TK4	005372	26-1508	#26-1579							
TK5	005170	26-1529	#26-1536							
TK6	005406	26-1537	#26-1583							

SYMBOL CROSS REFERENCE

CREF V01

SYMBOL	VALUE	REFERENCES
TK7	005376	26-1553 26-1577 #26-1581
TK9	005424	26-1513 #26-1591
TPB	001014	#16-682 *25-1368 *25-1372 25-1393 26-1526 26-1548 28-1721 28-1759 28-1790
		28-1879 28-1976 28-2043 28-2105 28-2138 28-2174 28-2208 29-2262 29-2282
TPS	001020	29-2305 29-2338 31-2434 31-2463 31-2513 *16-684 *25-1367 *25-1371 25-1394 25-1396 25-1399 26-1524 26-1546 28-1719
		28-1757 28-1788 28-1877 28-1974 28-2041 28-2103 28-2136 28-2172 28-2206
		29-2260 29-2280 29-2303 29-2336 31-2432 31-2461 31-2511
TSEAB	004176	24-1333 #24-1336
TSEDA	004202	#24-1338 24-1339
TSEND	004070	23-1274 23-1311 #24-1323
TSRSS	004232	#24-1346
TSRST	004236	24-1325 24-1343 #24-1348
TSTWRD	014144	30-2354 #30-2358
TY01	005571	20-1069 #27-1637
TY02	005630	22-1196 #27-1638
TY03	005673	23-1278 #27-1639
TYP	004332	15-615 #25-1381
TYPA	004342	#25-1384 25-1392 25-1406
TYPC	004352	25-1385 #25-1387
TYPD	004400	22-1245 25-1391 #25-1393 25-1403 25-1405
TYPDAT	004464	*22-1244 22-1246 #25-1384 25-1387 25-1389
TYPDO	004426	25-1395 #25-1399 25-1393 *25-1402 *25-1404 #25-1407
TYPD01	004434	25-1398 #25-1401
TYPF	004436	25-1388 #25-1402
TYPG	004450	25-1390 #25-1404
TYPINT	004314	19-1012 #25-1371
TYPSWR	005272	26-1504 26-1545 26-1552 #26-1554
TYPSWX	005336	26-1558 #26-1567
W	* 000007	#16-702 *21-1117 21-1117 #21-1117 *21-1120 21-1120 #21-1120 *21-1148 21-1148
		#21-1148 *21-1151 21-1151 #21-1151 22-1215 22-1215 #22-1215 *22-1242 22-1242
		#22-1242 #21-1117 21-1117
WAIT1	001730	#21-1117 21-1117
WAIT2	002100	#21-1120 21-1120
WAIT3	002366	#21-1148 21-1148
WAIT4	002536	#21-1151 21-1151
WAIT5	003142	#22-1215 22-1215
WAIT6	003406	#22-1242
WDD1	001736	#21-1117 21-1117
WDD2	002106	#21-1120 21-1120
WDD3	002374	#21-1148 21-1148
WDD4	002544	#21-1151 21-1151
WDD5	003166	22-1215 #22-1215 22-1215
WDD6	003414	#22-1242 22-1242
WDE1	001752	#21-1117 21-1117
WDE2	002122	#21-1120 21-1120
WDE3	002410	#21-1148 21-1148
WDE4	002560	#21-1151 21-1151
WDE5	003202	#22-1215 22-1215
WDE6	003430	#22-1242 22-1242
WER1	001770	21-1117 #21-1117
WER2	002140	21-1120 #21-1120

SYMBOL CROSS REFERENCE

CREF V01

SYMBOL	VALUE	REFERENCES
WER3	002426	21-1148 #21-1148
WER4	002576	21-1151 #21-1151
WER5	003220	22-1215 #22-1215
WER6	003446	22-1242 #22-1242
WEX1	002074	21-1117 #21-1117
WEX2	002244	21-1120 #21-1120
WEX3	002532	21-1148 #21-1148
WEX4	002702	21-1151 #21-1151
WEX5	003324	22-1215 #22-1215
WEX6	003554	22-1242 #22-1242
WORK	001124	#18-987 *21-1120 *21-1120 *21-1151 *21-1151 *22-1215 *22-1215 *22-1215 *22-1242 *22-1242 *23-1283 *23-1285 *23-1301 *23-1303 *28-1800 *28-1801 *28-1809 *28-1817 *28-1825 *28-1833 *28-1837 28-1838 28-1839 28-1841 *28-1890 *28-1891 *28-1899 *28-1907 *28-1915 *28-1923 *28-1927 28-1928 *28-1967 *28-1982 *28-1989 28-1990 *28-2049 *28-2053 *28-2057 *28-2061 *28-2065 *28-2069 *28-2073 *28-2077 *28-2082 28-2085 28-2091 28-2092 *31-2519 *31-2523 *31-2527 *31-2531 *31-2535 *31-2539 *31-2543 *31-2547 *31-2551 *31-2556 31-2559 31-2565 31-2566 #18-988 *21-1120 *21-1120 *21-1151 *21-1151 *22-1215 *22-1215 *22-1242 *22-1242 *23-1284 *23-1287 *23-1302 *23-1305
WORKA	001126	#18-988 *21-1120 *21-1120 *21-1151 *21-1151 *22-1215 *22-1215 *22-1242 *22-1242 *23-1284 *23-1287 *23-1302 *23-1305
WT2	005114	#26-1524 26-1525
WT3	005242	26-1517 26-1520 26-1523 #26-1546 26-1547

MACRO CROSS REFERENCE

CREF V01

MACRO NAME	REFERENCES									
\$ENABL	#17-907	19-1027								
\$ERROR	#17-716	20-1085	21-1117	21-1120	21-1128	21-1148	21-1151	21-1159	22-1215	22-1232
	22-1242	25-1365								
\$PRINT	#17-933	22-1202	23-1296							
\$PRTSN	#17-745	#20-1069	#22-1196	#23-1278						
\$SETPS	#17-924									
\$TSWRG	#17-949	20-1067	20-1081	20-1085	21-1117	21-1117	21-1120	21-1120	21-1128	21-1148
	21-1148	21-1151	21-1151	21-1159	21-1171	22-1194	22-1215	22-1215	22-1242	22-1242
	22-1254	23-1272	23-1276	23-1310	24-1324	24-1332	25-1459	25-1465		
\$TYPE	#17-941									
\$WAITI	#17-756	21-1120	21-1151	22-1215	22-1242					
\$WAITO	#17-843	#21-1117	#21-1148							