

IDENTIFICATION

SEQ 0001

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## 1.0 ABSTRACT

THIS DIAGNOSTIC IS DIVIDED INTO FOUR BASIC SECTIONS:

1. A CHECK OF THE CONSOLE TERMINAL INTERFACE LOGIC
2. A CHECK OF THE PRINTING CHARACTERISTICS AND CONTROL LOGIC
3. AN ECHO PORTION DESIGNED TO CHECK THE KEYBOARD AND TO AID IN THE DIAGNOSIS OF TERMINAL PROBLEMS.
4. A CHECK OF THE VARIOUS LA36 OPTIONS.

PATTERNS USED BY THE PRINTING TESTS WERE CHOSEN FOR EASE OF VISUAL VERIFICATION, THE ECHO TESTS WERE DESIGNED FOR MAXIMUM FLEXIBILITY, WITH TEST 24 ALLOWING ANY DESIRED PATTERN TO BE USED.

## 2.0 REQUIREMENTS

## 2.1 EQUIPMENT

THE DIAGNOSTIC IS WRITTEN TO RUN ON ALL MODELS OF THE PDP-11 COMPUTER WITH EITHER DH11 OR DJ11 MULTIPLEXER, UP TO 16 MULTIPLEXERS + 256 TERMINALS ARE DRIVEN. THE DIAGNOSTIC IS SET TO TEST THE TERMINALS AT 300 BAUD. TO CHANGE ANY PARAMETERS FOR THE DH11 INTERFACE REFER TO THE DH11 PARAMETER TABLE IN THE LISTING.

## 2.2 STORAGE

THE DIAGNOSTIC PROGRAM USES ALL OF 4K OF MEMORY WITH EXCEPTION OF THE AREA USED BY THE ABSOLUTE LOADER.

## 2.3 PRELIMINARY PROGRAMS

ANY APPLICABLE PDP-11 DIAGNOSTICS SHOULD BE RUN ON THE PROCESSOR. IF ANY ERRORS ARE ENCOUNTERED DURING THE INTERFACE CHECK, REFER TO THE APPROPRIATE INTERFACE DIAGNOSTIC FOR FURTHER HELP IN LOCATING THE PROBLEM IF NEEDED.

## 3:0 LOADING PROCEDURE &amp; INITIALIZATION

LOAD THE LA36 DIAGNOSTIC PROGRAM TAPE FOLLOWING NORMAL PROCEDURES; BEFORE STARTING THE PROGRAM, REFER TO THE EXISTING LINE TABLE (ELTAB) AND CLEAR THE PROPER BITS IN THE TABLE TO INDICATE WHICH TERMINALS ARE TO BE TESTED; A DETAILED DESCRIPTION IS CONTAINED IN THE PROGRAM LISTING. ALSO, REFER TO THE DESCRIPTION OF THE ROUTINE "DLY"; TIME DELAYS USED BY THE PROGRAM ARE A FUNCTION OF THE CPU MODEL AND MEMORY TYPE AND SHOULD BE SET UP BEFORE RUNNING THE DIAGNOSTIC. THE ROUTINE IS PRESET FOR A PDP-11/40 WITH CORE MEMORY;

IF A HARDWARE SWITCH REGISTER DOES NOT EXIST, THE PROGRAM WILL USE THE CONTENTS OF LOCATION 176 AS THE VALUE OF THE SWITCHES; THEREFORE, BE SURE TO LOAD LOCATION 176 WITH THE SWITCH VALUE BEFORE STARTING THE PROGRAM WHEN NOT USING HARDWARE SWITCHES.

## 4:0 STARTING PROCEDURE

## 4:1 STARTING ADDRESSES

200(8) = EXECUTE WITH DH11 MULTIPLEXER  
204(8) = EXECUTE WITH DJ11 MULTIPLEXER

## 4:1.1 EXECUTE WITH DH11 MULTIPLEXER

- A: REFER TO SECTION 3:0 AND MAKE SURE THE PROPER BITS IN THE ELTAB TABLE INDICATING WHAT TERMINALS ARE TO BE TESTED HAVE BEEN CLEARED AND THE CORRECT DELAY COUNT FOR THE CPU AND MEMORY TYPE IN USE HAS BEEN SET IN TIMER;
- B: SET SWITCH REGISTER = 200(8) AND PRESS THE LOAD ADDRESS SWITCH
- C: SET THE SWITCH REGISTER BITS 7=0 EQUAL TO THE PAPER WIDTH IN TERMS OF THE NUMBER OF COLUMNS (OCTAL). REFER TO SECTION 5:1.4
- D: SET SWITCH 8 UP IF IT IS DESIRED TO SELECT A SPECIFIC TEST RATHER THAN BEGIN THE NORMAL PRINTING TEST SEQUENCE. OTHERWISE, LEAVE SWITCH 8 DOWN.
- E: PRESS THE START SWITCH. IF BIT 8 WERE ZERO WHEN STARTING THE NUMBER OF DH11'S UNDER TEST WILL BE PRINTED ON ALL EXISTING TERMINALS AND THE PRINTER TESTS ARE EXECUTED SEQUENTIALLY.
- F: IF BIT 8 WERE 1 WHEN STARTING, THE NUMBER OF DH11'S UNDER TEST WILL BE INDICATED AND THE MESSAGE "SELECT TEST NUMBER" WILL BE PRINTED ON ALL EXISTING TERMINALS. THE PROGRAM WILL THEN BE WAITING FOR A TEST SELECTION VIA ANY TERMINAL KEYBOARD (IF SWITCH 13 IS DOWN), REFER TO SECTION 5:2

## 4.1.2 EXECUTE WITH DJ11 MULTIPLEXER

A: SAME INSTRUCTIONS AS 4.1.1 EXCEPT THAT THE STARTING ADDRESS IN B IS 204 AND THE FIRST MESSAGE PRINTED WILL BE THE NUMBER OF DJ11'S UNDER TEST.

## 5.0 OPERATING PROCEDURE

THE PROGRAM IS GENERALLY CONTROLLED FROM A MULTIPLEXER TERMINAL, BUT A FEW SWITCH REGISTER CONTROLS ARE AVAILABLE. THE PRINTER TEST WILL OUTPUT TO ALL TERMINALS OR TO THE ONE UNDER TEST AS A FUNCTION OF SR BIT 13. ECHO TESTS WILL REFERENCE ONLY THE TERMINAL SELECTING THE TEST, OR ALL TERMINALS DEPENDING ON THE SPECIFIC TEST AND THE SETTING OF SWITCH 13.

## 5.1 SWITCH REGISTER CONTROL

THE VARIOUS SWITCHES AND THEIR FUNCTIONS ARE LISTED BELOW. SWITCHES MAY BE CHANGED AND SET AS DESIRED EXCEPT AS NOTED IN THE SPECIFIC SWITCH DESCRIPTIONS. REFER TO THE DETAILED SWITCH DESCRIPTIONS FOR FURTHER, MORE COMPLETE INFORMATION.

SWITCH NUMBER	DESCRIPTION
15	1(UP) = HALT AT END OF TEST 0(DOWN) = CONTINUE TEST SEQUENCE
13	1(UP) = DRIVE ONLY SELECTED TERMINAL 0(DOWN) = DRIVE ALL TERMINALS
8	1(UP) = SELECT TEST (AT START-UP ONLY) 0(DOWN) = START NORMAL TEST SEQUENCE
7-0	NUMBER OF COLUMNS AT START-UP

## 5.1.1 SWITCH 15

WITH SWITCH 15 IN THE UP POSITION, THE PROGRAM WILL HALT AT THE END OF THE CURRENT TEST, REPLACING SWITCH 15 TO THE DOWN POSITION AND PRESSING CONTINUE WILL CONTINUE THE NORMAL TEST OPERATION,

## 5.1.2 SWITCH 13

PLACING SWITCH 13 IN THE DOWN POSITION WILL CAUSE THE DRIVING OF ALL TERMINALS. IF SWITCH 13 IS UP, ONLY THE TERMINAL UNDER TEST IS DRIVEN,

## NOTE

SWITCH 13 CAN ONLY BE CHANGED WHEN THE PROGRAM IS WAITING FOR A TEST SELECTION,

## 5.1.3 SWITCH 8 (AT START-UP ONLY)

TO SELECT A SPECIFIC TEST RATHER THAN START THE PRINTING TEST SEQUENCE, PLACE SWITCH 8 UP BEFORE STARTING THE DIAGNOSTIC, OTHERWISE, LEAVE SWITCH 8 DOWN TO RUN THE NORMAL TEST SEQUENCE, THIS SWITCH IS ONLY EFFECTIVE AT START-UP OF THE PROGRAM,

## 5.1.4 SWITCHES 7 TO 0 (AT START-UP ONLY)

AT START-UP ONLY, SWITCHES 7 TO 0 ARE USED TO SET THE DESIRED MAXIMUM NUMBER OF COLUMNS THE DIAGNOSTIC IS TO TEST, IF THE NUMBER SET IS GREATER THAN 132(10) OR LESS THAN 30(10), THE PROGRAM WILL DEFAULT TO 132(10). THE VALUE SET MUST BE IN OCTAL FORM,

## 5.2 KEYBOARD CONTROL

THE PROGRAM WILL ALWAYS BE UNDER KEYBOARD CONTROL; CONTROL FROM THE SWITCH REGISTER DURING PROGRAM EXECUTION IS ONLY POSSIBLE WITH SWITCHES 13 AND 19 AS STATED ABOVE.

TYPING THE "RUBOUT" (DEL) KEY ON ANY TERMINAL KEYBOARD WILL TERMINATE THE TEST IMMEDIATELY; AFTER TERMINATION OF THE TEST THE FOLLOWING MESSAGE WILL BE TYPED:

## SELECT TEST #

AT THIS TIME, TYPE THE DESIRED TEST NUMBER FOLLOWED BY ANY ONE OF THE FOLLOWING CONTROL CHARACTERS:

- . (PERIOD) ■ RUN THE SELECTED TEST ONCE AND RETURN FOR ANOTHER TEST SELECTION;
- L ■ LOOP ON THE SELECTED TEST UNTIL A "RUBOUT" IS TYPED.
- S ■ START THE TEST SEQUENCE WITH THE SELECTED TEST; CONTINUE TO LOOP ON THE PRINTING TEST SEQUENCE UNTIL A "RUBOUT" IS TYPED.

THE L OR S MAY BE EITHER UPPER OF LOWER CASE, BUT THE TEST NUMBER MUST ALWAYS BE A 2 DIGIT OCTAL NUMBER. FOR ALL ECHO TESTS, THE "L" AND "S" WILL ONLY RUN THE TEST ONCE (THE SAME AS IF TYPING A PERIOD); FOR ALL OPTION TESTS, THE "S" WILL ONLY RUN THE TEST ONCE (THE SAME AS IF TYPING A PERIOD), HOWEVER, TYPING AN "L" WILL CAUSE THE PROGRAM TO LOOP ON THE SELECTED TEST. IF AN ERROR IS DETECTED IN THE TEST SELECTION (ILLEGAL TEST NUMBER OR CONTROL CHARACTER) A QUESTION MARK IS PRINTED AND THE MESSAGE WILL BE REPEATED.





## EXAMPLE:

```

    @@@   !!!
    111   AAA   AAA
    """"  ?BB   BBB
    ###   CCC   CCC
    $$$   DDD   DDD
    %%%   EEE   EEE
    &&&   FFF   FFF
    !!!   GGG   GGG
    (((   HHH   HHH
    )))   III   III
    ***   JJJ   JJJ
    +++   KKK   KKK
    ...   LLL   LLL
    ---   MMM   MMM
    ...   NNN   NNN
    ///   OOO   OOO
    000   PPP   PPP
    111   QQQ   QQQ
    222   RRR   RRR
    333   SSS   SSS
    444   TTT   TTT
    555   UUU   UUU
    666   VVV   VVV
    777   WWW   WWW
    888   XXX   XXX
    999   YYY   YYY
    !!!   ZZZ   ZZZ
    )))   [ [ [
    <<<  \ \ \
    ===  ] ] ]
    >>>
    ???

```

## 6.1.3 TEST 2 - NON-PRINTABLE CHARACTER TEST

THIS TEST CHECKS ALL NON-PRINTABLE CHARACTERS THAT HAVE NO CONTROL FUNCTION IN THE LA36 TERMINAL OR THE LA36 OPTIONS (SUCH AS CR, LF, BS, & BEL); FIRST THE ASCII CODE WILL BE PRINTED FOLLOWED BY THE MNEMONIC AFTER A FEW SEPARATING SPACES, FOLLOWING THE MNEMONIC, THE ACTUAL CONTROL CHARACTER WILL BE SENT THREE TIMES AND NOTHING SHOULD HAPPEN AT THE PRINTER, THIS PATTERN IS REPEATED, THREE TIMES ON A LINE, UNTIL ALL OF THE NON-PRINTING CHARACTERS HAVE BEEN TESTED,

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

## EXAMPLE I

000	NUL	001	SOH	002	STX
006	ACK	020	DLE	021	DC1
022	DC2	023	DC3	024	DC4
025	NAK	026	SYN	027	ETB
030	CAN	031	EM	032	SUB
034	FS	035	GS	036	RS
037	US	177	DEL		

## 6.1.4 TEST 3 - CARRIAGE RETURN TEST

THIS TEST CHECKS THE CARRIAGE RETURN FROM ALL EVEN NUMBERED COLUMNS AND THE SPACING OF THE SOLENOID HEAD FROM THE LEFT MARGIN. IT IS ALSO A GOOD CHECK FOR PROPER OPERATION OF THE POSITION DECODER.

THE TEST PRINTS A FULL LINE OF ALTERNATING 0'S AND SPACES, STARTING WITH A 0, AT THE END OF THE LINE THE PRINT HEAD IS RETURNED TO THE LEFT MARGIN WITH A CARRIAGE RETURN. THE SPACES ARE THEN FILLED IN BY SPACING THE PRINT HEAD OUT FROM THE LEFT MARGIN TO THE FIRST SPACE, PRINTING AN "X", AND EXECUTING A CARRIAGE RETURN. THIS PATTERN IS REPEATED UNTIL THE LINE IS COMPLETED. CHECK TO SEE THAT ALL X'S ARE IN THE MIDDLE OF THE SPACE BETWEEN THE TWO ZEROES ON EITHER SIDE OF IT.

## EXAMPLE I

```
0X0X0X0X0X0X0X0X0X0X0X0X0X
```

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THIS TEST WILL PRINT A LINE OF 0'S AND SPACES, THEN PRINT A DIAGONAL LINE OF X'S. TO CORRECTLY CHECK THE ENCODER, THE AUTO LINE FEED OPTION SHOULD BE DISABLED.

## EXAMPLE I

```
0 0 0 0 0 0 0 0 0 0
 X
  X
   X
    X
     X
      X
       X
        X
```

## 6.1.5 TEST 4 - MULTIPLE LINE FEED TEST

THIS TEST CHECKS THE LINE FEED CAPABILITY OF THE PRINTER BY SENDING VARIOUS GROUPS OF LINE FEEDS INTERSPACED WITH REFERENCE LINES. THE NUMBER PRINTED AS THE REFERENCE LINE INDICATES THE NUMBER OF LINE FEEDS THAT FOLLOW. THE FIRST AND LAST LINES ALSO CONTAIN A STRING OF DASHES AS REFERENCE POINTS FOR MEASURING. THE TOTAL DISTANCE IS 63(10) LINES BETWEEN THE TWO DASHED LINES;

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY CARRIAGE RETURN, THE NUMBER PRINTED WILL INDICATE ONE LESS THAN THE NUMBER OF LINE FEEDS (THE NUMBER OF BLANK LINES) THAT FOLLOW. THE TOTAL DISTANCE BETWEEN THE TWO DASHED LINES WILL THEN BE 69 LINES;

## EXAMPLE:

```

01-----
02
04

08

16 \
    / 15 BLANK LINES
32 \
    / 31 BLANK LINES
00-----

```

## 6.1.6 TEST 5 - SINGLE LINE FEED TEST

THIS TEST IS DESIGNED TO CHECK THE TIMING OF SINGLE LINE FEEDS AND THE CAPABILITY OF DOING LINE FEEDS IN ALL COLUMNS. TWO REFERENCE LINES ARE USED BY THIS TEST (AND TEST 6) WHICH ALSO CAN BE USED TO EASILY CHECK THE NUMBER OF COLUMNS THE PRINTER IS PRINTING.

THE FIRST REFERENCE LINE CONTAINS 130(10) ZEROES FOLLOWED BY TWO 2'S IF TESTING 132(10) COLUMNS. IF LESS THAN 132 COLUMNS, THE LINE WILL CONTAIN 0'S FOR TWO LESS THAN THE MAXIMUM NUMBER OF COLUMNS FOLLOWED BY THE TWO 2'S. THIS REFERENCE LINE IS A QUICK CHECK FOR 132(10) COLUMNS IF TESTING THE FULL 132(10) COLUMNS. THE SECOND REFERENCE LINE PRINTS A STRING OF NUMBERS ( 1 TO 9 & 0 ) REPEATED TO THE MAXIMUM COLUMN. THIS LINE, AGAIN, CAN BE USED AS A QUICK CHECK OF THE NUMBER OF COLUMNS.

THE LINE FEED TEST IS ACCOMPLISHED BY: PRINTING THE FIRST REFERENCE LINE OF 0'S AND TWO 2'S; THEN EITHER SENDING 60(10) 3'S, IF TESTING 132(10) COLUMNS, OR WAITING 1.8 SECONDS FOR AN LCV, IF TESTING LESS THAN 132(10) COLUMNS. IF TESTING 132(10) COLUMNS, NOTHING SHOULD HAPPEN, EXCEPT FOR AN LCV, AT THE END OF THE LINE. THE 3'S SHOULD BE LOST AND NEVER PRINTED. AFTER THE LCV, WITH THE PRINT HEAD AT THE EXTREME RIGHT, A CARRIAGE RETURN = LINE FEED WILL BE SENT FOLLOWED BY REPEATED BACKSLASHES "\" AND LINEFEEDS TO PRINT A DIAGONAL LINE DOWN THE PAPER. WHEN A BACKSLASH IS PRINTED IN THE MAXIMUM COLUMN, A CARRIAGE RETURN WILL BE SENT IMMEDIATELY AFTER THE LINE FEED AND THE SECOND REFERENCE LINE OF SEQUENTIAL NUMBERS WILL BE PRINTED. AFTER COMPLETING THE LINE, A CARRIAGE RETURN = LINE FEED WILL BE SENT AND THE PROGRAM WILL WAIT ONE SECOND FOR THE CARRIAGE RETURN FUNCTION TO COMPLETE. AFTER THE DELAY, THE REFERENCE LINE WILL BE REPEATED, THE LAST LINE BEING GUARANTEED TO BE CORRECT. ANY TIMING PROBLEMS DURING THE LINE FEEDS WILL SHOW AS MISS PRINTS OR MISSING CHARACTERS DURING THE FIRST 16(10) CHARACTERS OF THE MIDDLE REFERENCE LINE. ALSO, ANY PAPER FEED PROBLEMS WILL CAUSE MISS-ALIGNMENT OF THE SLASHES FORMING THE DIAGONAL LINE.

EXAMPLE I

0000000000000000000000000000000022

123456789012345678901234567890  
123456789012345678901234567890

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED  
AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE EVERY  
PLACE A CARRIAGE RETURN IS EXECUTED,

## EXAMPLE:

0000700022

1234567890

1234567890

## 6.1.7 TEST 6 - BACKSPACE TEST

THIS TEST IS DESIGNED TO TEST THE PRINT TIMING AS IN TEST 5 AS WELL AS THE BACKWARD AND FORWARD MOVEMENT OF THE PRINT SOLENOID HEAD.

THE TEST CONSISTS OF THE SAME FIRST REFERENCE LINE AS IN TEST 5 THEN A CARRIAGE RETURN-LINE FEED; A FULL LINE IS THEN PRINTED USING THE FOLLOWING PATTERN:

```
FORWARD SLASH  "/"
BACKSPACE
BACK SLASH     "\"
```

THIS PATTERN PRODUCES A LINE OF ALL X'S, THE TWO SLASHES SHOULD CROSS EXACTLY AT THE MIDDLE, PRODUCING THE X CHARACTER, WHEN THE LINE IS COMPLETED A CARRIAGE RETURN-LINE FEED IS SENT AND THE LAST TWO REFERENCE LINES ARE PRINTED AS IN TEST 5, ANY TIMING PROBLEMS WILL SHOW IN THE FIRST 16(10) CHARACTERS OF THE MIDDLE REFERENCE LINE AGAIN AS IN TEST 5.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

## EXAMPLE:

```
000000000000000000000000000022
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
123456789012345678901234567890
123456789012345678901234567890
```

6.1.8 TEST 7 - OVERPRINT TEST

THIS TEST IS DESIGNED TO CHECK THE SPACING AND REPEATABLE PRINTING CHARACTERISTICS OF THE PRINTER, THREE ROWS OF CHARACTERS ARE EACH OVERPRINTED TWO TIMES, THE ROWS CONSIST OF THE FOLLOWING CHARACTERS ALTERNATED ACROSS THE LINE!

ROW 1 M=SP  
ROW 2 SP=Q  
ROW 3 Q=SP

THE RESULTING PATTERN WILL BE A CHECKERBOARD PATTERN AND THE OVERPRINTED CHARACTERS SHOULD BE ALIGNED PROPERLY WITH THE INITIAL CHARACTERS,

EXAMPLE!

M M M M M M M M M M M M M M M M  
Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q  
& & & & & & & & & & & & & & &

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THE LINES WILL NOT BE OVERPRINTED, THERE WILL BE THREE LINES OF EACH CHARACTER WITH A BLANK LINE BETWEEN EACH GROUP OF CHARACTERS, THE CHARACTERS IN EACH GROUP SHOULD BE IN THE SAME COLUMNS,

EXAMPLE!

M M M M M M M M M M  
M M M M M M M M M M  
M M M M M M M M M M  
  
Q Q Q Q Q Q Q Q Q Q  
Q Q Q Q Q Q Q Q Q Q  
Q Q Q Q Q Q Q Q Q Q  
  
& & & & & & & & & & & &  
& & & & & & & & & & & &  
& & & & & & & & & & & &

## 6.1.9 TEST 10 = PRINTING FREQUENCY SWEEP TEST

THIS TEST PRINTS THE CHARACTER "H" REPEATEDLY, 30(10) CHARACTERS PER LINE FOR FOUR LINES; DURING THE FIRST TWO LINES, THE TIME INTERVAL BETWEEN CHARACTERS IS INCREASED FROM 30(10) MILLISECONDS TO 1.8 SECONDS USING THE FOLLOWING FORMULA TO CREATE A LOGRITHMIC INCREASE:

$$\text{NEW DELAY} = \text{OLD DELAY} + \text{OLD DELAY}/16 + \text{OLD DELAY}/128$$

THE LAST TWO LINES DO JUST THE REVERSE; THE TIME INTERVAL BETWEEN CHARACTERS IS DECREASED FROM 1.8 SECONDS TO 30(10) MILLISECONDS USING THE FOLLOWING FORMULA TO AGAIN CREATE A LOGRITHMIC DECREASE:

$$\text{NEW DELAY} = \text{OLD DELAY} - \text{OLD DELAY}/16 - \text{OLD DELAY}/128$$

LOOK FOR POSSIBLE MISS-ALIGNMENT OF THE CHARACTERS OR SPACES BETWEEN CHARACTERS AS AN INDICATION OF TIMING PROBLEMS;

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE,

## EXAMPLE:

```

HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

```

## 6.1.10 TEST 11 = RIBBON FEED TEST

THIS TEST CHECKS THE RIBBON FEED MECHANISM BY PRINTING A SINGLE COLUMN OF 24 LINES OF X'S DOWN THE LEFT HAND MARGIN OF THE PAGE, VISUALLY CHECK FOR PROPER OPERATION OF THE RIBBON FEED MECHANISM DURING THIS TEST,

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE,

## EXAMPLE:

```

X
X
X
X
X
X
X
X

```



6.1.11 TEST 12 - PRINTER BELL TEST

THIS TEST CHECKS THE PRINTER BELL BUFFER TO INSURE THAT EIGHT BELLS ARE DISTINCTLY HEARD, EVEN WHEN SENT AT THE MAXIMUM TRANSFER RATE, THE PROGRAM SENDS 8 BELL CODES AT THE MAXIMUM RATE TO THE PRINTER THEN WAITS 2.5 SECONDS TO ALLOW THE OPERATOR TO HEAR THE BELLS,

6.1.12 TEST 17 - LIFE TEST

THIS TEST RUNS CONTINUOUSLY AND IS RUN AS AN INDIVIDUAL, SPECIAL TEST, IT IS NOT PART OF THE STANDARD PRINTING TEST SEQUENCE,

THIS TEST PRINTS 2 LINES OF EACH PRINTABLE CHARACTER AND THEN REPEATS CONTINUOUSLY, THE SECOND LINE OF EACH CHARACTER IS OVERPRINTED 4 TIMES TO CONSERVE PAPER, AT THE END OF EACH COMPLETE PASS THROUGH THE CHARACTER SET A MESSAGE IS PRINTED INDICATING THE NUMBER OF PASSES EXECUTED, IF ANY CHARACTER (EXCEPT "RUBOUT") IS TYPED ON THE KEYBOARD DURING THIS TEST, THE PATTERN WILL CHANGE AND RESTART WITH THE TYPED CHARACTER, THIS WILL ONLY HAPPEN IF KEYBOARD CONTROL IS IN USE,

EXAMPLE I

AAAAAAAAAAAAAAAAAAAAAAAAAAAA  
AAAAAAAAAAAAAAAAAAAAAAAAAAAA  
BBBBBBBBBBBBBBBBBBBBBBBBBB  
BBBBBBBBBBBBBBBBBBBBBBBBBB

IF THE AUTO LINE FEED OPTION IS SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THE TEST WILL PRINT SIX LINES OF EACH CHARACTER WITH A BLANK LINE BETWEEN THE FIRST AND SECOND LINES AS WELL AS BETWEEN EACH GROUP OF CHARACTERS,

EXAMPLE I

AAAAAAAAAAAAAAAA  
  
AAAAAAAAAAAAAAAA  
AAAAAAAAAAAAAAAA  
AAAAAAAAAAAAAAAA  
AAAAAAAAAAAAAAAA  
AAAAAAAAAAAAAAAA  
  
BBBBBBBBBBBBBB  
  
BBBBBBBBBBBBBB  
BBBBBBBBBBBBBB  
BBBBBBBBBBBBBB  
BBBBBBBBBBBBBB  
BBBBBBBBBBBBBB

## 6.2 ECHO TESTS

THESE TESTS ARE DESIGNED AS A TEST OF THE KEYBOARD AND AN AID IN ISOLATING TROUBLES WITHIN THE TERMINAL. AT THE BEGINNING OF EACH TEST, THE TEST NUMBER WILL BE PRINTED INDICATING WHICH TEST IS BEING EXECUTED. TYPING A "RUBOUT" OR "DELETE" AT ANY TIME, WHETHER IN KEYBOARD CONTROL OR NOT, WILL EXIT THE CURRENT ECHO TEST AND PRINT A TEST TERMINATION MESSAGE. IF IN KEYBOARD CONTROL, THE SELECT TEST MESSAGE WILL BE PRINTED AND THE PROGRAM WILL AWAIT A TEST SELECTION AS USUAL. IN SWITCH REGISTER CONTROL, THE PROGRAM WILL HALT (AT SELLHLT) WAITING FOR CONTROL VIA THE SWITCH REGISTER. A DETAILED DESCRIPTION OF EACH TEST FOLLOWS:

## 6.2.1 TEST 20 - CHARACTER ECHO TEST

THIS TEST IS DESIGNED TO OPERATE THE TERMINAL IN A SIMULATED LOCAL MODE. ANY CHARACTER TYPED ON THE KEYBOARD (EXCEPT A "RUBOUT") WILL BE ECHOED TO THE PRINTER.

## 6.2.2 TEST 21 - LINE ECHO TEST, FAST RATE

THIS TEST CONTINUALLY SENDS FULL LINES OF ANY CHARACTER UP TO THE MAXIMUM COLUMN WIDTH. THE TEST PRINTS A "0" CHARACTER WHEN STARTED UNTIL A KEY IS TYPED ON THE KEYBOARD. THE PROGRAM WILL THEN SEND THE TYPED CHARACTER UNTIL ANOTHER CHARACTER IS TYPED OR THE TEST IS TERMINATED BY TYPING A "RUBOUT". THE CHARACTERS ARE TRANSMITTED AT THE MAXIMUM RATE WITH A CARRIAGE RETURN=LINE FEED INSERTED AFTER EVERY 132(10) PRINTABLE CHARACTERS.

IF THE LA36 IS IN HALF DUPLEX WHEN RUNNING THIS TEST, CHARACTERS MAY BE LOST OR GARBLED WHENEVER A CHARACTER IS TYPED ON THE KEYBOARD.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

## 6.2.3 TEST 22 - LINE ECHO TEST, SLOW RATE

THIS TEST IS IDENTICAL TO TEST 21 EXCEPT A DELAY OF 1.8 SECONDS IS INSERTED BETWEEN EACH CHARACTER TO ALLOW THE PRINT HEAD TO PERFORM AN LCV BETWEEN CHARACTERS.

## 6.2.4 TEST 23 = CHARACTER/CODE ECHO TEST

THIS TEST WILL PRINT THE OCTAL CODE RECEIVED BY THE PROCESSOR FOLLOWED BY THE CHARACTER OR THE MNEMONIC OF THE CHARACTER EVERY TIME A KEY IS PRESSED ON THE KEYBOARD. THE PARITY OF THE RECEIVED CODE WILL BE INDICATED AS EITHER ODD OR EVEN. ALLOW SUFFICIENT TIME BETWEEN CHARACTERS FOR THE LINE TO BE PRINTED.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

## EXAMPLE:

301	A	ODD
263	3	ODD
215	CR	EVEN
240	SP	EVEN

## 6.2.5 TEST 24 = SELECTED PATTERN ECHO TEST

THIS TEST IS DESIGNED TO GIVE MAINTENANCE THE FLEXIBILITY TO CHOOSE THEIR OWN PATTERNS FOR ISOLATING ANY SPECIFIC PROBLEMS WHICH MAY ARISE IN THE FIELD.

TYPE ANY CHARACTERS (EXCEPT CONTROL=C AND RUBOUT) AND EACH CHARACTER WILL BE ECHOED AS TYPED. A MAXIMUM OF 256(10) CHARACTERS MAY BE INPUTTED. NO CARRIAGE RETURNS OR LINE FEEDS ARE INSERTED BY THE PROGRAM. ALL CHARACTERS MUST BE INPUTTED BY THE OPERATOR. TO TERMINATE THE INPUT STRING TYPE A CONTROL=C. THE PROGRAM WILL THEN CONTINUALLY ECHO THE INPUTTED PATTERN. TO STOP THE PRINTING, TYPE CONTROL=C. THE PROGRAM WILL STOP PRINTING THE PATTERN AND WILL WAIT FOR EITHER ANOTHER PATTERN INPUT TERMINATED BY A CONTROL=C, OR THE SAME PATTERN MAY BE USED AGAIN BY TYPING CONTROL=C. TO EXIT THE TEST AT ANY TIME, TYPE A "RUBOUT".

WHEN ANY OPTIONS ARE AVAILABLE, BE CAREFUL WHAT CHARACTERS OR CHARACTER SEQUENCES ARE SELECTED.

## 6.2.6 TEST 25 = BELL ECHO TEST

THIS TEST IS DESIGNED TO TEST THE BELL ON COLUMN 64 IF TYPING HAS OCCURED ON THE LINE. THE TEST PRINTS A MESSAGE:

TYPE ANY PRINTABLE CHARACTER AND LISTEN FOR BELL ;.....;

AFTER THE TEST MESSAGE IS PRINTED, TYPE ANY PRINTABLE CHARACTER ON THE KEYBOARD. THE CHARACTER WILL BE ECHOED AND THE BELL SHOULD RING. THE MESSAGE WILL THEN BE TYPED AGAIN. TYPE THE "RUBOUT" KEY TO TERMINATE THE TEST AT ANY TIME.

## 6.3 OPTION TESTS

THESE TESTS ARE DESIGNED AS A TEST OF THE VARIOUS OPTIONS IN WHATEVER COMBINATIONS THEY ARE AVAILABLE IN THE LA36; AT THE BEGINNING OF EACH TEST, THE TEST NUMBER WILL BE PRINTED INDICATING WHICH TEST IS BEING EXECUTED. TYPING A "RUBOUT" OR "DELETE" AT ANY TIME, WHETHER IN KEYBOARD CONTROL OR NOT, WILL EXIT THE CURRENT OPTION TEST. A DETAILED DESCRIPTION OF EACH TEST FOLLOWS:

## 6.3.1 TEST 30 = SECONDARY CHARACTER SET OPTION

THIS TEST IS DESIGNED TO TEST THE SECONDARY CHARACTER SET OPTION, TESTING THE ABILITY TO SELECT EITHER CHARACTER SET UNDER SOFTWARE CONTROL FROM THE CPU AND PRINTING THE CORRECT CHARACTERS WITHIN EACH CHARACTER SET;

A NUMBER IS PRINTED AT THE LEFT MARGIN INDICATING WHICH CHARACTER SET IS BEING PRINTED; #1 INDICATES THE PRIMARY SET AND #2 INDICATES THE SECONDARY SET (APL); AFTER THE NUMBER, THE APPROPRIATE SHIFT IN (SI) OR SHIFT OUT (SO) WILL BE SENT FOLLOWED BY THE ENTIRE PRINTABLE CHARACTER SET; IF LESS THAN 96 COLUMNS ARE BEING TESTED, A CARRIAGE RETURN - LINE FEED WILL BE INSERTED IN THE APPROPRIATE PLACES. THIS WILL BE REPEATED, ALTERNATING BETWEEN PRIMARY AND SECONDARY SETS UNTIL 16 LINES HAVE BEEN PRINTED (IF USING 96 OR MORE COLUMNS); THERE WILL BE A BLANK LINE BETWEEN EACH PAIR OF LINES TO SEPARATE EACH GROUPING; CHANGE LOCATION "130SC" AT THE END OF TESTS 30 TO 377 (8) IF USING 8 BIT SELECTION CODE RATHER THAN THE SI AND SO TO SELECT CHARACTER SETS; THE TEST WILL THEN SET OR CLEAR BIT 8 INSTEAD OF SENDING THE SI OR SO TO SELECT CHARACTER SETS;

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EACH RECEIVED CARRIAGE RETURN, THERE WILL BE EXTRA BLANK LINES EVERY PLACE A CARRIAGE RETURN IS SENT;

## EXAMPLE:

```
#1= 1"#$%&'()*...PRIMARY CHARACTER SET...
#2= 1"#$%&'()*...SECONDARY CHARACTER SET...

#1= 1"#$%&'()*...PRIMARY CHARACTER SET...
#2= 1"#$%&'()*...SECONDARY CHARACTER SET...
```

## 6.3.2 TEST 31 - SELECTIVE ADDRESSING OPTION

THIS TEST IS DESIGNED TO TEST THE VARIOUS FUNCTIONS OF THE SELECTIVE ADDRESSING OPTION. THE TEST FIRST SENDS AN "EOT" <004> TO DISABLE ALL TERMINALS AND TRIES TO PRINT AN ERROR MESSAGE. THE ERROR MESSAGE SHOULD NOT BE PRINTED ON ANY TERMINAL WITH THE SELECTIVE ADDRESSING OPTION. THEN A "BEL" <007> AND "STX" <002> ARE SENT TO SELECT ALL TERMINALS. AT THIS POINT THE TEST NUMBER IS PRINTED ON ALL TERMINALS. THUS, IF AN ERROR MESSAGE IS PRINTED BEFORE THE TEST NUMBER, THE EOT DID NOT DESELECT THE TERMINAL WHERE THE MESSAGE WAS PRINTED.

THE TEST NEXT SENDS AN EOT DIRECTLY FOLLOWED BY A STX, WITH NO SELECT CHARACTER. AGAIN, THE ERROR MESSAGE IS SENT TO ALL TERMINALS, WHICH SHOULD NOW BE ALL DESELECTED. THE ERROR MESSAGE SHOULD NOT BE PRINTED ON ANY TERMINAL WITH THE SELECTIVE ADDRESSING OPTION.

THE NEXT SERIES OF CHECKS ARE MADE ON THE GROUP SELECT CHARACTER. A TABLE LOCATED AT THE END OF TEST 31 IN THE LISTING IS USED TO TEST VARIOUS GROUP SELECT CHARACTERS. THE FIRST ZERO ENCOUNTERED IN THE TABLE WILL INDICATE THE END OF THE TABLE AND THE TEST WILL GO TO THE NEXT SERIES OF CHECKS ON THE OPTION. THE TABLE IS PRESET WITH A SINGLE GROUP SELECT CHARACTER, THE LETTER "G", BUT ALLOWS ROOM TO TEST UP TO 8 DIFFERENT SELECT CODES. THIS TABLE SHOULD BE CHANGED TO CONTAIN THE VARIOUS GROUP SELECT CHARACTERS DESIRED TO TEST WITH ONE ASCII CODE PER LOCATION. THE TEST WILL THEN USE THE VARIOUS GROUP SELECT CHARACTERS TO SELECT TERMINALS AND PRINT A MESSAGE ON EACH SELECTED TERMINAL INDICATING THE GROUP SELECT CHARACTER USED. CHECK THAT THE CORRECT GROUP SELECT CHARACTER HAS ENABLED EACH TERMINAL. ALSO, IT MAY BE HELPFUL TO PLACE UNUSED SELECT CHARACTERS IN THE TABLE TO CHECK THAT THEY DO NOT SELECT TERMINALS. IF AN ERROR MESSAGE WAS PRINTED BETWEEN THE TEST NUMBER AND THE GROUP SELECT MESSAGE, THE TERMINAL WHERE THE MESSAGE WAS PRINTED WAS SELECTED BY AN EOT AND STX WITH NO SELECT CHARACTER BETWEEN THEM.

THE LAST SERIES OF CHECKS ARE MADE ON THE UNIQUE SELECT CHARACTER. A TABLE LOCATED AT THE END OF TEST 31 IN THE LISTING IS USED TO TEST VARIOUS UNIQUE SELECT CHARACTERS. THE FIRST ZERO ENCOUNTERED IN THE TABLE WILL INDICATE THE END OF THE TABLE. THE PROGRAM WILL SELECT ALL TERMINALS USING THE BEL CODE BEFORE EXITING THE TEST. THE TABLE IS PRESET WITH A SINGLE UNIQUE SELECT CHARACTER, THE LETTER "U", BUT ALLOWS ROOM TO TEST UP TO 16 DIFFERENT UNIQUE SELECT CODES. THIS TABLE SHOULD BE CHANGED TO CONTAIN THE VARIOUS UNIQUE SELECT CHARACTERS DESIRED TO TEST, WITH ONE ASCII CODE PER LOCATION. MAKE SURE THAT EACH CHARACTER IN THE TABLE IS A VALID UNIQUE SELECT CODE OR THE DIAGNOSTIC WILL HANG DURING THIS PORTION OF THE TEST. USING EACH UNIQUE SELECT CHARACTER IN TURN, THE TEST WILL PERFORM THE REMAINING CHECKS OF THE SELECTIVE ADDRESSING OPTION.

THE TEST WILL SEND AN EOT FOLLOWED BY THE CURRENT UNIQUE SELECT CHARACTER; BEFORE THE STX IS SENT, THE TEST WILL TRY TO PRINT THE ERROR MESSAGE ON ALL TERMINALS; THEN THE STX WILL BE SENT AND A MESSAGE WILL BE PRINTED TO INDICATE THE UNIQUE SELECT CHARACTER USED; CHECK THAT THE CORRECT UNIQUE SELECT CHARACTER HAS ENABLED EACH TERMINAL; IF AN ERROR MESSAGE IS PRINTED BEFORE THE UNIQUE SELECT MESSAGE, THE TERMINAL WHERE THE MESSAGE WAS PRINTED WAS ENABLED BEFORE THE STX WAS RECEIVED; A MESSAGE WILL THEN BE PRINTED TELLING THE OPERATOR TO TYPE ANY PRINTABLE CHARACTER TO CHECK THAT THE KEYBOARD IS ENABLED, WHATEVER CHARACTER IS TYPED WILL BE ECHOED TO THE TERMINAL.

THE FINAL SECTION OF THE TEST WILL USE A DUMMY SELECT CHARACTER, THE ASCII CODE FOR THIS SELECT CHARACTER IS LOCATED BETWEEN THE TWO SELECT CHARACTER TABLE AT THE END OF THE TEST; THIS LOCATION SHOULD CONTAIN THE ASCII CODE OF ANY UNUSED SELECT CHARACTER; THE TEST WILL SEND AN EOT FOLLOWED BY THE DUMMY SELECT CHARACTER AND AN STX; THE ERROR MESSAGE WILL BE LOADED TO ALL TERMINALS AND SHOULD NOT BE PRINTED ON ANY TERMINALS SINCE ALL SHOULD BE DESELECTED; NEXT AN ETX <003> FOLLOWED BY THE CURRENT UNIQUE SELECT CHARACTER AND AN STX WILL BE SENT AND A PRINTED MESSAGE WILL INDICATE THE SELECT CHARACTER USED; ANOTHER ETX WILL BE SENT, FOLLOWED BY THE DUMMY SELECT CHARACTER AND AN STX THIS TIME; A MESSAGE WILL AGAIN BE PRINTED INDICATING THE CURRENT UNIQUE SELECT CHARACTER, ALL SELECTED TERMINALS SHOULD REMAIN SELECTED AND NO OTHER TERMINALS SHOULD GET SELECTED.

### 6.3.3 TEST 32 - ANSWER BACK OPTION

THIS TEST IS DESIGNED TO TEST THAT THE ANSWER BACK OPTION SENDS THE CORRECT MESSAGE UPON RECEIPT OF AN ENQ (005) OR UPON TYPING CONTROL-E OR THE HERE IS KEY ON THE KEYBOARD; THE TEST WILL SEND AN ENQ (005), READ THE MESSAGE, AND THEN PRINT OUT THE MESSAGE ON THE LAS6; THE TEST WILL THEN ASK THE OPERATOR TO DEPRESS THE HERE IS KEY, READ THE MESSAGE, AND THEN PRINT OUT THE MESSAGE, FINALLY, THE TEST WILL TELL THE OPERATOR TO DEPRESS THE CONTROL-E KEY, READ THE MESSAGE, AND PRINT OUT THE MESSAGE, IF THE SELECTIVE ADDRESSING OPTION IS AVAILABLE, THE AUTO ANSWER BACK OPTION WILL NOT RESPOND TO ANOTHER ENQ AFTER THE FIRST ONE RECEIVED, THUS, YOU MAY HAVE TO DEPRESS THE RUBOUT KEY TO EXIT THE TEST.

## 6.3.4 TEST 33 - TOP OF FORM OPTION

THIS TEST IS DESIGNED TO TEST THE FORM FEED CAPABILITY OF THE TOP OF FORM OPTION. A SET OF INSTRUCTIONS IS PRINTED FOR THE OPERATOR TO REMIND HIM TO DEPRESS THE TOP OF FORM RESET SWITCH AFTER MAKING EACH SWITCH SETTING; UPON COMPLETION OF EACH SETTING, AFTER DEPRESSING THE RESET SWITCH, TYPE ANY CHARACTER (EXCEPT RUBOUT) ON THE KEYBOARD TO TEST THAT SWITCH SETTING. THE REFERENCE LINES PRINTED WILL INDICATE THE LENGTH FORM FEED JUST EXECUTED AND THE NEXT SWITCH SETTING TO MAKE. THE 3 INCH FORM FEED IS TESTED TWICE BEFORE TESTING THE REMAINING POSITIONS. THE FIRST TIME, 16 OR 17 LINE FEEDS ARE EXECUTED BEFORE DOING THE FORM FEED, DEPENDING ON HOW THE AUTO LINE FEED OPTION IS SET UP. THE DIAGNOSTIC WILL THEN TEST EACH POSITION IN SEQUENCE FROM 3 TO 14 INCHES. THE SINGLE STEP POSITION IS NOT CHECKED.

## 6.3.5 TEST 34 - HORIZONTAL TAB OPTION

THIS TEST CHECKS THE ABILITY TO SET A TAB IN EVERY COLUMN AND AT PREDETERMINED INTERVALS, AS WELL AS THE ABILITY TO CLEAR ALL TABS. THE PROGRAM SETS A TAB IN THE PREDETERMINED COLUMN, DOES A BACKSPACE, AND PRINTS AN "0". AFTER THE LINE IS PRINTED AND THE TABS ARE SET, A CARRIAGE RETURN IS SENT AND THEN THE PRINT HEAD IS POSITIONED USING TABS AND X'S ARE PRINTED OVER THE O'S. SINCE THE FIRST LINE OF THE TEST SETS A TAB IN EVERY COLUMN, THE PRINT HEAD IS TABBED ACROSS THE PAGE TWICE TO TEST ALL TABS. THE FIRST PASS CHECKS THE EVEN NUMBERED COLUMNS WHILE THE SECOND PASS CHECKS THE ODD NUMBERED COLUMNS. THE TEST SETS TABS IN EVERY COLUMN, EVERY OTHER COLUMN, AND EVERY 4, 8, 16, 32, 64, 128, & 132 COLUMNS. ALL HORIZONTAL TABS WILL BE CLEARED AT THE END OF THE TEST IF THE TEST IS RUN TO COMPLETION. IF A RUBOUT IS USED TO EXIT THE TEST BEFORE COMPLETION, THE TABS WILL STILL BE SET.

## EXAMPLE:

```
000000000
 0 0 0 0 0
  0  0
   0
    0
```

WHEN THE AUTO LINE FEED OPTION IS SET UP TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BEFORE EACH REFERENCE LINE OF O'S AND THE X'S WILL BE PRINTED ON THE NEXT LINE UNDER THE O'S. THE FIRST LINE OF O'S WILL HAVE 2 LINES OF X'S UNDER IT, THE FIRST HAVING X'S IN ALL EVEN NUMBERED COLUMNS AND THE SECOND HAVING X'S IN ALL ODD NUMBERED COLUMNS.

## EXAMPLE:

```

000000000000
X X X X X X
X X X X X X

O O O O O
X X X X X X

O O O
X X X

O
X

```

## 6.3.6 TEST 35 - VERTICAL TAB OPTION

THIS TEST CHECKS THE VERTICAL TAB OPTION BY TESTING THE ABILITY TO SET TABS IN VARIOUS POSITIONS OF A 14 INCH FORM. AN INSTRUCTION IS PRINTED TELLING THE OPERATOR TO SET A 14 INCH FORM LENGTH AND DEPRESS THE TOP OF FORM RESET SWITCH. WHEN READY, TYPE ANY CHARACTER (EXCEPT RUBOUT) ON THE KEYBOARD TO CONTINUE. THE TEST WILL SEND LINE FEEDS, SET TABS, AND PRINT REFERENCE LINES WHEREVER A TAB IS SET. AT THE END OF THE FORM, A MESSAGE WILL INDICATE TO EITHER REMOVE THE REFERENCE PAGE (WITHOUT TOUCHING THE KEYBOARD) OR RESET THE FIRST REFERENCE LINE. TO RESET THE REFERENCE PAGE IN THE PRINTER, OPEN THE PAPER TRACTORS AND PLACE THE FIRST REFERENCE LINE INFRONT OF THE PRINT HEAD. WHEN READY TO CONTINUE, TYPE ANY CHARACTER (EXCEPT RUBOUT) ON THE KEYBOARD. THE TEST WILL THEN REPRINT THE REFERENCE LINES, USING THE TABS INSTEAD OF LINE FEEDS TO ADVANCE THE PAPER. IF THE FIRST REFERENCE PAGE WAS REMOVED, HOLD IT AGAINST THE SECOND REFERENCE PAGE TO CHECK FOR PROPER PAPER ADVANCING USING TABS. IF THE REFERENCE PAGE WAS RESET IN THE PRINTER, THE SECOND SET OF REFERENCE LINES SHOULD HAVE PRINTED DIRECTLY OVER THE FIRST SET EXCEPT ON THE FIRST LINE WHERE THEY SHOULD BE SIDE-BY-SIDE. ALLOW FOR A SLIGHT VARIANCE IN PAPER POSITION WHEN CHECKING THAT THE REFERENCE LINES ARE CORRECT. LOOK FOR FULL LINE DIFFERENCES. THE TEST PRODUCES 0,1,2,3,4,5,6,7,8,9, & 10 BLANK LINES BETWEEN THE REFERNECES LINES, IN THAT ORDER.





17	SWITCH REGISTER OPTIONS
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2172	OPTION TESTS
2711	DH11 VARIABLE PARAMETER TABLE
3008	EXISTING LINE TABLE
3048	DIAGNOSTIC MESSAGES

1  
2  
3  
4  
5  
6  
7  
8  
9  
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44  
45

,TITLE MAINDEC=11=DZLAD=C

!LA36 TERMINAL DIAGNOSTIC  
!DH11 AND OJ11 INTERFACES

!AUTHOR: ROBERT W. BAKER

!COPYRIGHT 1974,1975, DIGITAL EQUIPMENT CORP., MAYNARD, MASS, 01754

,SBTTL SWITCH REGISTER OPTIONS

SWITCH	POSITION	FUNCTION
15	UP (1) DOWN (0)	HALT AT END OF CURRENT TEST CONTINUE NORMAL TEST SEQUENCE
13	UP (1) DOWN (0)	DRIVE ONLY SELECTED TERMINAL DRIVE ALL TERMINALS
8	UP (1) DOWN (0)	SELECT TEST (AT START UP ONLY) START NORMAL TEST SEQUENCE
00	= 07	# OF COLUMNS AT START=UP

,SBTTL SPECIAL OPERATIONAL NOTES

!1,-- BEFORE START UP REFER TO THE DESCRIPTION OF THE ROUTINE "OLY"  
! TIMING IS A FUNCTION OF THE PDP11 MODEL AND MEMORY TYPE AND  
! SHOULD BE SET UP BEFORE RUNNING THE DIAGNOSTIC;

!2,-- THE DIAGNOSTIC WILL NOT RUN UNLESS THE ELTAB TABLE IS MANUALLY INITIALIZED.

```

46          .SBTTL EQUATES
47
48
49          | REGISTER EQUATES
50
51          000000      R0=K0
52          000001      R1=K1
53          000002      R2=K2
54          000003      R3=K3
55          000004      R4=K4
56          000005      R5=K5
57          000006      R6=K6
58          000007      R7=K7
59
60
61          | SYSTEM EQUATES
62
63
64          000001      BIT0=1
65          000002      BIT1=2
66          000004      BIT2=4
67          000010      BIT3=10
68          000020      BIT4=20
69          000040      BIT5=40
70          000100      BIT6=100
71          000200      BIT7=200
72          000400      BIT8=400
73          001000      BIT9=1000
74          002000      BIT10=2000
75          004000      BIT11=4000
76          010000      BIT12=10000
77          020000      BIT13=20000
78          040000      BIT14=40000
79          100000      BIT15=100000
80
81          000000      OPEN=0
82          022626      POPSP=22626      |POP STACK TWICE
83          000200      ACRLF=200
    
```

```

84          | PROGRAM TRAP EQUATES
85
86          104000      TYPE=EMT+0
87          104001      CHAIN=EMT+1
88          104002      TYPE=EMT+2
89          104003      DELAY=EMT+3
90          104004      TTYCTL=EMT+4
91          104005      TTYJTL=EMT+5
92          104006      CRRLF=EMT+6
93          104007      SCRLF=EMT+7
94          104010      LF=EMT+10
95          104011      PRINTC=EMT+11
96          104012      PRTHOR=EMT+12
97          104013      READ=EMT+13
98          104014      ORG=EMT+14
99          104015      BTOASC=EMT+15
100         104016      FORHD=EMT+16
101         104017      CLEAN=EMT+17
102         104020      TESTC=EMT+20
103         104021      ECHO=EMT+21
104         104022      INRDY=EMT+22
    
```

```

105                                     ,SBTTL TRAP CATCHER & STARTING ADDRESSES
106
107
108
109
110                                     ,ENABL ABS
111                                     ,ENABL AHA           ,ENABLE ABSOLUTE ADDRESSING
112
113                                     ,B0
114 000000 000000          HALT
115 000002 000000          HALT
116
117                                     ,B4
118
119 000004          MACHERI
120
121                                     ,B30
122
123 000030 003256          EMINT
124 000032 000340          340
125
126                                     ,B46
127
128 000046 010570          LOGICAL
129
130                                     ,B02
131
132 000032 010000          010000
133
134                                     ,B174
135
136 000174 000000          DISPREG: ,WORD 0           ,SOFTWARE DISPLAY REG
137 000176 000000          SWREG:   ,WORD 0           ,SOFTWARE SWITCH REGISTER
138
139                                     ,STARTING ADDRESSES
140
141 000200 000137 001256          JMP      START           ,RUN  DJ11 TESTS
142 000204 000137 001240          JMP      START1        ,RUN  DJ11 TESTS
143
144
145                                     ,B100
146
147 001100 000000          SPBOTI 0           ,BOTTOM OF STACK
    
```

```

148                                     ,SBTTL SYMBOL DEFINITIONS
149
150
151 001102 000554          TIMERS 954           ,1 MSEC COUNTER FOR ROUTINE "DELAY"
152
153 001104 000000          CNFLSW OPEN          ,CONSOLE TERMINAL CONTROL SWITCH
154 001106 000000          RTNNO: OPEN          ,CONTAINS CURRENT TEST NUMBER
155 001110 000000          NXSTI: OPEN          ,CONTAINS ADDRESS OF NEXT TEST
156 001112 000000          WIDTH: OPEN          ,CURRENT PAPER WIDTH, BINARY
157 001114 000000          REPT: OPEN           ,TEMP STORAGE FOR TESTS E021&E022
158 001116 000000          SPCNT: OPEN          ,COUNTER FOR TEST ROUTINE "PT3"
159 001120 000000          CURTST: OPEN          ,ADDRESS OF CURRENT TEST
160 001122 000000          POSI: OPEN           ,POSITION COUNTER FOR TESTS E021&E022
161 001124 000000          TEMPCH: OPEN          ,TEMP STOR FOR ECHO TESTS
162 001126 000000          PARITY: OPEN          ,PARITY FLAG
163 001130 000000          PCHAR: OPEN           ,CHAR CODE WITH PARITY BIT
164 001132 000000          LFCNT: OPEN          ,COUNTER FOR TEST ROUTINE "PT4"
165 001134 160020          DHAORI 160020         ,ADDRESS OF FIRST DJ11, (RECALCULATED)
166 001136 160020          SCRI 160020           ,SYSTEM CONTROL REGISTER
167 001140 160022          NRCRAI 160022        ,NEXT RECEIVED CHARACTER REG,
168 001142 160024          LPRI 160024          ,LINE PARAMETER REG
169 001144 160026          CARAI 160026         ,CURRENT ADDRESS REGISTER
170 001146 160030          BYORI 160030         ,BYTE COUNT REG
171 001150 160032          BARI 160032          ,BUFFER ACTIVE REG
172 001152 160036          SSRI 160036          ,SILO STATUS REG
173 001154 000000          CNYDM: OPEN          ,NO, OF THE DJ11 UNDER TEST
174 001156 000000          LINENO: OPEN          ,NO, OF THE TERMINAL UNDER TEST
175 001160 000000          MASK: OPEN           ,MASK OF LINE NO, UNDER TEST
176 001162 000001 000002 000004          BITTAB 1,2,4         ,TABLE OF LINE NO, MASKS
177 001170 000010 000020 000040          ,10,20,40
178 001176 000100 000200 000400          ,100,200,400
179 001204 001000 002000 004000          ,1000,2000,4000
180 001212 010000 020000 040000          ,10000,20000,40000
181 001220 100000          ,100000
182 001222 000000          ACTIVI: OPEN          ,TEST ACTIVE INDICATOR
183 001224 000000          IOSW: OPEN           ,0, DJ11 UNDER TEST--=1, DJ11 UNDER TEST
184 001226 000000          DJCNT: OPEN          ,COUNT OF DJ11'S ON BUS
185 001230 000000          DHCNT: OPEN          ,COUNT OF DJ11'S ON BUS
186 001232 000000          SCR1: OPEN           ,TEMP STORAGE USED BY PRINTC
187 001234 000000          SCR2: OPEN           ,TEMP STORAGE USED BY PTINTC
188 001236 160010          CSRI 160010          ,DJ11 CONTROL STATUS REG
189 001242 160014          TCRI 160014          ,DJ11 TRANSMITTER CONTROL REG
190 001242 160016          TBUP: 160016          ,DJ11 TRANSMITTER BUFFER REG
191 001244 177570          SRI 177570           ,SW REG ADDRESS
    
```

```

192          .SBTTL PROGRAM INITIALIZATION & CONTROL
193
194
195
196          |*****
197          |
198          |PROGRAM START
199          |
200          |*****
201
202 001246 012737 177777 001224 START1| MOV    #177777,IQSW  |ISET UP FOR DJ11 TEST
203 001254 000402          BR      STARTX      |
204 001256 005037 001224 START1| CLR    IOBH          |ISET UP FOR DH11 TESTS
205
206 001262 012706 001100 STARTX| MOV    #SP00,SP     |ISET STACK POINTER
207 001266 013746 000006          MOV    0,(SP)        |SAVE CURRENT VECTORS
208 001272 013746 000004          MOV    4,(SP)
209 001276 012737 001312 000004          MOV    #100,4       |ISET TIMEOUT VECTOR
210 001304 005777 177734          TST   #SR           |TRY REFERENCING SW REG
211 001310 000404          BR      110         |BRANCH IF DID NOT TIME OUT
212 001312 012737 000176 001244 10SI  MOV    #SWREG,SR     |POINT TO SOFTWARE SW REG
213 001320 022626          CMP    (SR),4(SP)   |RESET STACK
214 001322 012637 000004 1191  MOV    (SR),4       |RESET VECTOR
215 001326 012637 000006          MOV    (SR),6
216 001332 104017          CLEAN
217 001334 005037 001104          CLR    CNPLSW      |CLEAN UP
218 001340 012737 004100 000024          MOV    #PPAIL,24   |INITIALIZE TERMINAL CONTROL SWITCH
    
```

```

219          |*****
220          |
221          |THIS NEXT PART CHECKS THE PRESENCE OF DJ11 OR DH11
222          |STARTING AT 776010, A MESSAGE WILL BE PRINTED ON
223          |THE CONSOLE TERMINAL INDICATING THE NUMBER
224          |PRESENT, THE PRINTER DIAGNOSTIC WILL ADDRESS EACH OF
225          |THE TERMINALS IN THE SYSTEM
226          |
227          |*****
228
229 001346 012737 001400 000004          MOV    #END3,MACHER |INIT TIME OUT TRAP
230 001354 005037 001226          CLR    DJCNT        |CLEAR DJ11 COUNTER
231 001360 012700 100010          MOV    #100010,R0  |ADDR OF FIRST DJ11
232 001364 005710          TST   (R0)         |REF DJ11
233 001366 062700 000010          ADD    #10,R0      |SET R0 TO NEXT DJ11
234 001372 005237 001226          INC    DJCNT        |INCREMENT COUNT OF DJ11'S
235 001376 000772          BR      1$         |TEST PRESENCE OF NEXT DJ11
236
237 001400 022626          END3| POPBP2          |POP 2 FROM STACK
238 001402 030027 000010          BIT    R0,#10     |CHECK IF R0 IS MULTIPLE OF 20
239 001406 001402          SEQ    1$         |SKIP IF YES
240 001410 062700 000010          ADD    #10,R0     |MAKE R0 FIRST DH11 ADDR
241 001414 010037 001134          MOV    R0,DHADR   |SAVE AS FIRST DH11 ADDRESS
242 001420 012737 001446 000004          MOV    #END4,MACHER |SET TIME OUT TRAP
243 001426 005037 001230          CLR    DHCNT        |CLEAR COUNT OF DH11'S
244 001432 005710          TST   (R0)        |TEST IF DH11 IS PRESENT
245 001434 062700 000020          ADD    #20,R0     |YES, SET R0 TO NEXT DH11
246 001440 005237 001230          INC    DHCNT        |INCREMENT COUNT OF DH11'S
247 001444 000772          BR      2$         |CHECK IF NEXT ONE IS PRESENT
248
249 001446 022626          END4| POPBP2          |POP 2 FROM STACK
    
```

```

250 |*****
251 |
252 |READ THE PAPER WIDTH, NUMBER OF COLUMNS,
253 |FROM SWITCH REGISTER POSITIONS #7, SAVE AND
254 |CONVERT TO 3 ASCII CHARACTERS, A WIDTH 0T132
255 |FOR LT30 COLUMNS (DECIMAL) WILL BE ADORTED TO 132;
256 |
257 |*****
258 |
259 001450 017701 177370      MOV     #0R,R1      ;PUT (8R) INTO R1
260 001454 042701 177400      SIC     #177400,R1  ;SAVE ONLY BITS 0-7
261 001460 020127 000204      CMP     R1,#204     ;TEST NO; COLUMN GT132
262 001464 101003              BHI     25         ;COLUMNS GT132, DEPAULTY TO 132
263 001466 020127 000035      15)    CMP     R1,#35  ;CHECK IF NO; COLUMNS LT 30
264 001472 101002              BHI     30         ;NOT LT 30 NOR GT 132
265 001474 012701 000204      25)    MOV     #204,R1 ;COLUMNS LT 30 OR GT 132, DEFAULTY
266 001500 010137 001112      35)    MOV     R1,WIDTH ;SAVE NO; COLUMNS IN WIDTH
267 001504 012700 017004      MOV     #0R0,R0     ;ADDR TO STORE ASCII COLUMN VALUE
268 001510 012702 000033      MOV     #3,R2       ;OD A 3 CHAR; CONVERSION
269 001514 100015              BTOASC ;CONVERT NO; COLUMNS TO ASCII
270 001516 000037 001106      CLR     RTNNO       ;SET ROUTINE NO = 0
271 001522 000401              BR      50         ;PRINT TITLE FIRST TIME
272 001524 000405              BR      65         ;SKIP IT AFTER FIRST TIME
273 001526 100002              55)    TYPEM     ;PRINT DIAGNOSTIC HEADER
274 001530 016620              STARTH
275 001532 012737 000240      65)    MOV     #NOP,45   ;TAKE OUT BRANCH INSTR
276 001540 000737 001224      TS?    IOWH         ;CHECK IF DJ11 OR DH11 UNDER TEST
277 001544 000440              BEQ     100        ;BRANCH IF DH11
278 001546 013701 001226      MOV     0JENT,R1    ;GET NUMBER OF DJ11'S
279 001552 012700 017004      MOV     #DJ11,R0    ;ADDR TO STOR ASCII CHAR
280 001556 012702 000002      MOV     #2,R2       ;NO. OF ASCII CHARS (#2)
281 001562 100015              BTOASC ;CONVERT TO ASCII
282 001564 100006              CRLF
283 001566 100002              TYPEM
284 001570 017004              DJ11S      ;OUTPUT MESSAGE
    
```

```

285 |*****
286 |
287 | START ALL DJ11 RECEIVER SCANNERS
288 |
289 |*****
290 |
291 001572 012701 100010      MOV     #100010,R1  ;ADDR OF FIRST DJ11 SCR
292 001576 013703 001226      MOV     DJCNT,R3    ;NO. OF DJ11 TO R3
293 001602 001002              BNE     65         ;BRANCH IF COUNT IS NOT ZERO
294 001604 000000              HALT
295 001606 000776              BR      75         ;DO NOT CONTINUE
296 001610 002711 000010      65)    BIS     #16,(R1) ;CLEAR MDS
297 001614 012700 000005      95)    MOV     #P,R0   ;DELAY TIME TO R0
298 001620 100003              DELAY
299 001622 031127 000020      BIT     (R1),#20    ;TEST IF CLEAR STILL BUSY
300 001626 001372              BNE     95         ;BRANCH IF BUSY
301 001630 002711 000001      BIS     #1,(R1)    ;START BANNER
302 001634 002701 000010      ADD     #1,R1       ;ADDR OF NEXT SCR
303 001640 000303              DEC     R3          ;DEC COUNT OF DJ11
304 001642 001362              BNE     65         ;NOT ZERO, START NEXT ONE
305 001644 000412              BR      110        ;
306 001646 013701 001230      105)   MOV     0HCNT,R1   ;NO. OF DH11'S TO R1
307 001652 012700 016755      MOV     #DH11,R0    ;ADDR TO STORE ASCII CHAR
308 001656 012702 000002      MOV     #2,R2       ;NO. OF CHAR TO CONVERT
309 001662 100015              BTOASC ;CONVERT TO ASCII
310 001664 100006              CRLF
311 001666 100002              TYPEM     ;OUTPUT MESSAGE
312 001670 016755              DH11S
313 001672 032777 000400      115)   BIT     #BITS,0SR   ;CHECK IF WANT TEST SELECTION?
314 001700 001004              BNE     120        ;BRANCH IF BIT 0 IS SET (YES)
315 001702 012737 000410      120)   MOV     #PFB,NXTST  ;STARTUP PRINTING TESTS
316 001710 000430              BR      CHAINY
317 001712 100002              125)   TYPEM     ;TYPE SELECT TEST NO, MESSAGE
318 001714 017257              MSGS3
319 001716 000037 001222      CLR     ACTIV       ;SET TEST ACTIVE STATE NOT ACTIVE
320 001722 000737 001224      CLR     IOWH        ;DH11 OR DJ11
321 001726 001402              BEQ     TTYA        ;WAIT FOR TERMINAL CONTROL FROM DH11
322 001730 000435              BR      TTYJA       ;WAIT FOR TERMINAL CONTROL FROM DJ11
323 |
324 |
325 |*****
326 |
327 |CLEAN==INITIALIZES POINTERS BEFORE ENTERING A TEST
328 |
329 |*****
330 |
331 001732 012737 000006      35)    SCLEAN) MOV    #6,MACHERR ;SET UP MACHINE ERROR VECTOR
332 001740 000066 000002      CLR     CLR         ;CLEAR PROCESSOR STATUS WORD
333 001744 000002              RTI
    
```

```

334 |*****
335 |
336 |CHAINN=THIS PORTION IS THE COMMON RETURN
337 | FOR ALL TESTS,
338 |
339 |*****
340 |
341 001746 032737 000001 001104 CHAINNI BIT #1,ONTLSW ;CHECK IF TERMINAL CONTROL
342 001754 001405 BEQ 2S ;BRANCH IF NOT
343 001756 005737 001224 TST 109W ;DH11 OR DJ11?
344 001762 001401 BEQ 1S ;BRANCH IF DH11
345 001764 104005 TTYJTL ;WAIT FOR DJ11 TERMINAL CONTROL
346 001766 104004 TTYCTL ;WAIT FOR DH11 TERMINAL CONTROL
347 001770 022626 POPSP2 ;CORRECT STACK
348 |
349 |*****
350 |
351 | IF THE SR BIT IS SET, THE CPU WILL HALT HERE WITH
352 | THE TEST NUMBER IN R0, PRESS CONTINUE TO
353 | RUN NEXT TEST
354 |
355 |*****
356 |
357 001772 005777 177246 CHAINYI TST #SR ;CHECK SW REG,
358 001776 100003 BPL 1S ;BRANCH IF NO HALT
359 002000 113700 001106 MOV#B RTNND,R0 ;CURRENT TEST NUMBER TO R0
360 002004 000000 HALT ;
361 002006 104017 1S) CLEAN ;CLEAN UP
362 002010 102706 001100 MOV #8007,SP ;SET UP STACK POINTER
363 002014 104016 FORWD ;SET UP VALUES FOR NEXT TEST
364 002016 000177 177076 JMP @CUR#7 ;GO TO TEST
365 |
366 |*****
367 |
368 | TTYJ= THIS ROUTINE IS USED WHEN THE 'DJ11' ARE UNDER
369 | TEST, OTHERWISE THE COMMENTS AND INSTRUCTIONS ARE
370 | THE SAME AS FOR TTY1,
371 |
372 |*****
373 |
374 |
375 002022 022626 TTYJ) POPSP2 ;CORRECT STACK
376 002024 005737 TTYJAI TST #ACTIV ;TEST IF ENTRY IS FROM A TEST
377 002030 001402 BEQ 1S ;BRANCH IF NOT
378 002032 000137 002410 JMP TTY1G ;
379 002036 004737 003016 JSR PC,SCANDJ ;LOOK FOR INPUT
380 002042 004737 003124 JSR PC,SETDJ ;SET TERMINAL AS CONSOLE
381 002046 000137 002104 JMP TTY1B ;GO TO CONTROL
    
```

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382 |*****
383 |
384 | TTY1= THIS ROUTINE IS USED WHEN THE DH11'S ARE UNDER TEST, IT PROCESSES
385 | THE RESPONSE TO THE MESSAGE "SELECT TEST NO.", THE RESPONSE
386 | MUST BE THE TWO DIGIT OCTAL TEST NO, FOLLOWED BY:
387 | "L" TO LOOP ON TEST
388 | "S" TO SEQUENCE ON TEST
389 | " " TO EXECUTE TEST ONCE
390 |
391 | ALL SPACES ARE IGNORED AND AN ILLEGAL INPUT WILL BE FLAGED
392 | BY A "N" AND THE RETYPING OF THE ABOVE MESSAGE; THE FIRST
393 | TERMINAL TO RESPOND IS THE TERMINAL UNDER TEST; ALL
394 | PRINTER TESTS WILL OUTPUT TO ALL TERMINALS IF SR BIT 13 IS = 1,
395 | WHILE THE ECHO TESTS WILL RESPOND TO THE PRINTER UNDER TEST ONLY,
396 |
397 |*****
398 |
399 002052 022626 TTY1) POPSP2 ;CORRECT STACK
400 002054 005737 TTY1AI TST #DHENT ;BE SURE THAT THERE ARE DH11'S
401 002060 001002 BNE 2S ;BRANCH IF YES
402 002062 000000 1S) HALT ;
403 002064 000776 BR 1S ;DO NOT CONTINUE
404 002066 005737 001222 2S) TST #ACTIV ;TEST IF ENTRY IS FROM A TEST
405 002072 001146 BNE TTY1G ;BRANCH IF IT IS
406 002074 004737 002604 JSR PC,SCANDH ;LOOK FOR INPUT
407 002104 042700 177600 JSR PC,SETERM ;SET TERMINAL DATA
408 002110 100037 001124 TTY1BI BIC #177600,R0 ;SAVE ONLY CHAR
409 002114 020027 000040 1S) MOV R0,TEMPCH ;GET CHAR
410 002120 001002 ;CHECK IF CHAR IS A SPACE
411 002122 104013 BNE 2S ;BRANCH IF NOT
412 002124 000773 READ ;SPACE, LOOP WAITING FOR NEXT CHAR
413 002126 012700 000036 2S) BR 1S ;GET ONE
414 002132 104003 MOV #30,,R0 ;DELAY FOR HALF DUPLEX
415 002134 013700 DELAY ;GET CHAR
416 002140 104021 MOV TEMPCH,R0 ;ECHO CHAR
417 002142 104020 ECHO ;ECHO CHAR
418 002144 000421 TESTC ;GO TEST CHAR
419 002146 010005 BR 11S ;ERROR IN CHAR
420 002150 006305 MOV R0,R5 ;OK, SAVE DIGIT IN R5, POS 5-3
421 002152 006305 ASL R5 ;
422 002154 006305 ASL R5 ;
423 002156 104013 READ ;GO WAIT FOR NEXT CHAR
424 002160 020027 000040 3S) CMP R0,#40 ;CHECK IF A SPACE
425 002164 001002 BNE 4S ;BRANCH IF NOT A SPACE
426 002166 104013 READ ;WAIT FOR CHAR
427 002170 000773 BR 3S ;GET ONE, ECHO IT
428 002172 012700 000036 4S) MOV #30,,R0 ;DELAY FOR HALF DUPLEX
429 002176 104003 DELAY ;GET CHAR
430 002200 013700 001124 MOV TEMPCH,R0 ;ECHO CHAR
431 002204 104021 ECHO ;ECHO CHAR
432 002206 104020 TESTC ;GO CHECK CHAR
433 002210 000595 BR NG ;ERROR IN CHAR
434 002212 060005 ADD R0,R5 ;OK, R5 IS NOW OCTAL TEST NO,
435 002214 104013 READ ;GO WAIT FOR TERMINATOR
    
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436 002216 #20027 000040 5S| OMP R0,#40 ;CHECK IF A SPACE
437 002222 001002 BNE 6S ;BRANCH IF NOT A SPACE
438 002224 104013 READ ;SPACE, WAIT SOME MORE
439 002226 000773 BR 5S ;GET ONE, ECHO IT
440 002230 012700 000036 6S| MOV #30,,R0 ;DELAY FOR HALF DUPLEX
441 002234 104003 DELAY
442 002236 013700 001124 MOV TEMPCH,R0 ;GET CHAR
443 002242 104021 ECHO ;ECHO CHAR
444 002244 042700 000040 BIC #BITS,R0 ;ALLOW LOWER CASE OR UPPER CASE
445 002250 020027 000114 OMP R0,#114 ;IS IT AN "L"
446 002254 001413 BEQ 7S ;BRANCH IF YES
447 002256 020027 000123 OMP R0,#123 ;NO, IS IT AN "S"
448 002262 001414 BEQ 8S ;BRANCH IF YES
449 002264 023727 001124 000056 OMP TEMPCH,#56 ;NO, IS IT A "I"
450 002272 001124 BNE NG ;NO, ERROROR
451 002274 012737 000001 001104 MOV #1,CNTLSW ;SET BIT 0 ONLY IN CNTLSW
452 002302 000407 BR 9S
453 002304 012737 004001 001104 7S| MOV #4001,CNTLSW ;SET BITS 11 AND 0
454 002312 000403 BR 9S
455 002314 012737 000401 001104 8S| MOV #401,CNTLSW ;SET BITS 8 AND 0
456 002322 104017 9S| CLEAN ;CLEAN UP
457 002324 012706 001100 MOV #SPBOT,SP ;RESET SP
458 002330 010500 MOV R0,R0 ;TEST NO TO R0
459 002332 020027 000040 CMP R0,#40 ;CHECK IF TEST NO; IS EQ OR GT 40
460 002336 103102 BHS NG ;ERROR IF YES
461 002340 020027 000020 CMP R0,#20 ;CHECK IF THIS IS AN ECHO TEST
462 002344 103406 BLO 10S ;BRANCH IF NOT
463 002346 020027 000030 OMP R0,#30 ;OPTION TEST?
464 002352 103003 BHS 10S ;ALLOW LOOP ON OPTION TEST
465 002354 012737 000001 001104 MOV #1,CNTLSW ;YES, FORCE TO ONE TIME ONLY
466 002362 006300 R0 ;TEST NO; * 2
467 002364 016037 003156 001110 MOV PROTAB(R0),NXTST ;ADDR OF TEST TO NXTST
468 002372 001404 BEQ NG ;BRANCH IF ILLEGAL TEST
469 002374 104016 FORWD ;SET UP TEST PARAMETERS
470 002376 012737 000001 001222 MOV #1,ACTIV ;SET TEST ACTIVE IND
471 002404 000177 176910 JMP @CURTST ;GO TO TEST
472 002410 017700 176924 TTY1G1 OMP NRCRA,R0 ;TEST ACTIVE, CHECK INPUT FROM DH11
473 002414 100040 BPL TTY1L ;BRANCH IF NO DATA
474 002416 010004 MOV R0,R4 ;DATA, SAVE IT
475 002420 000300 SWAB R0 ;RIGHT JUSTIFY LINE NO;
476 002422 042700 177760 BIC #17760,R0 ;CLEAR ALL BUT LINE NO;
477 002426 020037 001196 CMP R0,LINEND ;CHECK IF LINE NO; IS SAME AS TEST LINE
478 002432 001366 BNE TTY1C ;NOT SAME, SEE IF ANY MORE IN SILO
479 002434 010400 MOV R4,R0 ;LINES ARE THE SAME, GET CHAR
480 002436 042700 177600 BIC #17760,R0 ;SAVE 7 BITS OF CHAR
481 002442 020027 000177 OMP R0,#177 ;CHECK IF A RUBOUT
482 002446 001360 BNE TTY1C ;NOT A RUBOUT, SEE IF ANY MORE
483 002450 012706 001100 TTY1HI MOV #SPBOT,SP ;RESET STACK
484 002454 012737 000001 001104 MOV #1,CNTLSW ;CLEAR BITS 11 AND 0
485 002462 012700 000036 MOV #30,,R0 ;DELAY FOR HALF DUPLEX
486 002466 104003 DELAY
487 002470 104002 TYPEM ;OUTPUT MESSAGE
488 002472 017257 MSGG3
489 002474 000037 001222 CLR ACTIV ;CLEAR TEST ACTIVE STATE
    
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490 002500 005737 001224 TST 10SH ;DJ11 OR DH11 ?
491 002504 001402 BEQ 1S ;BRANCH IF DH11
492 002506 000137 002024 JMP TTY1JA ;WAIT FOR NEXT TEST FROM DJ11
493 002512 000137 002054 1S| JMP TTY1A ;WAIT FOR NEXT TEST FROM DH11
494 002516 032737 004000 001104 TTY1L1 BIP #BIT11,CNTLSW ;CHECK IF LOOP ON TEST
495 002524 001401 BEQ 1S ;BRANCH IF NO LOOP
496 002526 000002 RTI ;GO LOOP ON TEST
497 002530 032737 000400 001104 1S| BIT #BIT0,CNTLSW ;CHECK IF LOOP ON SEQUENCE
498 002536 001744 BEQ TTY1H ;BRANCH IF NO
499 002540 000137 001772 JMP CHAINY ;GO LOOP ON SEQUENCE
500 002544 012700 000036 NG1 MOV #30,,R0 ;DELAY FOR HALF DUPLEX
501 002550 104003 DELAY
502 002552 112700 000077 MOV #77,R0 ;??" TO TEMPCH
503 002556 104021 ECHO ;PRINT A ?
504 002560 000733 BR TTY1H ;TRY AGAIN FROM DH11
505
506
507
508
509
510 ;FORWARD="THIS ROUTINE TRANSFERS THE 2 ARGUMENTS
511 ; FROM THE TEST ROUTINE, THEY ARE)
512 ; 1= ROUTINE NUMBER
513 ; 2= ADDRESS OF NEXT TEST
514
515
516 002562 013705 001110 SFORWD1 MOV NXTST,R5 ;ADDR OF NEXT TEST TO R5
517 002566 012537 001106 MOV (R0)+,RTNNO ;GET NUMBER OF NEXT TEST
518 002572 012537 001110 MOV (R0)+,NXTST ;GET ADDR OF FOLLOWING TEST
519 002576 010537 001120 MOV R5,CURTST ;ENTRY POINT TO TEST IN CURTST
520 002602 000002 RTI ;EXIT
521
522
523
524
525 ;SCANDH = ROUTINE TO SCAN DH CHANNELS LOOKING FOR INPUT
526
527
528
529 002604 013701 001230 SCANDH1 MOV DHONT,R1 ;COUNT OF DH11'S TO R1
530 002610 005037 001154 CLR CNTDH ;CLEAR DH11 POSITION COUNTER
531 002614 013700 001134 MOV DHADR,R0 ;ADDR OF FIRST DH11 TO R0
532 002620 005720 TST (R0)+ ;ADDR OF NRCRA
533 002622 010037 001140 MOV R0,NRCRA ;SET UP NRCRA ADDRESS
534 002626 017700 176306 1S| MOV @NRCRA,R0 ;GET NEXT CHAR FROM SILO
535 002632 100410 BHI 2S ;BRANCH IF DATA IS PRESENT
536 002634 005301 DEC R1 ;DECREMENT COUNT OF DH11'S
537 002636 001762 BEQ SCANDH ;START OVER IF ALL DONE
538 002640 042737 000020 001140 ADD #20,NRCRA ;SET UP ADDR FOR NEXT DH11
539 002646 005237 001154 INC CNTDH ;INC DH11 POSITION COUNTER
540 002652 000765 BR 1S ;GO CHECK NEXT DH11 ON BUS
541 002654 010004 2S| MOV R0,R4 ;SAVE LINE NO, AND CHAR
542 002656 000247 RTS PC ;RETURN
    
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543
544
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546
547
548
549
550 002660 013701 001140 SETERMI MOV NRCRA,R1 ;GET ADDR OF CURRENT NRCRA
551 002664 005741 TST =(R1) ;CAL ADDR OF SCR
552 002666 010137 MOV R1,SCR ;STORE SCR ADDR
553 002672 022121 CMP (R1)+,(R1)+ ;ADD 4
554 002674 010137 MOV R1,LPR ;STORE LPR ADDR
555 002700 005721 TST (R1)+ ;ADD 2
556 002702 010137 MOV R1,CARA ;STORE CARA ADDR
557 002706 005721 TST (R1)+ ;ADD 2
558 002710 010137 MOV R1,BYCR ;STORE BYCR ADDR
559 002714 005721 TST (R1)+ ;ADD 2
560 002716 010137 MOV R1,BAR ;STORE BAR ADDR
561 002722 022121 CMP (R1)+,(R1)+ ;ADD 4
562 002724 010137 MOV R1,SSR ;STORE SSR ADDR
563 002730 000300 SHAB R0 ;RIGHT JUSTIFY LINE NO;
564 002732 042720 BIC #17760,R0 ;SAVE ONLY LINE NO;
565 002736 010077 MOV R0,SSR ;SET UP SCR
566 002742 012701 MOV #DH1100,R1 ;GET ADDR OF VP TABLE
567 002746 005737 CNYDH ;CAL WHICH DH11 IS UNDER TEST
568 002752 001405 BEQ 25 ;BRANCH IF THIS IS THE ONE
569 002754 062701 ADD #20,R1 ;REPOSITION R1 IN VP TABLE
570 002760 005337 DEC CNYDH ;DEC DH11 POSITION COUNTER
571 002764 000770 BR 15
572 002766 010037 MOV R0,LINENO ;SAVE LINE NO;
573 002772 006300 ASL R0,R1 ;CREATE POINTER TO TABLE
574 002774 000001 ADD R0,R1 ;ADD LINE NO; TO VP TAB PNTR
575 002776 011177 MOV (R1),@LPR ;PUT VP INTO LPR
576 003002 062700 ADD @BITTAB,R0 ;CAL PNTR INTO LINE MASK TABLE
577 003006 010037 MOV (R0),MASK ;PUT LINE MASK INTO MASK
578 003012 010400 MOV R4,R0 ;STORE LINE NO AND CHAR
579 003014 000207 RTS PC ;RETURN
    
```

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580
581
582
583
584
585
586 003016 013701 001220 SCANDJI MOV DJ11,R1 ;COUNT OF DJ11 TO R1
587 003022 003037 CLR CNYDH ;CLEAR POS. COUNTER
588 003026 012700 MOV #160012,R0 ;ADDR OF FIRST RECV BUFFER TO R0
589 003032 012703 MOV @ELTAB,R3 ;ADDR OF ELTAB TO R3
590 003036 011002 15: MOV (R0),R2 ;GET RECV BUFFER
591 003040 100410 BMI 35 ;BRANCH IF DATA
592 003042 005301 25: R1 ;NO DATA, DEC COUNT OF DJ11
593 003044 001764 BEQ SCANDJ ;START OVER IF ALL CHECKED
594 003046 062700 ADD #10,R0 ;ADDR OF NEXT RBUF
595 003052 003723 TST (R3)+ ;INCREMENT ELTAB POINTER
596 003054 005237 INC CNYDH ;INCREMENT POS COUNTER
597 003060 000766 BR 35 ;ADD NEXT DJ11
598 003062 010204 35: MOV R2,R4 ;GET CONTENTS OF RBUF
599 003064 000302 SHAB R2
600 003066 042722 BIC #17760,R2 ;SAVE ONLY THE LINE NO;
601 003072 010237 MOV R2,LINENO ;SAVE LINE NO,
602 003076 006302 ASL R2 ;LINE NO,*2
603 003100 062702 ADD @BITTAB,R2 ;CAL ADDR OF LINE MASK
604 003104 011237 MOV (R2),MASK ;SAVE LINE MASK
605 003110 033713 BIT MASK,(R3) ;CHECK IF LINE EXISTS
606 003114 001352 BNE 25 ;BRANCH IF NOT
607 003116 110402 MOV R4,R2 ;RESTORE R2 WITH CHAR
608 003120 001750 BEQ 25 ;BRANCH IF NULL
609 003122 000207 RTS PC ;RETURN
610
611
612
613
614
615
616
617
618
619 003124 010037 SETDJI MOV R0,NRCRA ;SAVE ADDR FOR READ & TTYLN
620 003130 009740 TST =(R0) ;CAL ADDR OF CSR
621 003132 010037 MOV R0,CSR ;ADDR OF CURRENT CSR
622 003136 022020 CMP (R0)+,(R0)+ ;CAL ADDR OF TCR
623 003140 010037 MOV R0,TCR ;SAVE ADDR OF CURRENT CSR
624 003144 005720 TST (R0)+ ;CAL ADDR OF TBUF
625 003146 010037 MOV R0,TBUF ;SAVE ADDR OF CURRENT TBUF
626 003152 010400 MOV R4,R0 ;GET CONTENTS OF RECV BUFFER AGAIN
627 003154 000207 RTS PC ;RETURN
    
```

			,SBTTL TEST ADDRESS TABLE		
628					
629					
630	003156	006410	PRBTAB1	PT0	DATA PATH TEST
631	003160	006464		PT1	PRINTER CHARACTER TEST
632	003162	006506		PT2	NON-PRINTING CHARACTER TEST
633	003164	007236		PT3	CARRIAGE RETURN TEST
634	003166	007356		PT4	MULTIPLE LINE FEED TEST
635	003170	007534		PT5	SINGLE LINE FEED TEST
636	003172	007740		PT6	BACKSPACE TEST
637	003174	010122		PT7	OVERPRINT TEST
638	003176	010334		PT8	PRINTING FREQUENCY SWEEP TEST
639	003200	010472		PT11	TRIBBON FEED TEST
640	003202	010924		PT12	PRINTER BELL TEST
641	003204	000000		OPEN	SPARE FOR ADDITIONAL PRINTER TEST
642	003206	000000		OPEN	SPARE FOR ADDITIONAL PRINTER TEST
643	003210	000000		OPEN	SPARE FOR ADDITIONAL PRINTER TEST
644	003212	000000		OPEN	SPARE FOR ADDITIONAL PRINTER TEST
645	003214	010614		PT17	LIFE TEST
646					
647	003216	010756		E020	CHARACTER ECHO TEST
648	003220	011022		E021	LINE ECHO TEST, FAST RATE
649	003222	011074		E022	LINE ECHO TEST, SLOW RATE
650	003224	011360		E023	CHARACTER/CODE ECHO TEST
651	003226	011702		E024	SELECTIVE PATTERN ECHO TEST
652	003230	012466		E025	BELL ECHO TEST
653	003232	000000		OPEN	SPARE FOR ADDITIONAL ECHO TESTS
654	003234	000000		OPEN	SPARE FOR ADDITIONAL ECHO TESTS
655					
656	003236	012570		TEST30	SECONDARY CHARACTER SET OPTION
657	003240	012752		TEST31	SELECTIVE ADDRESSING OPTION
658	003242	013970		TEST32	AUTO ANSWER BACK OPTION
659	003244	014020		TEST33	FORM FEED OPTION
660	003246	014554		TEST34	HORIZONTAL TAB OPTION
661	003250	015116		TEST35	VERTICAL TAB OPTION
662	003252	000000		OPEN	SPARE FOR ADDITIONAL OPTION TESTS
663	003254	000000		OPEN	SPARE FOR ADDITIONAL OPTION TESTS

			,SBTTL ENT TRAP DECODER			
664						
665						
666						
667						
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669						
670						
671						
672						
673						
674	003256	011646	EMTINTI	MOV	0(SP),0(SP)	GET SAVED PC
675	003260	162716		SUB	#2,0(SP)	DECREMENT PC BY TWO
676	003264	017616		MOV	0(SP),0(SP)	
677	003270	121627		CMFB	0(SP),#22	CHECK THAT CALL IS WITHIN LIMITS
678	003274	014020		BLOS	25	BRANCH IF OK
679	003276	000000	1S)	HALT		
680	003300	000776		BR	15	
681	003302	006116	2S)	ROL	0(SP)	EMT ARGUMENT *2
682	003304	042716		BIQ	#1770#1,0(SP)	REMOVE 7 HBS
683	003310	062716		ADD	#EMTTAB,0(SP)	FORM EMT RTN ADDRESS
684	003314	017616		MOV	0(SP),0(SP)	
685	003320	005046		CLR	-(SP)	CLEAR PSW
686	003322	012746		MOV	#35,-(SP)	
687	003326	000002		RTI		
688	003330	000136	3S)	JMP	0(SP)+	GO TO EMT ROUTINE
689						
690						
691	003332	003776	EMTTAB1	TYP		MESSAGE OUTPUT ROUTINE
692	003334	001746		CHAINN		COMMON TEST EXIT
693	003336	004026		TYPH		MESSAGE OUTPUT ROUTINE, MULTI DEVICES
694	003340	004056		DLY		DELAY ROUTINE
695	003342	002052		TTY1		0M11 CONSOLE TERMINAL CONTROL
696	003344	002022		TTY2		0J11 CONSOLE TERMINAL CONTROL
697	003346	004356		SCRNF		CARRIAGE RETURN, ALL TERMINALS
698	003350	004340		SSORLF		CARRIAGE RETURN, CONSOLE TERMINAL
699	003352	004360		SLF		LINE FEED ONLY, ALL TERM/S
700	003354	004454		SPRXC		PRINT CHAR, ALL TERM/S
701	003356	004400		SPRHDR		PRINT TEST HEADER
702	003360	003600		SREAD		READ CHAR
703	003362	004370		SCR		CARRIAGE RETURN ONLY, ALL TERM/S
704	003364	004202		SBTASC		BINARY TO ASCII CONVERSION
705	003366	002562		SFORWD		
706	003370	001732		SCLEAN		
707	003372	004306		STESTC		CHECK CHAR
708	003374	003400		SEGOH		PRINT CHAR, CONSOLE ONLY
709	003376	003536		SINRDY		CHECK IF READY

```

710                               ;SBTTL COMMON ROUTINES
711
712                               ;*****
713                               ;
714                               ;ECHO= THIS ROUTINE ECHOS CHARACTERS ON THE TERMINAL UNDER TEST.
715                               ;
716                               ;*****
717
718 003400 009737 001224   SECHQI  TST    IOBH          /DJ11 OR DM11
719 003404 001026                BNE    ECHODJ    ;BRANCH IF DJ11
720 003406 037737 175936 001160   BIT    @BAR,MASK ;CHECK IF OK TO SEND TO DM11
721 003414 001371                BNE    SECHO      ;NO, WAIT UNTIL OK
722 003416 010037 001124                MOV    R0,TEMPCH ;CHAR INTO TEMPCH
723 003422 013777 001156 175906   MOV    LINENO,@SCR ;SET LINE NUMBER
724 003430 012777 001124 175906   MOV    @TEMPCH,@CARA ;OK, PUT ADDR OF CHAR INTO CARA
725 003436 012777 177777 175902   MOV    #1,@BYCR   ;SET CHAR COUNT TO 1
726 003444 012777 000020 175900   MOV    @R0,@SSR   ;SET SILO OVERFLOW TO 16
727 003492 053777 001160 175470   BIS    MASK,@BAR  ;SET TRANSMIT BIT
728 003460 000002                RTI          ;RETURN
729 003462 013777 001160 175950   ECHODJ  MOV    MASK,@TCR ;SET LINE NO; IN TCR
730 003470 052777 000400 175940   1S)  BIS    @BIT,@GSR ;START TRANSMITTER SCANNER
731 003476 009777 175934                2S)  TST    @GSR   ;CHECK IF OK
732 003502 100375                BPL    2S      ;BRANCH IF NOT READY
733 003504 017704 175932                MOV    @TBUF,R4  ;GET CONTENTS OF TBUF
734 003510 000304                SWAB   R4        ;RIGHT JUSTIFY LINE NO;
735 003512 042704 177760                BIC    #197760,R4 ;SAVE ONLY THE LINE NO;
736 003516 020437 001156                CMP    R4,LINENO ;BE SURE IT'S THE LINE UNDER TEST
737 003522 001362                BNE    1S      ;BRANCH IF NOT
738 003524 110077 175912                MOVB  R0,@TBUF   ;LOAD CHAR TO PRINT
739 003530 110037 001124                MOVB  R0,TEMPCH  ;SAVE CHAR IN TEMPCH
740 003534 000002                RTI          ;RETURN
741
742                               ;*****
743                               ;
744                               ;INRDY= CHECKS IF ANY INPUT FROM TERMINAL UNDER TEST;
745                               ;RETURN VIA PC IF NO CHAR OR VIA PC+2 IF VALID CHAR, CHAR WILL
746                               ;BE IN BITS 0-0 OF TEMPCH,
747                               ;CALLING SEQUENCE:
748                               ;    INRDY
749                               ;    NO CHAR RETURN
750                               ;    VALID CHAR RETURN
751                               ;
752                               ;*****
753
754 003536 017700 175976   SINRDYI  MOV    @NRQRA,R0 ;GET CHAR
755 003542 100013                BPL    1S        ;BRANCH IF NO CHAR
756 003544 010037 001124                MOV    R0,TEMPCH ;SAVE CHAR
757 003550 000300                SWAB   R0        ;RIGHT JUSTIFY LINE NO;
758 003552 042700 177760                BIC    #177760,R0 ;SAVE ONLY LINE NO;
759 003556 020037 001156                CMP    R0,LINENO ;CHECK IF SAME AS LINE UNDER TEST
760 003562 001365                BNE    SINRDY   ;BRANCH IF NOT LINE UNDER TEST
761 003564 042737 177600 001124   BIC    #177600,TEMPCH ;SAVE ONLY THE CHAR
762 003572 062716 000002                ADD    #2,@SP    ;SET UP RETURN ADDR.
763 003576 000002                1S)  RTI          ;RETURN
    
```

```

764                               ;*****
765                               ;
766                               ;IREAD= THIS ROUTINE READS INPUT FROM THE TERMINAL UNDER TEST ONLY
767                               ;IF SW13 IS SET, OTHERWISE ALL TERMINALS ARE SCANNED FOR INPUT
768                               ;AND TERMINAL WHERE CHARACTER IS RECEIVED IS SET AS THE
769                               ;TERMINAL UNDER TEST.
770                               ;
771                               ;*****
772
773 003600 032777 020000 175436   SREADI  BIT    #BIT13,@SR ;SW13 SET?
774 003606 001413                BEQ    1S        ;BRANCH IF NOT
775 003610 017700 175924                MOV    @NRQRA,R0 ;GET CHAR
776 003614 100371                BPL    SREAD    ;NO CHAR, WAIT FOR ONE
777 003616 010004                MOV    R0,R4    ;VALID DATA
778 003620 000304                SWAB   R4        ;RIGHT JUSTIFY LINE NO;
779 003622 042704 177760                BIC    #177760,R4 ;SAVE ONLY LINE NO;
780 003626 020437 001156                CMP    R4,LINENO ;CHECK IF SAME AS LINE UNDER TEST
781 003632 001362                BNE    SREAD    ;BRANCH IF NOT
782 003634 000424                BR     4S        ;CONTINUE
783 003636 010146                1S)  MOV    R1,@(SP) ;SAVE R1
784 003640 010246                MOV    R2,@(SP)
785 003642 010346                MOV    R3,@(SP)
786 003644 010446                MOV    R4,@(SP)
787 003646 009737 001224                TST    IOBH      ;DM OR DJ?
788 003652 001005                BNE    2S        ;BRANCH IF DJ
789 003654 004737 002604                JSR    PC,SCANDH ;LOOK FOR INPUT
790 003660 004737 002660                JSR    PC,SETERM ;SETUP TERMINAL UNDER TEST
791 003664 000404                BR     3S        ;CONTINUE
792 003666 004737 003016                2S)  JSR    PC,SCANDJ ;LOOK FOR DJ INPUT
793 003672 004737 003124                JSR    PC,SETDJ  ;SETUP DJ UNDER TEST
794 003676 012604                3S)  MOV    (SP)+,R4  ;RESTORE REGS
795 003700 012603                MOV    (SP)+,R3
796 003702 012602                MOV    (SP)+,R2
797 003704 012601                MOV    (SP)+,R1
798 003706 010037 001130                4S)  MOV    R0,PCHAR  ;SAVE CHAR WITH PARITY BIT
799 003712 113737 001130 001127   MOVB  PCNPAR,PARITY+1 ;GET CODE FOR PARITY CHECK
800 003720 042737 177400 001130   BIC    #177400,PCHAR ;CLEAR UNWANTED BITS
801 003726 042700 177600                BIC    #177600,R0 ;SAVE ONLY THE CHAR
802 003732 010037 001124                MOV    R0,TEMPCH
803 003736 012700 000011                MOV    #1,R0    ;SET SHIFT COUNT
804 003742 042737 000377 001126   BIC    #397,PARITY ;CLEAR PARITY FLAG
805 003750 009500                DEC    R0        ;DECREMENT SHIFT COUNT
806 003752 001406                BEQ    6S        ;EXIT IF DONE
807 003754 106337 001127                ASLB  PARITY+1  ;ROTATE CODE
808 003760 103373                BCC    5S        ;CONTINUE IF CARRY BIT WAS A ZERO
809 003762 109137 001126                COMB  PARITY    ;COMPLEMENT PARITY FLAG IF BIT WAS ONE
810 003766 000770                BR     5S        ;CONTINUE
811 003770 013700 001124                6S)  MOV    TEMPCH,R0 ;RESTORE R0
812 003774 000002                RTI          ;RETURN
    
```

```

813 )XXXXXXXXXX
814 )
815 )TYPE-- A COMMON ROUTINE USED TO TYPE MESSAGES ON THE TERMINAL
816 ) UNDER TEST ONLY, THE NULL CHARACTER TERMINATES
817 ) THE MESSAGE, CALLED THROUGH AN EMT TRAP,
818 ) CALLING SEQUENCE
819 ) TYPE
820 ) MSG      ADDRESS OF MESSAGE
821 )
822 )XXXXXXXXXX
823 )
824 003776 011601          )GET POINTER TO ADDR. OF MSG.
825 004000 062716 000002 )SET UP RETURN ADDRESS
826 004004 011101          )ADDR. OF MSG TO R1
827 004006 112100 15)    )GET CHAR
828 004010 100402          )BRANCH IF WANT AUTO CR-LF
829 004012 001003          )PRINT CHAR IF NOT NULL
830 004014 000002          )EXIT ON NULL CHAR
831 004016 104007 25)    )SEND A CR-LF
832 004020 000772          )GET NEXT CHAR
833 004022 104021 35)    )OUTPUT CHAR
834 004024 000770          )GO GET NEXT CHAR
835
836
837 )XXXXXXXXXX
838 )
839 )TYPH--MULTI TYPE--A COMMON ROUTINE TO OUTPUT
840 ) A MESSAGE ON ALL DM11S,
841 ) THIS ROUTINE IS USED BY
842 ) THE PRINTER TESTS TO TYPE HEADINGS,
843 ) CALLING SEQUENCE:
844 ) TYPE
845 ) MSGAD     ADDRESS OF MESSAGE
846 )
847 )XXXXXXXXXX
848 )
849 004026 011601          )GET POINTER TO ADDR OF MSG
850 004030 062716 000002 )SET UP RETURN ADDRESS
851 004034 011101          )ADDR OF MSG TO R1
852 004036 112100 15)    )GET CHAR
853 004040 100402          )BRANCH IF WANT AUTO CR-LF
854 004042 001003          )CONTINUE IF NOT NULL
855 004044 000002          )RETURN TO CALLER
856 004046 104006 25)    )SEND CR-LF
857 004050 000772          )GET NEXT CHAR
858 004052 104011 35)    )PRINT CHAR
859 004054 000770          )GO GET NEXT CHAR,
    
```

```

860 )*****
861 )
862 )DELAY--A COMMON ROUTINE TO DELAY PROCESSING
863 ) A GIVEN NUMBER OF MSEC,
864 ) CALLING SEQUENCE:
865 ) MOV #5,R0  ;R0 CONTAINS THE NUMBER OF MSEC DELAY DESIRED
866 ) DELAY
867 )
868 ) THE DELAY IS EFFECTED BY THE EXECUTION OF THE LOOP:
869 )     15) DEC R1
870 )     BNE 15
871 )
872 ) SINCE THE EXECUTION TIMES OF THE 00P11 LINE DOES VARY FROM
873 ) MACHINE TO MACHINE, THE VALUE AT SYMBOLIC LOCATION
874 ) "TIMER" MUST BE CHANGED TO THE APPROPRIATE VALUE AS SHOWN BELOW
875 ) BEFORE STARTING THE DIAGNOSTIC, "TIMER" IS INITIALIZED
876 ) FOR AN PDP-11740 (TIMER = 994),
877 )
878 )MACHINE      09410  35440  15820          11/45  & 11/70
879 )
880 )LOOP: DEC R1  3,4  1,99  2,3          BIPOLAR      MOS      CORE
881 )     BNE LOOP 2,9  1,76  2,6          1,30      ,51  1,98
882 ) TIME=      5,0US  2,75  4,9          1,60      1,98  1,13
883 ) SET TIMER  251  994  314          2127      1237  755
884 )
885 )XXXXXXXXXX
886 )
887 )
888 )
889 )
890 004056 010146          )SAVE R1
891 004060 013701 001102 )MOV 1MSEC LOOP CNT TO R1
892 004064 003301 25)    )DECREMENT COUNT
893 004066 001376          )BRANCH IF NOT ZERO
894 004070 003300          )DEC NO. OF MSEC DELAY
895 004072 001372          )DELAY AGAIN IF NOT ZERO
896 004074 012601          )MOV (SP)+,R1
897 004076 000002          )JALL DONE RESTORE R1
    
```

```

898
899
900
901
902
903
904
905
906
907
908
909 004100 010046 PFAILI MOV R0,*(SP)
910 004102 010146 MOV R1,*(SP)
911 004104 010246 MOV R2,*(SP)
912 004106 010346 MOV R3,*(SP)
913 004110 010446 MOV R4,*(SP)
914 004112 010546 MOV R5,*(SP)
915 004114 013746 000024 MOV SP,SAVR6
916 004120 010637 004134 MOV *RESTART,24
917 004124 012737 004136 000024
918 004132 000000 HALT
919
920
921 004134 000000 SAVR6I ,WORD 0
922
923
924 004136 104002 RESTARTI TYPEM ;TYPE POWER MSG
925 004140 004172
926 004142 013766 004134 MOV SAVR6,SP
927 004146 012637 000024 MOV (SP)+,24
928 004152 012605 MOV (SP)+,R5
929 004154 012604 MOV (SP)+,R4
930 004156 012603 MOV (SP)+,R3
931 004160 012602 MOV (SP)+,R2
932 004162 012601 MOV (SP)+,R1
933 004164 012600 MOV (SP)+,R0
934 004166 000137 001262 JMP STARTX
935
936 004172 050200 003517 051105 1S) ,ASCII <ACRLF>/POWER/<ACRLF>
937 004200 000200 ,EVEN
938
    
```

```

939
940
941
942
943
944
945
946
947
948
949
950
951
952 004202 010237 004266 SBTASCI MOV R2,CNVCTR
953 004206 006302 R2
954 004210 002702 004274 ADD #AOTENP,R2
955 004214 014237 004272 1S) MOV *(R2),TENPWR
956 004220 005037 004270 CLR DIGIT
957 004224 163701 004272 2S) SUB TENPWR,R1
958 004230 103403 BCS 3S
959 004232 005237 004270 INO DIGIT
960 004236 000772 BR 2S
961 004240 063701 004272 3S) ADD TENPWR,R1
962 004244 062737 000000 004270 ADD #00,DIGIT
963 004252 113720 004270 MOVB DIGIT,(R0)*
964 004256 005337 004266 DEC CNVCTR
965 004262 001394 BNE 1S
966 004264 000002 RTI
967
968
969 004266 000000 CNVCTR ,WORD 0
970 004270 000000 DIGITI ,WORD 0
971 004272 000000 TENPWR ,WORD 0
972
973 004274 000001 000012 000144 ADTENPI ,WORD 1,,10',,100',,1000',,10000',
974 004302 001750 025420
975
976
977
978
979
980
981
982
983
984 004306 013700 001124 STESTCI MOV TEMPCH,R0
985 004312 020027 000000 CMP R0,#60
986 004316 103407 BLO 1S
987 004320 020027 000067 CMP R0,#67
988 004324 101004 BHI 1S
989 004326 062716 000002 ADD #2,*SP
990 004332 042700 177770 BIC #177770,R0
991 004336 000002 1S) RTI
    
```

```

0902 |*****
0903 |
0904 |ISGRLF= A COMMON ROUTINE TO OUTPUT A CR AND LF TO
0905 | THE TEST TERMINAL ONLY;
0906 |
0907 |*****
0908 |
0909 004340 112700 000015 5SGRLF) MOVB #1,R0 ISEND A CR
1000 004344 104021 ECHO #1,R0 IWAIT UNTIL PRINTER IS READY
1001 004346 112700 000012 ECHO #1,R0 ISEND A LF
1002 004352 104021 ECHO RTI IRETURN TO CALLER
1003 004354 000002
1004
1005
1006 |XXXXXXXXXX
1007 |
1008 |ICRLF= ROUTINES TO SEND A CR AND/OR LF TO ALL TERMINALS.
1009 |
1010 |XXXXXXXXXX
1011 |
1012 004356 104014 5CRLF) CR ISEND CR
1013 004360 012700 000012 SLP) MOV #1,R0 ILF TO R0
1014 004364 104011 PRINTC ISEND IT
1015 004366 000002 RTI IRETURN
1016
1017 004370 012700 000015 5CRI) MOV #1,R0 ICR TO R0
1018 004374 104011 PRINTC ISEND IT
1019 004376 000002 RTI IRETURN
1020
1021
1022 |*****
1023 |
1024 |ROUTINE TO PRINT TEST HEADER
1025 |
1026 |*****
1027 |
1028 004400 104002 5PRHDR) TYPEM IPRINT MSG
1029 004402 017033 HDRMSC
1030 004404 013700 001106 MOV RTNNO,R0 IGET TEST NUMBER
1031 004410 006200 ASH R0 IGET FIRST DIGIT
1032 004412 006200 ASH R0
1033 004414 006200 ASH R0
1034 004416 042700 177770 BIC #17770,R0 IMASK FIRST DIGIT
1035 004422 062700 000060 ADD #60,R0 IMASK ASCII
1036 004426 104011 PRINTC IPRINT IT
1037 004430 013700 001106 MOV RTNNO,R0 IGET TEST NUMBER AGAIN
1038 004434 042700 177770 BIC #17770,R0 IMASK LAST DIGIT
1039 004440 062700 000060 ADD #60,R0 IMASK ASCII
1040 004444 104011 PRINTC IPRINT IT
1041 004446 104006 ORLF ICR LF
1042 004450 104010 LF IBLANK LINE
1043 004452 000002 RTI IRETURN
    
```

```

1044 |*****
1045 |
1046 |PRINTC--THIS ROUTINE IS USED TO DRIVE EACH OF THE EXISTING TERMINALS
1047 | ON EACH OF THE EXISTING DM11'S (AS DEFINED BY THE SET UP IN ELTAB),
1048 | IF IN THE MAINTENANCE MODE SR BIT 13 CONTROLS WHETHER OR NOT
1049 | ALL DM11'S ARE DRIVEN OR ONLY THE TERMINAL UNDER TEST; SET
1050 | BIT 13 DOWN TO DRIVE ALL TERMINALS ON ALL DM11'S, SET BIT 13 UP TO
1051 | DRIVE ONLY THE TERMINAL UNDER TEST;
1052 | EACH TERMINAL IS DRIVEN ONE CHARACTER AT A TIME.
1053 | PRINTC WILL LOOP WAITING FOR THE FIRST TERMINAL TO BE READY
1054 | ENTER WITH CHAR TO PRINT IN R0;
1055 |
1056 |*****
1057 |
1058 004454 010046 5SPRDC) MOV R0,(SR) ISAVE R0
1059 004456 010146 MOV R1,(SR) ISAVE R1
1060 004460 010246 MOV R2,(SR) ISAVE R2
1061 004462 010346 MOV R3,(SR) ISAVE R3
1062 004464 010446 MOV R4,(SR) ISAVE R4
1063 004466 010546 MOV R5,(SR) ISAVE R5
1064 004470 009737 001224 TST 100H IDH11 OR DJ11?
1065 004474 001402 BEQ 15
1066 004476 000137 005324 JMP PRINTJ IGO TO DJ11 ROUTINE
1067 004502 009737 001230 15) TST DMONT IANY DM11'S PRESENT?
1068 004506 001562 BEQ 123 IRETURN IF NONE
1069 004510 032777 020000 174926 BIT #09113,09R ICHECK IF SR BIT13 IS SET
1070 004516 001445 BEQ 65 IDRIVE ALL TERMINALS IF NOT SET
1071 004520 104021 ECHO IOUTPUT CHAR
1072 004522 104022 INRDY ICHECK IF ANY INPUT
1073 004524 000440 BR 185 INO,RETURN
1074 004526 023727 001124 000177 CMP TEMPC,#177 IINPUT,CHECK IF A RUBOUT
1075 004534 001402 BEQ 25
1076 004536 000137 005246 JMP ENDIR INO RUBOUT, RETURN
1077 004542 023727 001106 000024 25) CMP RTNNO,#24 ICHECK IF TEST 24
1078 004550 001004 BNE 35 IBRANCH IF NOT
1079 004552 012700 012054 000014 MOV #TERM,14(SR) ISET RETURN ADR
1080 004560 000535 BR 123 IRETURN TO EXIT TEST PROPERLY
1081 004562 023727 001106 000021 35) CMP RTNNO,#21 ITEST 21?
1082 004570 001004 BNE 45 IBRANCH IF NOT
1083 004572 012700 011064 000014 MOV #EO210,14(SR) ISET RETURN TO EXIT TEST PROPERLY
1084 004600 000525 BR 125 IRETURN
1085 004602 023727 001106 000022 45) CMP RTNNO,#22 ITEST 22?
1086 004610 001004 BNE 55 ICONTINUE IF NOT
1087 004612 012700 011144 000014 MOV #EO220,14(SR) ISET RETURN ADR
1088 004620 000515 BR 125 IRETURN TO EXIT TEST PROPERLY
1089 004622 000137 002450 55) JMP TTY1H IGO WAIT
1090 004626 000137 005262 105) JMP ENDIR
1091 004632 013737 001134 001232 65) MOV DMADR,SCR1 IINIT ADDR OF FIRST DM11
1092 004640 012700 010500 MOV #ELTAB,R5 IINIT ADDR TO EXISTING TERM TAB
1093 004644 012704 013500 MOV #DM1100,R4 IINIT ADDR TO VP TAB
1094 004650 013703 001230 MOV DMONT,R3 IINIT DM11 COUNT
1095 004654 012702 000001 75) MOV #1,R2 IINIT CURRENT LINE NO,
1096 004660 009001 CLR R1 ISET UP CURRENT CHANNEL NUMBER
1097 004662 013737 001232 001234 MOV SCR1,SCR2 ISET SCR2 = ADDR OF CURRENT DM11
    
```

1098	004670	062737	000012	001234		ADD	#12,SCR2	ISSET SCR2 = ADDR OF BAR
1099	004676	031302			051	BIT	R0,R2	ITEST IF TERMINAL EXISTS
1100	004700	001147				BNE	175	IBRANCH IF NO TERMINAL
1101	004702	037702	174326		951	BIT	R0R2,R2	ITEST IF OK TO SEND
1102	004706	001375				BNE	95	ITEST AGAIN
1103	004710	062737	000004	001234		ADD	#4,SCR2	IADDR OF SILO STATUS
1104	004716	112777	000020	174310		MOVB	#20,R0SCR2	ISSET SILO OVERFLOW TO 16
1105	004724	162737	000016	001234		SUB	#14,SCR2	ISSET SCR2 AS ADDR OF SCR
1106	004732	110177	174276			MOVB	R1,R0R2	IPUT CHANNEL NO, INTO SCR
1107	004736	062737	000002	001234		ADD	#2,SCR2	ISSET CHAR SUP ADR
1108	004744	005777	174264			TST	R0SCR2	ISANY INPUT?
1109	004750	100004				BPL	165	ICONTINUE IF NONE
1110	004752	017737	174256	001124		MOV	R0R2,TEMPCH	ISGET CHAR
1111	004760	042737	177600	001124		BIC	#177600,TEMPCH	IMASK CHAR
1112	004766	023727	001124	000177		CMF	TEMPCH,#177	ICHECK IF RUBOUT
1113	004774	001032				BNE	145	IBRANCH IF NOT RUBOUT
1114	004776	023727	001100	000024		CMF	RTNNO,#24	ITEST 24?
1115	005004	001004				BNE	105	IBRANCH IF NOT
1116	005006	012766	012054	000014		MOV	#TERM,I4(SP)	ISSET RETURN ADR
1117	005014	000517				BR	ENDIT0	IRETURN TO EXIT TEST PROPERLY
1118	005016	023727	001100	000021	1051	CMF	RTNNO,#21	ITEST 21?
1119	005024	001004				BNE	115	IBRANCH IF NOT
1120	005026	012766	011064	000014		MOV	#E0210,I4(SP)	ISSET RETURN ADR
1121	005034	000507				BR	ENDIT0	IRETURN TO EXIT TEST PROPERLY
1122	005036	023727	001100	000022	1151	CMF	RTNNO,#22	ITEST 22?
1123	005044	001004				BNE	135	IBRANCH IF NOT
1124	005046	012766	011144	000014		MOV	#E0220,I4(SP)	ISSET RETURN ADR
1125	005054	000477			1251	BR	ENDIT0	IRETURN TO EXIT TEST PROPERLY
1126	005056	000137	002450		1351	JMP	TTV1H	ICONTROL
1127	005062	023727	001124	000003	1451	CMF	TEMPCH,#3	ICCHAR = CONTROL C ?
1128	005070	001004				BNE	155	ICONTINUE IF NOT
1129	005072	023727	001100	000024		CMF	RTNNO,#24	ITEST 24?
1130	005100	001465				BEQ	ENDIT0	IEEXIT IF TEST 24
1131	005102	013737	001124	001114	1551	MOV	TEMPCH,REPT	ISAVE CHAR FOR TESTS 21 AND 22
1132	005110	010046				MOV	R0,(SP)	ISAVE R0
1133	005112	012700	000036			MOV	#30,R0	IDELAY FOR HALF DUPLEX
1134	005116	104003				DELAY		
1135	005120	012600				MOV	(SP)+,R0	IRESTORE R0
1136	005122	062737	000032	001234	1651	ADD	#2,SCR2	ISCR2 EQ ADDR OF LPR
1137	005130	011477	174100			MOV	(R4),R0SCR2	ISTORE VP INTO LPR
1138	005134	062737	000002	001234		ADD	#2,SCR2	IADD 2 TO ADDR IN SCR2
1139	005142	010146				MOV	R1,(SP)	ISAVE R1
1140	005144	006321				ASL	R1	IFIND TABLE POINTER
1141	005146	006301				ASL	R1	ITO STORE CHAR
1142	005150	006301				ASL	R1	IFOR THIS CHANNEL
1143	005152	006301				ASL	R1	
1144	005154	006301				ADD	R3,R1	
1145	005156	062701	006007			ADD	#CHARAC=1,R1	
1146	005162	110011				MOVB	R0,(R1)	ISTORE CHAR
1147	005164	010177	174044			MOV	R1,R0SCR2	IADDR OF CHAR INTO CARA
1148	005170	012601				MOV	(SP)+,R1	IRESTORE R1
1149	005172	062737	000002	001234		ADD	#2,SCR2	IADD 2 TO ADDR IN SCR2
1150	005200	012777	177777	174026		MOV	#177777,R0SCR2	ISSET CHAR COUNT EQ 1
1151	005206	062737	000002	001234		ADD	#2,SCR2	IADD 2 TO ADDR IN SCR2

1152	005214	050277	174014			BIS	R2,R0SCR2	ISSET LINE BIT IN BAR
1153	005222	005724			1751	TST	(R4)+	INC PTR TO VP15B FOR NEXT TERM
1154	005222	005201				INC	R1	INCREMENT CHANNEL NO,
1155	005224	006202				ASL	R2	IRotate LINE NO, MASK TO NEXT POS,
1156	005226	103223				BCG	05	IDD NEXT TERM, ON SAME DM11
1157	005230	005303				DEC	R3	IDEC COUNT OF DM11'S
1158	005232	001413				BEQ	ENDIT	IBRANCH IF ALL DONE
1159	005234	062737	000020	001232		ADD	#20,SCR1	ISSET UP FOR NEXT DM11
1160	005242	005725				TST	(R3)+	INC PTR TO EXISTING TERM, TBL,
1161	005244	000603				BR	75	IDD NEXT DM11
1162								
1163								
1164	005246	013737	001124	001114	ENDITR	MOV	TEMPCH,REPT	ISAVE CHAR FOR TESTS 21 & 22
1165	005254	012700	000036		ENDITDI	MOV	#30,R0	IDELAY FOR HALF DUPLEX
1166	005260	104003				DELAY		
1167								
1168	005262	012605			ENDITI	MOV	(SP)+,R5	
1169	005264	012604				MOV	(SP)+,R4	
1170	005266	012603				MOV	(SP)+,R3	
1171	005272	012602				MOV	(SP)+,R2	
1172	005272	012601				MOV	(SP)+,R1	
1173	005274	012600				MOV	(SP)+,R0	
1174	005276	023727	001124	000003		CMF	TEMPCH,#3	ICCHAR = CONTROL C ?
1175	005304	001006				BNE	15	IEEXIT IF NOT
1176	005306	023727	001100	000024		CMF	RTNNO,#24	ITEST 24?
1177	005314	001002				BNE	15	IEEXIT IF NOT
1178	005316	012716	011770			MOV	#E024R,(SP)	ISAVE SET RETURN ADR
1179	005322	000002			151	RTI		IRETURN

```

1180 I*****
1181 I
1182 IPRINTJ==THIS ROUTINE IS USED TO DRIVE EACH OF THE EXISTING TERMINALS
1183 I ON EACH OF THE EXISTING DJ11'S (AS DEFINED BY THE SET UP IN
1184 I "ELTAB"), IF IN THE MAINTENANCE MODE, SR BIT 13 CONTROLS
1185 I WHETHER OR NOT ALL DJ11'S ARE DRIVEN OR ONLY THE TERMINAL
1186 I UNDER TEST; EACH TERMINAL IS DRIVEN ONE AT A TIME; PRINTJ
1187 I WILL LOOP WAITING FOR THE FIRST ONE TO BE READY TO SEND
1188 I ENTER WITH CHARACTER TO SEND IN R0;
1189 I
1190 I*****
1191 I
1192 005324 005737 001226 PRINTJ TST DJCNT ANY DJ11'S
1193 005330 001754 BEQ ENQIT NO, RETURN
1194 005332 032777 020000 173704 BIT #BIT13,0SR ICHECK IF SR 13 IS SET
1195 005340 001441 BEQ 46 ICLEAR, DRIVE ALL TERMINALS
1196 005342 104021 ECHO ICHECK IF SR 13 IS SET
1197 005344 104022 INRDY ICHECK IF ANY INPUT
1198 005346 000745 BR ENQIT NO, RETURN
1199 005350 023727 001124 000177 CMP TEMPCH,#177 IYES CHECK IF A RUBOUT
1200 005356 001333 BNE ENQITR NO, RETURN
1201 005360 023727 001106 000024 CMP RTNNO,#24 ITEST 24?
1202 005366 001004 BNE 13 IBRANCH IF NOT
1203 005370 012766 012054 000014 MOV #TERM,14(SR) ISET RETURN ADR
1204 005376 000726 BR ENQITR IRETURN TO EXIT TEST PROPERLY
1205 005400 023727 001106 000021 15) CMP RTNNO,#21 ITEST 21?
1206 005406 001004 BNE 25 IBRANCH IF NOT
1207 005410 012766 011064 000014 MOV #EQ210,14(SR) ISET RETURN ADR
1208 005416 000716 BR ENQITR IRETURN TO EXIT TEST PROPERLY
1209 005420 023727 001106 000022 25) CMP RTNNO,#22 ITEST 22?
1210 005426 001004 BNE 35 IBRANCH IF NOT
1211 005430 012766 011144 000014 MOV #EQ220,14(SR) ISET RETURN ADR
1212 005436 000706 BR ENQITR IRETURN TO EXIT TEST PROPERLY
1213 005440 000137 002450 35) JMP TTV1H IGO WAIT
1214 005444 012737 100010 001232 45) MOV #100010,SCR1 IINIT ADDR OF FIRST DJ11
1215 005452 012705 016560 MOV #ELTAB,R5 IINIT ADDR OF EXISTING TERM TAB
1216 005456 013703 001226 MOV DJCNT,R3 ICOUNT OF DJ11'S TO R3
1217 005462 012702 000001 55) MOV #1,R2 IINIT CURRENT LINE NO.
1218 005466 005001 CLR R1 IINIT CURRENT CHANNEL NO.
1219 005470 013737 001232 001234 65) MOV SCR1,SCR2 ISET SCR2=ADDR OF CURRENT DJ11
1220 005476 062737 000004 001234 ADD #4,SCR2 ISCR2 IS ADDR OF TCR
1221 005504 013502 BIT 0R0,R2 ITEST IF TERMINAL EXISTS
1222 005506 001124 BNE 128 IBRANCH IF NO TERMINAL
1223 005510 010277 173520 MOV R2,0SCR2 IYES,SET LINE NO. IN TCR
1224 005514 162737 000004 001234 SUB #4,SCR2 ISCR2 IS NOW ADDR OF CSR
1225 005522 105777 173506 TSTB 0SCR2 ICHECK FOR INPUTS
1226 005526 100072 BPL 136 ICONTINUE IF NO INPUT
1227 005530 062737 000002 001234 ADD #2,SCR2 ISET CHAR BUF REG ADR
1228 005536 017737 173472 001124 MOV 0SCR2,TEMPCH IGET INPUT CHAR
1229 005544 042737 177000 001124 BIC #17760,TEMPCH IMASK CHAR
1230 005552 023727 001124 000177 CMP TEMPCH,#177 ICHECK CHAR
1231 005560 001032 BNE 119 IBRANCH IF NOT RUBOUT
1232 005562 023727 001106 000024 CMP RTNNO,#24 ITEST 24?
1233 005570 001004 BNE 75 IBRANCH IF NOT
    
```

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1234 005572 012766 012054 000014 MOV #TERM,14(SR) ISET RETURN ADR
1235 005600 000625 BR ENQITR IRETURN TO EXIT TEST PROPERLY
1236 005602 023727 001106 000021 75) CMP RTNNO,#21 ITEST 21?
1237 005610 001004 BNE 65 IBRANCH IF NOT
1238 005612 012766 011064 000014 MOV #EQ210,14(SR) ISET RETURN ADR
1239 005620 000615 BR ENQITR IRETURN TO EXIT TEST PROPERLY
1240 005622 023727 001106 000022 85) CMP RTNNO,#22 ITEST 22?
1241 005630 001004 BNE 108 IBRANCH IF NOT
1242 005632 012766 011144 000014 MOV #EQ220,14(SR) ISET RETURN ADR
1243 005640 000605 95) BR ENQITR IRETURN TO EXIT TEST PROPERLY
1244 005642 000137 002450 108) JMP TTV1H IGO TO CONTROL
1245 005646 023727 001124 000003 115) CMP TEMPCH,#3 ICHAR = CONTROL-C ?
1246 005654 001004 BNE 128 IBRANCH IF NOT
1247 005656 023727 001106 000024 CMP RTNNO,#24 ITEST 24?
1248 005664 001765 BEQ 95 IYES, RETURN TO TEST
1249 005666 013737 001124 001114 125) MOV TEMPCH,REPT ISAVE CHAR FOR TESTS 21 & 22
1250 005674 010046 MOV R0,#(SR) ISAVE R0
1251 005676 012700 000036 MOV #30,R0 IDELAY FOR HALF DUPLEX
1252 005702 104003 DELAY
1253 005704 012600 MOV (SR),R0 IRESTORE R0
1254 005706 162737 000002 001234 SUB #2,SCR2 IRESET PROPER ADR FOR PRINT
1255 005714 052777 000400 173312 135) BIS #BIT0,0SCR8 ISTART TRANSMITTER SCANNER
1256 005722 005777 173306 145) TST 0SCR2 ICHECK STATE OF CSR
1257 005726 100375 BPL 145 IBRANCH IF XMITTER NOT READY
1258 005730 062737 000006 001234 ADD #6,SCR2 IREADY, SCR2 NOW=ADDR OF TBUF
1259 005736 017704 MOV 0SCR2,R4 IGET CONTENTS OF TBUF
1260 005742 000304 SWAB R4
1261 005744 042704 BIC #17760,R4 ISAVE ONLY LINE NO.
1262 005750 020401 CMP R4,R1 IBE SURE SCANNER IS ON CORRECT LINE
1263 005752 001246 BNE 63 IBRANCH IF NOT, TRY AGAIN
1264 005754 110077 MOV R0,0SCR2 ILOAD TBUF WITH CHAR
1265 005760 005201 155) INC R1 INCREMENT LINE NO.
1266 005762 006302 ASL R2 ISET LINE NO. TO NEXT POSITION
1267 005764 103241 BCC 63 IIF CARRY IS CLEAR DJ11 IS DONE
1268 005766 005303 DEC R3 IDEC COUNT OF DJ11'S
1269 005770 001002 BNE 163 IBRANCH IF NOT DONE
1270 005772 000137 JMP ENQITR IDONE
1271 005776 062737 000010 001232 165) ADD #10,SCR1 ISET SCR1 TO ADDR OF NEXT DJ11
1272 006004 005725 (R2)+ ISET R5 TO NEXT ELTAB ENTRY
1273 006006 000625 BR 55 IGO DO NEXT DJ11
1274
1275
1276
1277 006010 000400 CHARACT ,BLKB 256, ICHARACTER STORAGE FOR OUTPUT
    
```



```

1278                                ;SBTTL PRINTER TESTS
1279
1280
1281                                ;XXXXXXXXXX
1282                                ;
1283                                ;
1284                                ;PT0 == DATA PATH TEST--FOUR LINES OF ALTERNATING
1285                                ;"0" AND "U" ARE PRINTED, OUT TO THE GIVEN PAPER
1286                                ;WIDTH THE PATTERN WILL APPEAR AS FOLLOWS,
1287                                ;
1288                                ;
1289                                ;   0U0U0U0U0U0
1290                                ;   U0U0U0U0U0U
1291                                ;   0U0U0U0U0U0
1292                                ;   U0U0U0U0U0U
1293                                ;
1294                                ;XXXXXXXXXX
1295                                ;
1296                                ;PT01 0 ;TEST NUMBER
1297                                ;PT1 ;NEXT TEST
1298                                ;PRTHDR ;PRINT TEST HEADER
1299                                ;TYPEM ;PRINT COLUMN MESSG
1300                                ;HOR0
1301                                ;15) MOV #U0,R3 ;SET FIRST CHAR PAIR
1302                                ;MOV #16,R2 ;SET LINE COUNT
1303                                ;25) MOV R3,R0 ;SET CHAR PAIR
1304                                ;MOV WIDTH,R1 ;SET COLUMN COUNT
1305                                ;35) PRINTC ;PRINT CHAR
1306                                ;SWAB R0 ;SET NEXT CHAR
1307                                ;DEC R1 ;DEC COLUMN COUNT
1308                                ;BNE 35 ;FINISH LINE
1309                                ;SWAB R3 ;SET NEXT START CHAR
1310                                ;CRLF ;CR=LF
1311                                ;DEC R2 ;DEC LINE COUNT
1312                                ;BNE 25 ;FINISH TEST
1313                                ;CHAIN ;ALL DONE, EXIT
1314                                ;BR 25 ;REPEAT TEST
    
```

```

1314                                ;XXXXXXXXXX
1315                                ;
1316                                ;PT1 == PRINTER CHARACTER TEST == PRINTS ALL PRINTABLE CHARACTERS
1317                                ;
1318                                ;XXXXXXXXXX
1319                                ;
1320                                ;PT1 1 ;TEST NUMBER
1321                                ;PT2 ;NEXT TEST
1322                                ;PRTHDR ;PRINT TEST HEADER
1323                                ;15) MOV #40,R1 ;SPACE TO R1
1324                                ;MOV #100,R2 ;0 TO R2
1325                                ;MOV #140,R3 ;1 TO R3
1326                                ;25) MOV R1,R0 ;FIRST CHAR TO R0
1327                                ;JSR PC,SPSP ;SEND TWO SPACES
1328                                ;MOV R2,R0 ;SECOND CHAR TO R0
1329                                ;JSR PC,SPSP ;SEND TWO SPACES
1330                                ;MOV #3,R4 ;CHAR COUNT TO R4
1331                                ;MOV R3,R0 ;THIRD CHAR TO R0
1332                                ;35) PRINTC ;PRINT CHAR
1333                                ;DEC R4 ;THREE TIMES ?
1334                                ;BNE 35 ;BRANCH IF NOT
1335                                ;CRLF ;CR=LF
1336                                ;CMPB (R1)+(R2)+ ;SET NEXT CHARS
1337                                ;TSB (R3)+
1338                                ;CMP R3,#200 ;CHECK IF ALL DONE
1339                                ;BLO 25 ;BRANCH IF NOT
1340                                ;CHAIN ;EXIT TO NEXT TEST
1341                                ;BR 15 ;REPEAT TEST
1342
1343                                ;SPSP1 MOV #3,R4 ;SET PRINT COUNT
1344                                ;15) PRINTC ;PRINT CHAR
1345                                ;DEC R4 ;DEC PRINT COUNT
1346                                ;BNE 15 ;FINISH CHAR
1347
1348                                ;SP21 MOV #40,R0 ;SPACE TO R0
1349                                ;PRINTC ;PRINT FIRST SPACE
1350
1351                                ;SPC1 MOV #40,R0 ;SPACE TO R0
1352                                ;PRINTC ;PRINT SECOND SPACE
1353                                ;RTS PC ;RETURN
    
```

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1354 )XXXXXXXXXX
1355 )
1356 )PRT == NON-PRINTING CHARACTER TEST. THIS TEST
1357 )PRINTS THE OCTAL CODE FOLLOWED BY THE MNEMONIC
1358 )OF ALL NON-PRINTING CHARACTERS, FOLLOWING EACH
1359 )MNEMONIC, THE PRINTER IS DRIVEN BY THE NON-PRINTING
1360 )CODE (000 THROUGH 037 PLUS 177). ALL CONTROL CHARACTERS
1361 ) (INCLUDING THOSE FOR OPTIONS) WILL BE SKIPPED.
1362 ) REFER TO THE DOCUMENT FOR A LIST OF THOSE PRINTED.
1363 )
1364 )XXXXXXXXXX
1365
1366 006606 000002          PRT) 2          ITEST NUMBER
1367 006610 007236          PRT) 3          INEXT TEST
1368 006612 104012          PRT) 4          IPRINT TEST HEADER
1369 006614 005003          CLR R3          INON-PRINTABLE CHAR, NULL IS FIRST
1370 006616 012701 006774  MOV #LINE2,R1  IADDR OF CHAR STRING TO R1
1371 006622 012702 000003  MOV #3,R2       INO. OF CHAR GROUPS PER LINE
1372 006626 012704 000010  MOV #10,R4      INO. OF CHARS PER GROUP
1373 006632 112100          MOVB (R1)+,R0  ICHAR INTO R0
1374 006634 104011          PRINTC         IPRINT CHAR
1375 006636 005304          DEC R4         I# CHARS PRINTED?
1376 006640 001374          BNE #4         IBRANCH IF NOT
1377 006642 022703 000002  CMP #2,R3      ICHAR # STX?
1378 006646 001400          BEQ #7         IYES, SET STX CHAR
1379 006650 022703 000004  CMP #4,R3      ICHAR # EOT?
1380 006654 001414          BEQ #6         IYES, SET NEXT CHAR
1381 006656 022703 000033  CMP #33,R3    ICHAR # ESC?
1382 006662 001412          BEQ #7         IYES, SET NEXT CHAR
1383 006664 022703 000007  CMP #7,R3     ICHAR # BELL
1384 006670 001002          BNE #9         IBRANCH IF NOT A BELL
1385 006672 012703 000020  MOV #20,R3    ISET NEXT CHAR
1386 006676 022703 000040  CMP #40,R3    IIS IT THE LAST?
1387 006702 001003          BNE #9         IBRANCH IF NO
1388 006704 000421          BR 110        IYES, OUTPUT LAST CHAR (177)
1389 006706 005203          INC R3        ISKI CHAR
1390 006710 005203          INC R3        ISKI CHAR
1391 006712 010300          MOV R3,R0    INON-PRINTABLE CHAR TO R0
1392 006714 012704 000003  MOV #3,R4     IA COUNT OF 3 TO R4
1393 006720 104011          PRT) 9          IDRIVE PRINTER WITH NON-PRINTABLE CHAR
1394 006722 005304          DEC R4        IDECREMENT COUNTER
1395 006724 001375          BNE #9        IBRANCH IF NOT ZERO (3 TIMES)
1396 006726 005203          INC R3        IINCREMENT CHAR,CODE
1397 006730 005302          DEC R2        IDEC. GROUPS PER LINE COUNTER (3)
1398 006732 001404          BEQ #100      IBRANCH IF ZERO
1399 006734 004737 006570  JSR PG,SP2    ISEND 3 SPACES
1400 006740 104011          PRINTC
1401 006742 100731          BR 35         ICONTINUE
1402 006744 104006          CRLF         ISEND A CR, LF
1403 006746 000725          BR 25         IGO DO NEXT LINE
1404 006750 012704 000003  MOV #3,R4     IA 3 COUNT TO R4
1405 006754 012700 000177  MOV #177,R0  IA DEL TO R0
1406 006760 104011          PRT) 12         IPRINT CHAR
1407 006762 005304          DEC R4        IDECREMENT COUNTER

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1408 006764 001375          BNE #120      IBRANCH IF NOT ZERO
1409 006766 104006          CRLF         ISEND A CR, LF
1410 006770 104001          CHAIN        ICHAIN TO NEXT TEST
1411 006772 000710          BR 15        IREPEAT TEST
1412
1413
1414 006774 030000 020000 047040  LINE) ,ASCII /000 NUL001 000002 STX/
1415 007002 046125 030000 020001
1416 007010 051440 044117 030000
1417 007016 020002 051440 054124
1418 007024 030000 020006 040440  ,ASCII /006 ACX020 DLE021 DC1/
1419 007032 045003 031000 020000
1420 007040 042040 042014 031000
1421 007046 020001 042040 030503
1422 007054 031000 020002 042040  ,ASCII /022 DC2023 003024 DC4/
1423 007062 031003 031000 020003
1424 007070 042040 031003 031000
1425 007076 020004 042040 032103
1426 007104 031000 020005 047040  ,ASCII /025 NAK020 SYN027 ETB/
1427 007112 045001 031000 020006
1428 007120 051440 047131 031000
1429 007126 020007 042440 041124
1430 007134 031400 020000 041440  ,ASCII /030 CAN031 EM 032 SUB/
1431 007142 047101 031400 020001
1432 007150 042440 020115 031400
1433 007156 020002 051440 041125
1434 007164 031400 020004 043040  ,ASCII /034 FS 035 GS 036 RS /
1435 007172 020123 031400 020005
1436 007200 043440 020123 031400
1437 007206 020006 051040 020123
1438 007214 031400 020007 052440  ,ASCII /037 US 177 DEL /
1439 007222 020123 033461 020007
1440 007230 042040 046105 040
1441 007236          ,EVEN

```

```

1442          JXXXXXXXXX
1443          I
1444          I
1445          I
1446          I
1447          I
1448          I
1449          I
1450          I
1451          I
1452          I
1453          I
1454          I
1455          I
1456          I
1457          I
1458          I
1459          I
1460          I
1461          I
1462          I
1463          I
1464          I
1465          I
1466          I
1467          I
1468          I
1469          I
1470          I
1471          I
1472          I
1473          I
1474          I
1475          I
1476          I
1477          I
1478          I
1479          I
1480          I
1481          I
    PTJ1      3          ITEST NUMBER
    PT4       4          INEXT TEST
    PRTHDR    151      IPRINT TEST HEADER
    CLR       251      ICLR SPACE COUNTER
    MOV       251      IPOSITION COUNTER TO R1
    MOV       251      I"0" TO R0
    PRINTC    251      IPRINT THE "0"
    DEC       R1        IDECREMENT POSITION COUNTER
    BEQ       35        IBRANCH IF 0
    JSR       PC,SPC    IPRINT A SPACE
    DEC       R1        IDECREMENT POSITION COUNTER
    BNE       25        IBRANCH IF NOT ZERO
    CR        351      ISEND CR
    MOV       451      ISPACE, COUNTER SET TO 1
    MOV       451      INO. OF SPACES TO R1
    JSR       PC,SPC    IPRINT SPACE
    DEC       R1        IDECREMENT SPACE COUNTER
    BNE       55        IBRANCH IF NOT ZERO
    MOV       551      I"X" INTO R0
    PRINTC    551      IPRINT "X"
    CR        551      ISEND CR
    ADD       551      INCREMENT SPACE COUNT BY 2
    CMP       551      ICOMPARE POSITION COUNTER WITH COLM, COUNT
    BLO       45        IBRANCH IF LOWER
    LF        551      ISEND LF
    CHAIN     15        ICHAIN TO NEXT TEST
    BR        15        IREPEAT TEST
    
```

```

1482          JXXXXXXXXX
1483          I
1484          I
1485          I
1486          I
1487          I
1488          I
1489          I
1490          I
1491          I
1492          I
1493          I
1494          I
1495          I
1496          I
1497          I
1498          I
1499          I
1500          I
1501          I
1502          I
1503          I
1504          I
1505          I
1506          I
1507          I
1508          I
1509          I
1510          I
1511          I
1512          I
1513          I
1514          I
1515          I
1516          I
1517          I
1518          I
1519          I
1520          I
1521          I
1522          I
1523          I
1524          I
1525          I
1526          I
1527          I
1528          I
1529          I
1530          I
1531          I
1532          I
1533          I
    PT41      4          ITEST NUMBER
    PT6       6          INEXT TEST
    PRTHDR    151      IPRINT TEST HEADER
    MOV       151      ILINE FEED COUNT TO 1
    MOV       151      ICOLUMN COUNT TO R1
    MOV       151      IADDR OF NUMBER FIELD TO R2
    JSR       PC,REP    IPRINT REFERENCE LINE
    MOV       251      ILINE FEED COUNT TO R1
    LF        351      ISEND LF
    DEC       R1        IDECREMENT COUNTER
    BNE       35        IBRANCH IF NOT YET 0
    ASL       LFCNT     IDOUBLE LINE FEED COUNT
    CMP       451      ITEST IF COUNT IS 32
    BEQ       45        IBRANCH IF =32; END
    MOVB     (R2)+,R0    INUMBER TO R0
    PRINTC    151      IPRINT I?
    MOVB     (R2)+,R0    INUMBER TO R0
    PRINTC    151      IPRINT I?
    CR        451      ISEND CR
    BR        25        IDRIVE THE LINEFEEDS
    MOV       451      ICOLUMN COUNT TO R1
    JSR       PC,REP    ISEND END REFERENCE LINE
    LF        451      ISEND LF
    CHAIN     15        ICHAIN TO NEXT TEST
    BR        15        IREPEAT TEST
    REPI      MOVB     (R2)+,R0    INUMBER TO R0
    PRINTC    MOVB     (R2)+,R0    IPRINT I?
    PRINTC    MOVB     (R2)+,R0    INUMBER TO R0
    PRINTC    PRINTC    IPRINT I?
    TST      151      IDECREASE COUNTER BY 2
    MOV       151      IASB (=) TO R0
    PRINTC    PRINTC    IPRINT I?
    DEC       R1        IDECREMENT COLUMN COUNTER
    BNE       15        IBRANCH IF NO ZERO
    CR        151      ISEND CR
    RTS      PC        IRETURN
    LINES1    ,ASCII /0I020408163200/
    EVEN
    
```

```

XXXXXXXXXX
|
|PT6== SINGLE LINE FEED TEST == TESTS THE LINE FEED
| CAPABILITY FROM ALL COLUMNS,
|
XXXXXXXXXX
|
|TEST NUMBER
|NEXT TEST
|PRINT TEST HEADER
|COLUMN COUNT TO R1
|DECREASE BY 2
|"0" TO R0
|SEND 0
|DECREMENT COLUMN COUNTER
|BRANCH IF NOT ZERO
|SEND A 2
|SEND A SECOND TWO
|COMPARE COLUMN COUNT
|BRANCH IF EQ 132
|DELAY 1.8 SEC
|3/8 TO R0
|64 TO COUNTER
|SEND CHARACTER
|DECREMENT COUNTER
|BRANCH IF NOT ZERO
|SEND A CR,LF
|NO, COLUMNS TO R1
|BACKSLASH TO R0
|SEND IT
|SEND LF
|DECREMENT COUNTER
|BRANCH IF NOT ZERO,
|SEND CR
|SEND REF LINE #1
|SEND A CR,LF
|DELAY 1 SEC
|SEND A SECOND REF, LINE
|SEND A CR,LF
|CHAIN TO NEXT TEST
|REPEAT TEST
|COLUMN COUNT TO R1
|"1" TO R0
|PRINT R0
|DECREMENT COUNTER
|BRANCH IF #0
|INCREMENT CHARACTER
|COMP CHAR TO "9"
|BRANCH IF LOWER OR SAME
|RESET CHAR TO "0"
|CONTINUE
|FINISHED, RETURN TO CALLER
    
```

```

XXXXXXXXXX
|
|PT6== BACKSPACE TEST == A REFERENCE LINE SUCH AS IN
| TEST PT5 IS PRINTED, THE SECOND LINE CONSISTS
| OF PRINTING A BACKSLASH, BACKSPACE AND FORWARD
| SLASH COMBINATION OUT TO THE GIVEN COLUMN WIDTH,
| THIS LINE IS THEN FOLLOWED BY THE SAME TWO REFERENCE
| LINES AS PRINTED IN TEST PT5,
|
XXXXXXXXXX
|
|TEST NUMBER
|NEXT TEST
|PRINT TEST HEADER
|COLUMN COUNT TO R1
|DECREMENT BY 2
|"0" TO R0
|SEND 0
|DECREMENT COLUMN COUNTER
|BRANCH IF NOT ZERO
|"2" TO R0
|SEND A "2"
|SEND A SECOND "2"
|COMPARE COLUMN COUNT
|BRANCH IF EQ 132
|DELAY 1.8 SEC
|3/8 TO R0
|64 TO COUNTER
|SEND CHAR
|DECREMENT COUNTER
|CONTINUE IF NOT DONE
|SEND A CR,LF
|COLUMN COUNT TO R1
|BACKSLASH TO R0
|SEND IT
|BACKSPACE TO R0
|SEND IT
|FORWARD SLASH TO R0
|SEND IT
|END OF PAPER
|BRANCH IF NO
|SEND LF
|SEND CR
|SEND REF LINE #1
|SEND A CR,LF
|DELAY 1 SEC
|SEND SECOND REF LINE
|SEND A CR,LF
|CHAIN TO NEXT TEST
|REPEAT TEST
    
```

```

1641 |XXXXXXXXXX
1642 |
1643 |IPF7-- OVERPRINT TEST-- A ROW OF ALTERNATING N'S AND
1644 | SPACES ARE PRINTED, OUT TO THE LAST COLUMN AND OVERPRINTED TWICE.
1645 | A SECOND LINE OF ALTERNATING SPACES AND "0'S" IS THEN
1646 | SENT 3 TIMES AS THE FIRST LINE. THIS IS FOLLOWED
1647 | BY A THIRD AND FINAL LINE OF ALTERNATING '6'
1648 | AND SPACES.
1649 |
1650 |XXXXXXXXXX
1651 |
1652 010122 000007 P77) 7 TEST NUMBER
1653 010124 010334 PTIG 7 INEXT TEST
1654 010126 104012 PRTHDR 7 IPRINT TEST HEADER
1655 010130 012703 000002 15) MOV #2,R3 IS COUNT TO R3
1656 010134 013701 001112 23) MOV WIDTH,R1 IND. OF COLUMNS TO R1
1657 010140 012700 000115 33) MOV #10,R0 IPRINT H
1658 010144 104011 PRINTC
1659 010146 005301 DEC R1 IEND OF LINE
1660 010150 001404 BEQ 48 IBRANCH IF YES
1661 010152 004737 006576 JSR PC,SPC ISEND SPACE
1662 010156 005301 DEC R1 IEND OF LINE?
1663 010160 001367 BNE 38 IBRANCH IF NO
1664 010162 022703 000002 45) CMP #2,R3 ITEST R3
1665 010166 001003 BNE 65 IBRANCH IF NOT FIRST TIME
1666 010170 104014 55) CR ISEND CR
1667 010172 005303 DEC R3 IDECREASE LINE COUNTER
1668 010174 000797 BR 25 IREPEAT LINE
1669 010176 005703 65) TST R3 ITHIRD TIME?
1670 010200 001373 BNE 95 IBRANCH IF NOT
1671 010202 104006 ORLF IEND CR
1672 010206 013701 001112 75) TST (R3)+ IREPEAT COUNTER TO R3
1673 010210 004737 006576 85) MOV WIDTH,R1 I COLUMN COUNT TO R1
1674 010212 004737 006576 JSR PC,SPC ISEND SPACE
1675 010216 005301 DEC R1 IDECREASE COLUMN COUNT
1676 010220 001405 BEQ 98 IBRANCH IF 0, END OF LINE
1677 010222 012700 000100 MOV #100,R0 I"0" TO R0
1678 010226 104011 PRINTC ISEND IT
1679 010230 005301 DEC R1 IDECREASE COLUMN COUNT
1680 010232 001367 BNE 88 IBRANCH IF NOT 0 (NOT END)
1681 010234 022703 000002 95) CMP #2,R3 IEND OF LINE, FIRST TIME?
1682 010240 001003 BNE 118 IBRANCH IF NOT
1683 010242 104014 109) CR ISEND CR
1684 010244 005303 DEC R3 IDECREASE LINE COUNTER
1685 010246 000797 BR 75 IREPEAT LINE
1686 010250 005703 119) TST R3 ITEST IF THIRD REPEAT
1687 010252 001373 BNE 108 IBRANCH IF NOT
1688 010254 104006 ORLF IEND NEXT LINE
1689 010256 005703 TST (R3)+ ILINE REPEAT COUNTER TO R3
1690 010260 013701 001112 128) MOV WIDTH,R1 I COLUMN COUNT TO R1
1691 010264 012700 000046 138) MOV #46,R0 I"6" TO R0
1692 010270 104011 PRINTC IPRINT IT
1693 010272 005301 DEC R1 IDECREASE COLUMN COUNT
1694 010274 001404 BEQ 148 IBRANCH IF END
    
```

```

1695 010276 004737 006576 JSR PC,SPC ISEND SPACE
1696 010302 005301 DEC R1 IDECREASE COLUMN COUNT
1697 010304 001367 BNE 138 IBRANCH IF NOT END
1698 010306 022703 000002 148) CMP #2,R3 ITEST IF FIRST TIME
1699 010312 001003 BNE 168 IBRANCH IF #2, FIRST TIME
1700 010314 104014 158) CR I CARRIAGE RETURN
1701 010316 005303 DEC R3 IDECREASE REPEAT COUNTER
1702 010320 000797 BR 128 IPRINT LINE AGAIN
1703 010322 005703 168) TST R3 ITEST IF END, R3=0
1704 010324 001367 BNE 178 IBRANCH IF NOT END
1705 010326 104006 ORLF ISEND CR,LF
1706 010330 104001 CHAIN ICHAIN TO NEXT TEST
1707 010332 006576 BR 18 IREPEAT TEST
    
```

```

1708 |XXXXXXXXXX
1709 |
1710 |IPT10== PRINTING FREQUENCY TEST-- 120 X'S ARE PRINTED ON 4 LINES
1711 |      30 PER LINE, THE TEST IS SUCH THAT BETWEEN THE FIRST AND SECOND
1712 |      "M" A 30 MSEC DELAY IS INTRODUCED; THIS DELAY IS THEN INCREASED
1713 |      BETWEEN CHARACTERS OUT TO 60 CHARACTERS IN AN EXPONENTIAL
1714 |      MANNER; THE DELAY IS THEN DECREASED IN THE SAME MANNER OUT TO THE
1715 |      120TH CHARACTER, THIS DELAY IS CALCULATED AS FOLLOWS:
1716 |
1717 |      NEW DELAY = OLD DELAY [+ OR -] (OLD DELAY/16 + OLD DELAY/120 )
1718 |
1719 |XXXXXXXXXX
1720 |
1721 |010334 000010 PT101 10          ;TEST NUMBER
1722 |010336 010472      PT11          ;NEXT TEST
1723 |010340 104012      PRTHDR         ;PRINT TEST HEADER
1724 |010342 012701      MOV #30,R1      ;SET R1=30
1725 |010346 012702      MOV #130,R2     ;SET CHAR COUNT = 120
1726 |010392 012737      MOV #30,39+2   ;SET UP DELAY VALUE
1727 |010360 012700      MOV #15,R0      ;"M" TO R0
1728 |010364 104011      PRINTC         ;SEND IT
1729 |010366 012700      MOV #30,R0      ;
1730 |010372 104003      DELAY          ;DELAY
1731 |010374 005301      DEC R1          ;DEC; COUNT OF CHARS PER LINE
1732 |010376 001426      BEQ 65          ;BRANCH IF 0, END OF LINE
1733 |010400 005302      DEC R2          ;DECREMENT CHAR COUNTER
1734 |010402 001430      BEQ 75          ;BRANCH IF END
1735 |010404 013704      MOV 30+2,R4     ;GET OLD DELAY
1736 |010410 006204      ASR R4          ;CAL 1/16 OF OLD DELAY
1737 |010412 006204      ASR R4          ;
1738 |010414 006204      ASR R4          ;
1739 |010416 006204      ASR R4          ;
1740 |010420 010405      MOV R4,R5      ;SAVE 1/16 IN R5
1741 |010422 006204      ASR R4          ;CAL 1/120 OF OLD DELAY
1742 |010424 006204      ASR R4          ;
1743 |010426 006204      ASR R4          ;
1744 |010430 006405      ADD R4,R5      ;1/16 +1/120 TO R5
1745 |010432 022702      CMP #60,R2     ;TEST WHICH HALF OF THE 120 CHARS;
1746 |010436 005403      BLE 55         ;BRANCH IF LT OR EQ 60
1747 |010440 160537      SUB R0,35+2    ;GT 51, DECREASE DELAY BY 34 MEC,
1748 |010444 000745      BR 25          ;GO PRINT AGAIN
1749 |010446 060537      ADD R0,35+0    ;LT HALF WAY, ADD DELAY OF 34 MEC;
1750 |010452 000742      BR 25          ;GO PRINT AGAIN
1751 |010454 104036      ORLF          ;SEND CRLF
1752 |010456 012701      MOV #30,R1     ;SET R1=30
1753 |010462 000746      BR 45          ;
1754 |010464 104006      CRLF          ;SEND CR,LF
1755 |010466 104001      CHAIN         ;CHAIN TO NEXT TEST
1756 |010470 000724      BR 15         ;REPEAT TEST

```

```

1757 |XXXXXXXXXX
1758 |
1759 |IPT11== RIBBON FEED TEST == THIS TEST PRINTS A SINGLE COLUMN
1760 |      OF X'S (24 LINES) DOWN THE LEFT MARGIN OF THE PAGE, VISUALLY
1761 |      CHECK THE RIBBON REED MECHANISM FOR PROPER OPERATION,
1762 |
1763 |XXXXXXXXXX
1764 |
1765 |010472 000011 PT111 11          ;TEST NUMBER
1766 |010474 010524      PT12          ;NEXT TEST
1767 |010476 104012      PRTHDR         ;PRINT TEST HEADER
1768 |010500 012701      MOV #30,R1      ;SET R1=30
1769 |010504 012700      MOV #130,R0    ;SET CHAR = X
1770 |010510 104011      PRINTC         ;PRINT X
1771 |010512 104011      CRLF          ;SEND CRLF
1772 |010514 005301      DEC R1          ;DEC COUNT
1773 |010516 001372      BNE 25         ;BRANCH IF NOT DONE TEST
1774 |010520 104001      CHAIN         ;CHAIN TO NEXT TEST
1775 |010522 000766      BR 15         ;REPEAT TEST
1776 |
1777 |
1778 |XXXXXXXXXX
1779 |
1780 |IPT12== PRINTER BELL TEST-- THE LAST TEST IN THE
1781 |      PRINTER TEST SEQUENCE; THIS TEST OUTPUTS
1782 |      EIGHT BELL SIGNALS TO THE PRINTER
1783 |
1784 |XXXXXXXXXX
1785 |
1786 |010524 000012 PT121 12          ;THIS TEST
1787 |010526 006410      PT5          ;NEXT TEST
1788 |010530 104012      PRTHDR         ;PRINT TEST HEADER
1789 |010532 012701      MOV #10,R1     ;COUNTER TO R1
1790 |010536 012700      MOV #7,R0      ;BELL TO R0
1791 |010542 104011      PRINTC         ;SEND IT
1792 |010544 005301      DEC R1          ;DECREMENT COUNT
1793 |010546 001373      BNE 15         ;BRANCH IF NOT ZERO
1794 |010550 104010      LF            ;SEND LF
1795 |010552 012700      MOV #3720,R0  ;DELAY 2 SEC BEFORE RESTARTING
1796 |010556 104003      DELAY          ;
1797 |
1798 |010560 013700      MOV #42,R0     ;CHECK IF UNDER ACT11 OR XXOP
1799 |010564 001405      BEQ HERE       ;CONTINUE TEST SEQUENCE
1800 |010566 000005      RESET         ;
1801 |010570 004710      LOGICAL JSR PC,(R0)
1802 |010572 000240      NOP          ;
1803 |010574 000240      NOP          ;
1804 |010576 000240      NOP          ;
1805 |010600 104001      CHAIN         ;CHAIN TO NEXT TEST
1806 |010602 000753      BR PT12A      ;REPEAT TEST

```

```

1807          JXXXXXXXXX
1808          |
1809          |PF17=LIFE TEST
1810          |
1811          | THIS TEST PRINTS 2 FULL LINES OF EACH PRINTABLE
1812          | CHARACTER AND OVERRIDES THE SECOND LINE 4 TIMES.
1813          | THIS TEST IS CONTINUOUS RUNNING ONCE INITIATED,
1814          | LOOPING AUTOMATICALLY ON ITSELF.
1815          | END OF PASS COUNT IS CLEARED WHENEVER THE TEST IS RESTARTED,
1816          |
1817          JXXXXXXXXX
1818          PTI7B1 17          ITEST NUMBER
1819          PT17B  JHP          INEXT TEST
1820          PT17B  JHP          PTE7D          ICONTINUE
1821          PTE71  17          ITEST NUMBER
1822          PTE71  17          PTE7B          INEXT TEST
1823          PTE71  17          PASCNT          ICLR PASS COUNT
1824          PTE71  17          PRVHDR          IPRINT TEST HEADER
1825          PTE71  17          MOV #4,RPT          ISET START CHAR
1826          PTE71  17          MOV WIDTH,R1          ISET COLUMN COUNT
1827          PTE71  29          MOV REPT,R0          IGET CHAR
1828          PTE71  29          PRINTC          ISEND CHAR
1829          PTE71  29          DEC R1          IDECREMENT COUNT
1830          PTE71  29          BNE 29          IBRANCH IF NOT DONE
1831          PTE71  29          CRLF          ISEND CR/LF
1832          PTE71  29          MOV #5,R2          ISET OVERPRINT COUNT
1833          PTE71  35          MOV WIDTH,R1          ISET COLUMN COUNT
1834          PTE71  48          MOV REPT,R0          IGET CHAR
1835          PTE71  48          PRINTC          ISEND CHAR
1836          PTE71  48          DEC R1          IDECREMENT COUNT
1837          PTE71  48          BNE 48          IBRANCH IF NOT DONE
1838          PTE71  48          CR          ISEND CR
1839          PTE71  48          DEC R2          IDONE OVERPRINTS?
1840          PTE71  35          BNE 35          INO, CONTINUE
1841          PTE71  48          LF          ISEND LF
1842          PTE71  48          INC REPT          ISET NEXT CHAR
1843          PTE71  48          CMP #177,REPT          IDONE CHAR SET?
1844          PTE71  48          BNE 15          INO, CONTINUE
1845          PTE71  48          INC PASCNT          INCREMENT PASS COUNT
1846          PTE71  48          MOV #P1MES,R0          ISET MESSAGE ADDRESS
1847          PTE71  48          MOV PASCNT,R1          I# TO CONVERT
1848          PTE71  48          MOV #4,R2          I# DIGITS
1849          PTE71  48          BTDASC          ICONVERT PASS COUNT TO ASCII
1850          PTE71  48          TYPEN          ITYPE PASS COUNT
1851          PTE71  48          ENDPAS          |
1852          PTE71  48          CHAIN          IREPEAT TEST
1853          PTE71  48          BR          PTE7D
1854          PTE71  48          BR          PTE7D
1855          PASCNT1 0
  
```

```

1856          |SBTTL ECHO TESTS
1857          |
1858          |
1859          |
1860          |
1861          |
1862          |
1863          |
1864          |
1865          |XXXXXXXXXX
1866          |
1867          |E020= CHARACTER ECHO TEST-- ALL PRINTABLE AND
1868          | NON-PRINTING CHARACTERS TYPED ON THE KEYBOARD
1869          | ARE USED TO DRIVE THE PRINTER, ONE CHARACTER AT
1870          | A TIME. A "RUBOUT" WILL CAUSE THE TEST TO BE
1871          | TERMINATED.
1872          |
1873          |XXXXXXXXXX
1874          |E0201 20          ITEST NUMBER
1875          |E0201 20          E0201          INEXT TEST
1876          |E0201 20          PRVHDR          IPRINT TEST HEADER
1877          |E0201 15          READ          IGO WAIT FOR KEYBOARD INPUT
1878          |E0201 15          MOV #3B,,R0          IDELAY FOR HALF DUPLEX
1879          |E0201 15          DELAY          |
1880          |E0201 15          MOV TEMPCH,R0          IGET CHAR
1881          |E0201 15          CMP #177,R0          ICHECK IF RUBOUT
1882          |E0201 15          BEQ 25          IBRANCH IF YES
1883          |E0201 15          ECHO          INO, CHECK PRINTER READY
1884          |E0201 25          BR          15          |
1885          |E0201 25          TYPEN          IPRINT TERMINATION MESSAGE
1886          |E0201 25          ECHOEND          |
1887          |E0201 25          CHAIN          ICHAIN TO NEXT TEST
1888          |E0201 25          BR          15          IREPEAT TEST
  
```

```

1888
1889
1890
1891
1892
1893
1894
1895
1896
1897
1898 011022 000021
1899 011024 011074
1900 011026 104012
1901 011030 012737 000060 001114
1902 011036 013737 001112 001122
1903 011044 013700 001114
1904 011050 104011
1905 011052 005337 001122
1906 011056 001372
1907 011060 104006
1908 011062 000765
1909
1910 011064 104002
1911 011066 017210
1912 011070 104001
1913 011072 000756

XXXXXXXXXX
;
;E021= LINE ECHO TEST, FAST RATE=. THIS TEST WILL
; CAUSE THE CONTINUAL PRINTING OF "0" AT THE MAXIMUM
; RATE UNTIL EITHER ANOTHER CHARACTER IS SELECTED
; BY PRESSING A KEY ON THE KEYBOARD OR TERMINATION BY THE
; RUBOUT.
;
XXXXXXXXXX
E021: 21 ;TEST NUMBER
      E022 ;NEXT TEST
      PRYHDR ;PRINT TEST HEADER
E021A: MOV #00,REPT ;CHARACTER TO BE REPEATED (0)
      2S) MOV WIDTH,POS1 ;SET CHAR COUNT
      1S) MOV REPT,R0 ;CHAR TO TEMPCH
          PRINTC ;PRINT CHAR
          DEC POS1 ;DECREMENT POSITION COUNTER
          BNE 1S ;CONTINUE
          GRFP ;SEND A CR AND LF
          BR 2S
E021B: TYPEH ;PRINT TERMINATION MESSG
      E0END ;CHAIN TO NEXT TEST
      CHAIN ;REPEAT TEST
      BR E021A
  
```

```

1914
1915
1916
1917
1918
1919
1920
1921
1922 011074 000022
1923 011076 011360
1924 011100 104012
1925 011102 012737 000060 001114
1926 011110 013737 001112 001122
1927 011116 013700 001114
1928 011122 104011
1929 011124 012700 003410
1930 011130 104003
1931 011132 005337 001122
1932 011136 001367
1933 011140 104006
1934 011142 000762
1935
1936 011144 104002
1937 011146 017210
1938 011150 104001
1939 011152 000753

XXXXXXXXXX
;
;E022= LINE ECHO TEST, SLOW RATE= SAME AS E021 EXCEPT
; THAT A DELAY IS INTRODUCED BETWEEN CHARACTERS
; TO PRODUCE AN LCV ACTION
;
XXXXXXXXXX
E022: 22 ;PRINT TEST HEADER
      E023 ;LOAD 0 AS INITIAL CHARACTER
      PRYHDR ;SET CHAR COUNT
E022A: MOV #00,REPT ;READY CHAR TO TEMPCH
      3S) MOV WIDTH,POS1 ;OUTPUT CHAR
      1S) MOV REPT,R0
          PRINTC
          MOV #3410,R0
          DELAY
          DEC POS1 ;DECREMENT POSITION COUNTER
          BNE 1S ;BRANCH IF NOT DONE LINE
          GRFP ;SEND A CR AND LF
          BR 3S
E022B: TYPEH ;PRINT TERMINATION MESSAGE
      E0END ;CHAIN TO NEXT TEST
      CHAIN ;REPEAT TEST
      BR E022A
  
```



```

1940 ;*****
1941 ;
1942 ; THIS FOLLOWING TABLE IS USED BY TEST E023
1943 ;
1944 ;*****
1945
1946 011154 052916 020114 MONICI ,ASCII /NUL /
1947 011160 047523 020110 ,ASCII /SOH /
1948 011164 052123 020130 ,ASCII /STX /
1949 011170 052105 020130 ,ASCII /ETX /
1950 011174 047505 020124 ,ASCII /EOT /
1951 011200 047105 020121 ,ASCII /ENO /
1952 011204 041501 020113 ,ASCII /ACK /
1953 011210 042502 020114 ,ASCII /BEL /
1954 011214 051502 020040 ,ASCII /BS /
1955 011220 052110 020040 ,ASCII /HT /
1956 011224 043114 020040 ,ASCII /LF /
1957 011230 052126 020040 ,ASCII /VT /
1958 011234 043106 020040 ,ASCII /FF /
1959 011240 051103 020040 ,ASCII /CR /
1960 011244 047523 020040 ,ASCII /SO /
1961 011250 044523 020040 ,ASCII /SI /
1962 011254 046104 020105 ,ASCII /DLE /
1963 011260 041504 020061 ,ASCII /DC1 /
1964 011264 041504 020062 ,ASCII /DC2 /
1965 011270 041504 020063 ,ASCII /DC3 /
1966 011274 041504 020064 ,ASCII /DC4 /
1967 011300 040516 020113 ,ASCII /NAK /
1968 011304 054523 020116 ,ASCII /SYN /
1969 011310 052105 020102 ,ASCII /ETB /
1970 011314 040503 020116 ,ASCII /CAN /
1971 011320 046505 020040 ,ASCII /EM /
1972 011324 052523 020102 ,ASCII /SUB /
1973 011330 051505 020103 ,ASCII /ESC /
1974 011334 051506 020040 ,ASCII /FS /
1975 011340 051507 020040 ,ASCII /GS /
1976 011344 051522 020040 ,ASCII /RS /
1977 011350 051525 020040 ,ASCII /US /
1978 011354 050123 020040 ,ASCII /SP /
1979
1980 ,EVEN
    
```

```

1981 ;XXXXXXXXXX
1982 ;
1983 ;E023= CHARACTER CODE TEST= ALL CHARACTERS SELECTED
1984 ; WILL BE ECHOED ALONG WITH ITS OCTAL CODE,
1985 ; A MNEMONIC WILL BE PRINTED INSTEAD OF THE CHARACTER
1986 ; IF IT IS A NON-PRINTING CHARACTER
1987 ; THE PARITY OF THE RECEIVED CODE WILL BE
1988 ; INDICATED AS EITHER EVEN OR ODD,
1989 ;
1990 ;XXXXXXXXXX
1991
1992 011360 000023 E023I 23 ;TEST NUMBER
1993 011362 011702 E024 ;NEXT TEST
1994 011364 104012 PRTTHR ;PRINT TEST HEADER
1995 011366 104013 1S) READ ;GO WAIT FOR CHARACTER
1996 011370 012700 000036 MOV #30,,R0 ;DELAY FOR HALF DUPLEX
1997 011374 104003 DELAY
1998 011376 023727 001124 000041 CMP TEMPCH,#41 ;TEST IF CHAR IS PRINTABLE
1999 011404 103015 BHS 3S ;BRANCH IF IT IS
2000 011406 004737 011342 JSR PC,STRLN ;STORE CODE INTO MESSAGE
2001 011412 013700 001124 MOV TEMPCH,R0 ;GET CODE AGAIN
2002 011416 006300 ASL R0 ;MULT BY 2
2003 011420 006300 ASL R0 ;MULT BY 4
2004 011422 062700 011344 ADD #MONIC,R0 ;ADD ADDR OF MNEMONIC TABLE
2005 011426 004737 011620 JSR PC,MOVNUM ;MOV MNEMONIC TO MESSAGE
2006 011432 104000 2S) TYPE ;TYPE CODE AND MNEMONIC
2007 011434 017237 E023M ;ADDRESS OF MESSAGE
2008 011436 000753 BR ;
2009 011440 023727 001124 000177 3S) CMP TEMPCH,#177 ;GO WAIT FOR NEXT CHARACTER
2010 011446 001421 BEQ 4S ;TEST IF CHAR IS A RUBOUT
2011 011450 012701 011672 MOV #M024,R1 ;BRANCH IF RUBOUT
2012 011454 113721 001124 MOVB TEMPCH,(R1)+
2013 011460 112721 000040 MOVB #40,(R1)+
2014 011464 112721 000040 MOVB #40,(R1)+
2015 011470 112721 000040 MOVB #40,(R1)+
2016 011474 004737 011342 JSR PC,STRLN ;STORE CODE INTO MESSAGE
2017 011500 012700 011672 MOV #M024,R0 ;ADDR OF CHAR INTO R0
2018 011504 004737 011620 JSR PC,MOVNUM ;MOVE CHAR INTO MESSAGE
2019 011510 000750 BR ;
2020 011512 004737 011342 4S) JSR PC,STRLN ;TYPE MESSAGE
2021 011516 012700 ;RUBOUT, CONVERT AND STOR CODE
2022 011522 004737 011672 MOV #M025,R0 ;ADDR OF DEL INTO R0
2023 011526 104000 JSR PC,MOVNUM ;MOVE DEL INTO MESSAGE
2024 011530 017237 TYPE ;TYPE MESSAGE
2025 011532 104002 E023M ;ADDR OF MESSAGE
2026 011534 017210 TYPEM
2027 011536 104001 E023D
2028 011540 000712 CHAIN 1S ;CHAIN TO NEXT TEST
    
```

2029	011542	012702	000003	STRLN1	MOV	#3,R2	ICOUNT OP 3 TO R2
2030	011546	012701	017241		MOV	#LINES,R1	IADDR OF MESS TO R1
2031	011592	062701	000003		ADD	#3,R1	IPOINT TO LAST SPACE IN MESS
2032	011596	013700	001130	1S)	MOV	POHAR,R0	IMOVE OCTAL CODE TO R0
2033	011562	042700	177770		BIC	#177770,R0	ISAVE LS OCTAL CHAR.
2034	011566	062700	000000		ADD	#60,R0	IMAKE ASCII
2035	011572	110041			MOV	R0,(R1)	IMOVE INTO MESS
2036	011574	005302			DEC	R2	IDECREMENT CHAR COUNTER
2037	011576	001407			BEQ	Z0	IBRANCH IF 3 MOVED
2038	011600	006237	001130		ASR	POHAR	INOT THREE, SHIFT NEXT OCTAL
2039	011604	006237	001130		ASR	POHAR	ICHARACTER TO THE RIGHT
2040	011610	006237	001130		ASR	POHAR	
2041	011614	000760			BR	1S	ICONVERT AND STORE NEXT CHAR.
2042	011616	000207		2S)	RTB	PC	IRETURN TO CALLER
2043							
2044							
2045	011620	012701	017240	MOVNUM1	MOV	#LINES,R1	IADDR OF LINES IN R1
2046	011624	012702	000004		MOV	#4,R0	ICOUNT OP 3 TO R2
2047	011630	112021		1S)	MOV	(R0),(R1)	IMOV 3 CHARS TO MESS AREA
2048	011632	005302			DEC	R2	IDECREMENT COUNTER
2049	011634	001375			BNE	1S	IBRANCH IF NOT ALL DONE
2050	011636	105737	001126		TSTB	PARITY	ITEST PARITY FLAG
2051	011642	001003			BNE	Z0	IBRANCH IF ODD PARITY
2052	011644	012700	017302		MOV	#EVEN,R0	IBET MESSAGE FOR EVEN PARITY
2053	011650	000402			BR	Z0	ICONTINUE
2054	011692	012700	017306	2S)	MOV	#ODD,R0	IBET MESSAGE FOR ODD PARITY
2055	011696	012702	000004	3S)	MOV	#4,R2	IBET WORD COUNT
2056	011662	112021		4S)	MOV	(R0),(R1)	IMOVE CHAR TO MESSAGE
2057	011664	005302			DEC	R2	IDEC CHAR COUNT
2058	011666	001375			BNE	Z0	ICONTINUE
2059	011670	000207			RTB	PC	IRETURN
2060							
2061	011672	020040	020040	MOB41	.ASCII / /		ISAVE CHARACTER CODE
2062							
2063					.EVEN		
2064							
2065	011676	042504	020114	MOB51	.ASCII /DEL /		IMNEMONIC FOR RUBOUT
2066							
2067					.EVEN		

2068							
2069							
2070							
2071							
2072							
2073							
2074							
2075							
2076							
2077							
2078							
2079							
2080							
2081							
2082							
2083	011702	000024					
2084	011704	012466		E0841	24		ITEST NUMBER
2085	011706	104012			E085		INEXT TEST
2086	011710	005001			PRTHDR		IPRINT TEST HEADER
2087	011712	012702	012064	E08481	CLR	R1	ICLEAR CHARACTER COUNT
2088	011716	104013			MOV	#BUFR,R2	IADDRESS OF BUFFER TO R2
2089	011720	012700	000036	1S)	READ		IWAIT FOR INPUT
2090	011724	104003			MOV	#30,R0	IDELAY FOR HALF DUPLEX
2091	011726	022737	000177	001124	DELAY		
2092	011734	001447			CMF	#17,TEMPCH	ITEST IF RUBOUT
2093	011736	022737	000003	001124	BEQ	TERM	IBRANCH IF RUBOUT
2094	011744	001416			CMF	#3,TEMPCH	ITEST IF CNTL-C
2095	011746	020127	000400		BEQ	OUTPUT	IBRANCH IF CNTL-C
2096	011752	103361			CMF	R1,#256,	IFYES, CHECK IF CHAR CNT IS EQ, CT 256
2097	011754	013700	001124		BWIS	Z0	IBRANCH IF YES, IGNORE CHAR
2098	011760	110022			MOV	TEMPCH,R0	IGET CHAR
2099	011762	005201			MOV	R0,(R2)	ISTORE CHAR INTO BUFFER
2100	011764	104021			INC	R1	INCREMENT CHARACTER COUNT
2101	011766	000753			ECHO		IOUTPUT CHAR
2102					BR	1S	IOO WAIT FOR NEXT CHAR
2103	011770	005037	001124	E084R1	CLR	TEMPCH	ICLEAR CONTROL-C FROM BUFFER
2104	011774	104006			ORLF		ICONTROL-C RETURN FROM PRINT ROUTINE
2105	011776	104010			LF		
2106	012000	000743			BR	E084B	

```

2107      |*****
2108      |
2109      |SECTION TO OUTPUT CONTINUOUS STRING
2110      |
2111      |*****
2112
2113 012002 020227 012064  OUTPUTI  CMP      R2,#BUFR      (CHECK IF POINTER IS AT START OF BUFFER
2114 012006 001405          BEQ      15          (YES, DON'T STORE %C IN TABLE
2115 012010 113722          MOVVB   TEMPCH,(R2)+ (STORE %C IN TABLE
2116 012014 005037          CLR     TEMPCH      (CLEAR CONTROL=C FROM BUFFER
2117 012020 104006          CRLF   (SEND A CR LF
2118 012022 212702          MOV     #BUFR,R2    (BUFFER ADDRESS TO R2
2119 012026 005037          CLR     TEMPCH      (CLEAR CONTROL=C
2120 012032 121227          CMPB   (R2),#3     (FIRST CHAR IN TABLE %C ?
2121 012036 201724          BEQ    EQ04B       (YES, GO LOOK FOR MORE INPUT
2122 012040 112200          MOVVB  (R2)+,R0    (GET CHAR
2123 012042 020027          CMP    R0,#3       (DONE STRING?
2124 012046 001765          BEQ    15          (YES, RESTART STRING
2125 012050 104011          PRINTC (OUTPUT CHAR
2126 012052 000772          BR     25
2127
2128 012054 104002          TERMI   TYPEH      (OUTPUT TERMINATION MESSAGE
2129 012056 017210          EOEEND
2130 012060 104001          CHAIN   (CHAIN TO NEXT TEST
2131 012062 000712          BR     EQ04B       (REPEAT TEST
2132
2133 012064 000003          BUPRI   3          (INITIALIZE FIRST CHAR AS CNTL=C IN TABLE
2134 012066 000400          ,BLKB  256,       (256 CHARACTER BUFFER
    
```

```

2135      |XXXXXXXXXXXX
2136      |
2137      |EQ25== BELL ECHO TEST== A MESSAGE IS PRINTED AND
2138      | THE TEST WAITS FOR SOME PRINTABLE CHARACTER
2139      | TO BE SELECTED ON THE KEYBOARD (07048); THIS
2140      | TEST IS VALID ONLY IF THE PAPER WIDTH IS GT 64
2141      | COLUMNS, IF LT 64 COLUMNS AN ILLEGAL BELL TEST
2142      | MESSAGE IS PRINTED;
2143      |
2144      |XXXXXXXXXXXX
2145
2146 012466 000025          EQ25I   25          (TEST NUMBER
2147 012470 010756          E020   (NEXT TEST HEADER
2148 012472 104012          PRTHDR (PRINT TEST HEADER
2149 012474 023727          CMP    WIDTH,#101  (TEST IF COLUMN COUNT IS EQ,GT 64
2150 012502 103424          BLO    45          (BRANCH IF NOT
2151 012504 104002          TYPEH  (TYPE TEST MESS
2152 012506 017063          E025MA (ON ALL TERMS
2153 012510 000402          BR     35          (WAIT FOR CHAR
2154 012512 104000          TYPE  (TYPE TEST MESS ON TERM
2155 012514 017063          E025MA (CHARACTER WAS RECEIVED ON
2156 012516 104013          READ   (WAIT FOR OPERATOR RESPONSE
2157 012520 012700          MOV    #30,,R0    (DELAY FOR HALF DUPLEX
2158 012524 104003          DELAY
2159 012526 113700          MOVVB  TEMPCH,R0  (CHAR TO R0
2160 012532 020027          CMP    R0,#40     (TEST IF PRINTABLE
2161 012536 103767          BLO    35          (BRANCH IF NON-PRINTABLE
2162 012540 022700          CMP    #177,R0    (CHECK IF CHAR IS RUBOUT
2163 012544 001405          BEQ    55          (BRANCH IF YES
2164 012546 104021          ECHO   (PRINT CHAR
2165 012550 104007          SCRLF  (SEND A CR LF
2166 012552 000757          BR     25          (REPEAT
2167 012554 104002          45)   TYPEH      (TYPE ERROR MESSAGE
2168 012556 017163          E025MB
2169 012560 104002          55)   TYPEH      (PRINT TERMINATION
2170 012562 017210          EOEEND
2171 012564 104001          CHAIN   (EXIT TO NEXT TEST
2172 012566 000742          BR     15          (REPEAT TEST
    
```

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2173          ,SBTTL OPTION TESTS
2174          |XXXXXXXXXXXXXXXXX
2175          |
2176          |TEST30 =      SECONDARY CHARACTER SET OPTION
2177          |
2178          |XXXXXXXXXXXXXXXXX
2179
2180
2181 012570 000030      TEST30| 30
2182 012572 012570      TEST30
2183 012574 104012      PRTHDR          ;PRINT TEST HEADER
2184 012576 F12704      MOV          #0,R4          ;SET PASS COUNT
2185 012602 104002 012666 25| TYPEM, 100      ;INDICATE PRIMARY SET AND SEND "SI"
2186 012606 012702 000177      MOV          #177,R2      ;SET END CHAR
2187 012612 004737 012700      JSR          PC,300      ;PRINT CHAR SET
2188 012616 104002 012673      TYPEM, 200      ;INDICATE SECONDARY CHAR SET
2189 012622 C13702 012750      MOV          T300C,R2      ;SET CHAR SET LIMIT
2190 012626 020227 000377      CMP          R2,#377      ;USING 8 BITS INSTEAD OF 81?
2191 012632 001403      BEQ          30          ;BRANCH IF YES
2192 012634 012700 000016      MOV          #16,R0      ;SET 80 CHAR
2193 012640 104011      PRINTC          ;SEND IT
2194 012642 004737 012700 35| JSR          PC,300      ;PRINT CHAR SET
2195 012646 104006      CRLF          ;BLANK LINE
2196 012650 005304      DEC          R4          ;DEC PASS COUNT
2197 012652 001353      BNE          25          ;FINISH TEST
2198 012654 012700 000017      MOV          #17,R0      ;SET 81 CHAR AGAIN
2199 012660 104011      PRINTC          ;MAKE SURE ON PRIMARY CHAR SET
2200 012662 104001      CHAIN          ;NEXT TEST SELECTION OR LOOP
2201 012664 000741      BR          TEST30      ;LOOP ON TEST
2202
2203 012666 021417 036461 000 100| ,ASCII <17>#16/
2204 012673 017 031043 000075 200| ,ASCII <17>#20/
2205
2206
2207 012700 010201 300| MOV          R2,R1          ;GET LIMIT CHAR
2208 012702 042701 177537      BIC          #177537,R1      ;GET STARTY CHAR
2209 012706 013703 001112      MOV          WIDTH,R3      ;GET COLUMN COUNT
2210 012712 162703 000003      SUB          #3,R3          ;SUBTRACT 3
2211 012716 010100 310| MOV          R1,R0          ;GET CHAR
2212 012720 104011      PRINTC          ;PRINT IT
2213 012722 009201      INC          R1          ;NEXT CHAR
2214 012724 020102      CMP          R1,R2          ;DONE CHAR SET?
2215 012726 001406      BEQ          320          ;EXIT IF DONE
2216 012730 005303      DEC          R3          ;DEC COLUMN COUNT
2217 012732 001371      BNE          310          ;FINISH LINE
2218 012734 104006      CRLF          ;SEND CR-LF WHEN DONE LINE
2219 012736 013703 001112      MOV          WIDTH,R3      ;RESET COLUMN COUNT
2220 012742 000765      BR          310          ;CONTINUE
2221 012744 104006 320| CRLF          ;SEND CR-LF
2222 012746 000207      RTS          PC          ;RETURN
2223
2224 012750 000177      T300C| ,WORD 177          ;CHAR SET LIMIT
2225          ;CHANGE TO 377 WHEN USING 8 BIT CHAR SELECTION

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2226          |XXXXXXXXXXXXXXXXX
2227          |
2228          |TEST31 =      SELECTIVE ADDRESSING OPTION
2229          |
2230          |XXXXXXXXXXXXXXXXX
2231
2232 012752 000031      TEST31| 31
2233 012754 012752      TEST31
2234 012756 104006      CRLF          ;SEND CRLF
2235 012760 013700 013542      MOV          340,R0          ;SET EOT CHAR
2236 012764 104011      PRINTC          ;SEND IT
2237 012766 104002 013372      TYPEM, 100      ;TRY PRINTING ERROR MSG
2238 012772 012700 000007      MOV          #7,R0          ;SET SEL CHAR
2239 012776 104011      PRINTC          ;SEND IT
2240 013000 012700 000002      MOV          #2,R0          ;SET STX CHAR
2241 013004 104011      PRINTC          ;SEND IT
2242 013006 104012      PRTHDR          ;PRINT TEST HEADER ON ALL TERMINALS
2243 013010 013700 013542      MOV          340,R0          ;SET EOT CODE
2244 013014 104011      PRINTC          ;SEND IT
2245 013016 012700 000002      MOV          #2,R0          ;SET STX CODE
2246 013022 104011      PRINTC          ;SEND IT
2247 013024 104002 013372      TYPEM, 100      ;TRY PRINT ERROR MSG
2248 013030 012703 013520      MOV          #300,R3      ;SET TABLE POINTER
2249 013034 005713 15| TST          (R3)          ;CHECK TABLE POINTER
2250 013036 001416      BEQ          20          ;NEXT PORTION OF TEST IF DONE
2251 013040 013700 013542      MOV          340,R0          ;SEND EOT CHAR
2252 013044 104011      PRINTC          ;SEND EOT CHAR
2253 013046 011300      MOV          (R3),R0      ;SEND GROUP SELECT CHAR
2254 013050 104011      PRINTC          ;SEND IT
2255 013052 012700 000002      MOV          #2,R0          ;SEND STX CHAR
2256 013056 104011      PRINTC          ;SEND STX CHAR
2257 013060 104002 013436      TYPEM, 140          ;TYPE MSG
2258 013064 012300      MOV          (R3)+,R0      ;TYPE SELECT CHAR FOR MSG
2259 013066 104011      PRINTC          ;SEND SELECT CHAR FOR MSG
2260 013070 104006      CRLF          ;CR-LF
2261 013072 000760      BR          15          ;CONTINUE = NEXT SELECT CHAR
2262 013074 012703 013546 25| MOV          #400,R3      ;SET TABLE ADR
2263 013100 005713 35| TST          (R3)          ;CHECK SELECT CHAR
2264 013102 001517      BEQ          40          ;CONTINUE TEST
2265 013104 013700 013542      MOV          340,R0          ;SEND EOT CHAR
2266 013110 104011      PRINTC          ;ALL TERMS OFF
2267 013112 011300      MOV          (R3),R0      ;GET UNIQUE SELECT CHAR
2268 013114 104011      PRINTC          ;SEND IT = THAT TERM ON
2269 013116 104002 013372      TYPEM, 100      ;TRY PRINTING ERROR MSG
2270 013122 012700 000002      MOV          #2,R0          ;SEND STX
2271 013126 104011      PRINTC          ;SEND STX
2272 013130 104002 013444      TYPEM, 150          ;TYPE SELECT CHAR MSG
2273 013134 011300      MOV          (R3),R0      ;PRINT SELECT CHAR FOR MSG
2274 013136 104011      PRINTC          ;SEND SELECT CHAR FOR MSG
2275 013140 104006      CRLF          ;SEND CR-LF
2276 013142 104002 013463      TYPEM, 200          ;PRINT MSG
2277 013146 104013      READ          ;READ CHAR FROM SELECTED TERM
2278 013150 012700 000036      MOV          #30,,R0      ;DELAY FOR HALF DUPLEX
2279 013154 104003      DELAY          ;DELAY FOR HALF DUPLEX

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2280	013156	022737	000177	001124	CMR	#177,TEMPCH	ICHECK CHAR
2281	013164	001013			BNE	53	ICEXIT IF RUBOUT
2282	013166	013700	013542		MOV	348,R0	IENABLE ALL TERMINALS
2283	013172	104011			PRINC		
2284	013174	012700	000007		MOV	#7,R0	
2285	013200	104011			PRINC		
2286	013202	012700	000002		MOV	#2,R0	
2287	013206	104011			PRINC		
2288	013210	000137	002450		JMP	TTYLN	IGO TO KYBD CONTROL
2289	013214	013700	001124	55)	MOV	TEMPCH,R0	IGET CHAR
2290	013220	104021			ECHO		IECHO CHAR
2291	013222	104006			ORLF		ISEND CR-LF
2292	013224	013700	013542		MOV	348,R0	ISEND EOT CHAR
2293	013230	104011			PRINC		
2294	013232	013700	013544		MOV	350,R0	ISEND DUMMY SELECT CHAR
2295	013236	104011			PRINC		
2296	013240	012700	000002		MOV	#2,R0	ISEND STX
2297	013244	104011			PRINC		
2298	013246	104002	013372		TYPEH,	100	ITRY PRINTING ERROR MESSAGE
2299	013252	012700	000003		MOV	#3,R0	ISEND ETX
2300	013256	104011			PRINC		
2301	013260	011300			MOV	(R0),R0	ISEND UNIQUE SELECT CHAR
2302	013262	104011			PRINC		
2303	013264	012700	000002		MOV	#2,R0	ISEND STX
2304	013270	104011			PRINC		
2305	013272	104002	013444		TYPEH,	150	IPRINT SELECT MSG ON SELECTED TERMINAL
2306	013276	011300			MOV	(R0)+,R0	IPRINT SELECT CHAR FOR MSG
2307	013300	104011			PRINC		
2308	013302	104006			ORLF		ISEND CR-LF
2309	013304	012700	000003		MOV	#3,R0	ISEND ETX
2310	013310	104011			PRINC		
2311	013312	012700	013544		MOV	#300,R0	ISEND DUMMY SELECT CHAR
2312	013316	104011			PRINC		
2313	013320	012700	000002		MOV	#2,R0	ISEND STX
2314	013324	104011			PRINC		
2315	013326	104002	013444		TYPEH,	150	IPRINT MSG ON SELECTED TERM
2316	013332	012300			MOV	(R0)+,R0	IPRINT SELECT CHAR FOR MSG
2317	013334	104011			PRINC		
2318	013336	104006			ORLF		ISEND CR-LF
2319	013340	000007			BR	30	IGCONTINUE
2320	013342	013700	013542	45)	MOV	348,R0	IENABLE ALL LINES
2321	013346	104011			PRINC		IBEFORE EXITING TEST
2322	013350	012700	000007		MOV	#7,R0	
2323	013354	104011			PRINC		
2324	013356	012700	000002		MOV	#2,R0	
2325	013362	104011			PRINC		
2326	013364	104001			CHAIN		ICHAIN TO NEXT TEST OR LOOP ON TEST
2327	013366	000137	012752		JMP	TEST31	ILOOP ON TEST

2328	013372	051105	047522	026122	100)	.ASCIZ	/ERROR, ALL TERMINALS SHOULD BE OFF/<ACRLF>
2329	013400	040440	046114	052040			
2330	013406	051105	044515	040516			
2331	013414	051514	051440	047510			
2332	013422	046125	020104	042502			
2333	013430	047440	043106	000200			
2334	013436	051107	052517	020120	140)	.ASCII	/GROUP /
2335	013444	042523	042514	052103	150)	.ASCIZ	/SELECT CHAR # /
2336	013452	041440	040510	020122			
2337	013460	020075	000				
2338	013463	124	050131	020105	200)	.ASCIZ	/TYPE ANY PRINTABLE CHAR ';; /
2339	013470	047101	020131	051120			
2340	013476	047111	040524	046102			
2341	013504	020105	044103	051101			
2342	013512	027040	027056	000040			
2343						.EVEN	
2344							
2345	013520	000107			300)	107	IGROUP SELECT CHAR TABLE
2346	013522	000000				0	IFIRST ZERO # END OF TABLE
2347	013524	000000				0	
2348	013526	000000				0	
2349	013530	000000				0	
2350	013532	000000				0	
2351	013534	000000				0	
2352	013536	000000				0	
2353	013540	000000				0	
2354							
2355	013542	000004			340)	004	IOSELECT CHAR = "EOT"
2356							
2357	013544	000045			350)	045	IDUMMY SELECT CHARACTER,
2358							IF "X" IS USED AS A UNIQUE OR GROUP SELECT
2359							ICHAARACTER, REPLACE WITH ANY UNUSED SELECT
2360							ICHAARACTER CODE,
2361							
2362	013546	000125			400)	125	IUNIQUE SELECT CHAR TABLE
2363	013550	000000				0	IFIRST ZERO # END OF TABLE
2364	013552	000000				0	
2365	013554	000000				0	
2366	013556	000000				0	
2367	013560	000000				0	
2368	013562	000000				0	
2369	013564	000000				0	
2370	013566	000000				0	

```

2371 IXXXXXXXXXXXXXXXXX
2372 I
2373 ITEST32 = AUTO ANSWER BACK OPTION
2374 I
2375 IXXXXXXXXXXXXXXXXX
2376
2377 013970 000032 TEST32| 32 TEST32
2378 013972 013570 PRTHDR
2379 013974 104012 #5,R0 ;PRINT TEST HEADER
2380 013976 012700 000005 MOV #5,R0 ;SEND ENG CHAR
2381 013982 104921 ECHO
2382 013984 004737 013634 JSR PC,105 ;READ AND PRINT MSG
2383 013988 104002 013722 TYPEM, 208 ;TYPE INSTRUCTIONS
2384 013994 004737 013634 JSR PC,105 ;READ AND PRINT MSG
2385 013998 104002 013747 TYPEM, 308 ;TYPE INSTRUCTIONS
2386 013999 004737 013634 JSR PC,105 ;READ AND PRINT MSG
2387 013999 104001 25| CHAIN BR TEST32 ;CHAIN TO NEXT TEST
2388 013999 000756 ;LOOP ON TEST
2389
2390 013634 012702 013773 105| MOV #970,R2 ;SET TABLE ADR
2391 013640 104013 READ ;READ FIRST CHAR
2392 013642 023727 001124 000177 65| CMP TEMPCH,#177- ;CHAR = RUBOUT?
2393 013650 001002 BNE 35 ;CONTINUE IF NOT RUBOUT
2394 013652 000137 002450 JMP TTY1H ;GO TO KYBD CONTROL
2395 013656 113722 001124 35| MOVB TEMPCH,(R2)+ ;STORE CHAR
2396 013662 012703 000002 MOV #0,R0 ;SET DELAY COUNT
2397 013666 013701 001102 45| MOV TIMER,R1
2398 013672 104922 55| INVDY ;ANY INPUT?
2399 013674 000401 BR 65 ;NO, WAIT FOR CHAR
2400 013676 000761 BR 65 ;YES, READ CHAR
2401 013700 003301 65| DEC R1 ;DELAY WHILE WAITING FOR CHAR
2402 013702 001373 BNE 55
2403 013704 003303 DEC R3
2404 013706 001367 BNE 45
2405 013710 105012 75| CLR (R0) ;SET NULL AS TERMINATOR IN TABLE
2406 013712 104000 TYPE, STORE=I ;TYPE MSG ON TERMINAL RECEIVED ON
2407 013716 104007 SCRLF ;SEND CR-LF
2408 013720 000207 RTS PC ;RETURN TO TEST
2409
2410 013722 042504 051120 051505 205| .ASCIE /DEPRESS HERE IS KEY/<ACRLF>
2411 013730 020123 042510 042522
2412 013736 044440 020123 042513
2413 013744 100131 000
2414 013747 104 050105 042522 305| .ASCIE /DEPRESS CONTROL-E/<ACRLF>
2415 013754 051523 041440 047117
2416 013762 051124 046117 042495
2417 013770 000200
2418 013772 200
2419
2420 013773 000025 STOREI ,BLKB 21| ;20 CHAR + TERMINATOR BUFFER
2421
2422 .EVEN
    
```

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2423 IXXXXXXXXXXXXXXXXX
2424 I
2425 ITEST33 = FORM FEED OPTION
2426 I
2427 IXXXXXXXXXXXXXXXXX
2428
2429 014020 000033 TEST33| 33 TEST33
2430 014022 014020 PRTHDR
2431 014024 104012 #00,R0 ;PRINT TEST HEADER
2432 014026 012705 014472 MOV #00,R0 ;SET TABLE POINTER
2433 014032 012704 014450 MOV #00,R4 ;SET TABLE POINTER
2434 014036 104002 014301 TYPEM, 408 ;PRINT INSTR
2435 014042 012701 000020 MOV #16,R1 ;SET LF COUNT TO 16
2436 014046 104013 READ ;WAIT FOR KYBD FLAG
2437 014050 012700 000036 MOV #30,R0 ;DELAY FOR HALF DUPLEX
2438 014054 104003 DELAY
2439 014056 022737 000177 001124 135| CMP #177,TEMPCH ;CHECK FOR RUBOUT
2440 014064 001002 BNE 135 ;EXIT IF RUBOUT
2441 014066 000137 002450 JMP TTY1H ;GO TO KYBD CONTROL
2442 014072 104014 65| CR ;SEND CR
2443 014074 104010 65| LF ;SEND LF
2444 014076 005301 DEC R1 ;DEC COUNT
2445 014100 001375 BNE 65 ;CONTINUE
2446 014102 012700 000014 MOV #14,R0 ;SET FF
2447 014106 104011 PRINTC ;SEND IT
2448 014110 113701 014456 MOVB 000,R1 ;SET FILL COUNT
2449 014114 005000 CLN R0 ;SET NULL
2450 014116 104011 PRINTC ;SEND FILLS
2451 014120 005301 DEC R1 ;DEC FILL COUNT
2452 014122 001374 BNE 95 ;CONTINUE
2453 014124 104002 014417 TYPEM, 498 ;TYPE MESSAGE
2454 014130 010537 014210 55| MOV R0,25 ;SET MSG
2455 014134 104013 READ ;WAIT FOR KYBD FLAG
2456 014136 012700 000036 MOV #30,R0 ;DELAY FOR HALF DUPLEX
2457 014142 104003 DELAY
2458 014144 022737 000177 001124 135| CMP #177,TEMPCH ;CHECK IF RUBOUT
2459 014152 001002 BNE 135 ;EXIT IF RUBOUT
2460 014154 000137 002450 JMP TTY1H ;GO TO KYBD CONTROL
2461 014160 104014 155| CR ;SEND CR
2462 014162 012700 000014 MOV #14,R0 ;SEND FF
2463 014166 104011 PRINTC ;SEND IT
2464 014170 112401 MOVB (R4)+,R1 ;GET FILL COUNT
2465 014172 005000 CLN R0 ;SET NULL
2466 014174 104011 PRINTC ;SEND FILLS
2467 014176 005301 DEC R1 ;CONTINUE
2468 014200 001374 BNE 115 ;FINISH NULLS
2469 014202 104002 014254 125| TYPEM, 105 ;PRINT MSG
2470 014206 104002 TYPEM, 0
2471 014210 000000 ,WORD 205
2472 014212 104002 TYPEM, 205
2473 014216 022525 35| CMP (R5)+,(R5)+ ;INC TABLE POINTER
2474 014220 010537 014220 MOV R0,45 ;SET MSG
2475 014224 104002 TYPEM, 105 ;PRINT MSG
2476 014226 000000 ,WORD 0
    
```

2477	014230	104002	014271		TYRPH, 308	
2478	014234	104002	014254		TYRPH, 108	
2479	014240	009765	000004		TSY 4(R5)	!DONE TEST?
2480	014244	001331			BNE 95	!NO, CONTINUE
2481	014246	104006			ORLF	!YES, SEND CR-LF
2482	014250	104001			CHAIN	!SELECT TEST OR LOOP
2483	014252	000662			BR TEST33	!LOOP ON TEST
2484						
2485	014254	026455	000055	1001	ASCIE /0000/	
2486	014262	020042	043106	2051	ASCIE /" FF/457/ /	
2487	014270	000				
2488	014271	042	047040	3091	ASCIE /" NEXT /	
2489	014276	020124	000			
2490	014301	104	050105	042522	4091	ASCII /DEPRESS FORMFEED RESET SWITCH/<ACRLF>/AFTER EACH SWITCH SETTING/<ACRLF>
2491	014306	051523	043040	051117		
2492	014314	043115	042505	020104		
2493	014322	042522	042523	020124		
2494	014330	053523	052111	044103		
2495	014336	040600	052106	051105		
2496	014344	042440	041501	020110		
2497	014352	053523	052111	044103		
2498	014360	051440	052109	044524		
2499	014366	043516	200			
2500	014371	124	050131	020105		
2501	014376	050123	041501	020105		
2502	014404	044127	047105	051040		
2503	014412	040505	054504	200		
2504	014417	055	026455	020055	4501	ASCIE /000 SET 3 INCH FORMFEED 000/
2505	014424	042523	020124	031440		
2506	014432	044440	041516	020110		
2507	014440	047506	046522	042506		
2508	014446	042105	026440	026455		
2509	014454	000055				
2510	014456	002	005	010	6001	BYTE 2,5,0,,17',20',26',32',39',50',56',60,
2511	014461	021	024	032		
2512	014464	040	043	062		
2513	014467	070	104			
2514		014472				
2515						
2516	014472	020040	000063	5001	ASCIE / 3/	
2517	014476	027063	000069		ASCIE /3,5/	
2518	014502	020040	000064		ASCIE / 4/	
2519	014506	027065	000069		ASCIE /5,5/	
2520	014512	020040	000066		ASCIE / 6/	
2521	014516	020040	000067		ASCIE / 7/	
2522	014522	020040	000070		ASCIE / 8/	
2523	014526	027070	000065		ASCIE /8,5/	
2524	014532	030440	000061		ASCIE /11/	
2525	014536	030440	000062		ASCIE /12/	
2526	014542	030440	000064		ASCIE /14/	
2527	014546	020040	000040		ASCIE / /	
2528	014552	000000			WORD 0	!END OF TABLE

2529					!XXXXXXXXXXXXXXXXXX	
2530					!	
2531					!TEST34 = HORIZONTAL TAB OPTION	
2532					!	
2533					!XXXXXXXXXXXXXXXXXX	
2534						
2535	014554	000034			TEST34) 34	
2536	014556	014554			TEST34	
2537	014560	104012			PRHOR	
2538	014566	005004			CLR R4	!PRINT TEST HEADER
2539	014564	012737	014756		MOV #168,125+2	!SET TABLE POINTER
2540	014572	013703	001112	251	MOV WIDTH,R3	!RESET JUMP INSTR OR FIRST TIME THRU
2541	014576	012700	000033		MOV #33,R0	!SET COLUMN COUNT
2542	014602	104011			PRINTC	!CLEAR OLD TABS
2543	014604	012700	000062		MOV #62,R0	
2544	014612	104011			PRINTC	
2545	014612	104014			CR	!DO A CARRIAGE RETURN
2546	014614	014601	015046	351	MOV 200(R4),R1	!GET SPACE COUNT FOR TAB
2547	014620	000405			BR 55	!SUBTRACT 1 FOR TAB SET
2548	014622	012700	000040	451	MOV #40,R0	!GET SPACE
2549	014626	104011			PRINTC	!SEND IT
2550	014630	005303			DEC R3	!DEC COLUMN COUNT
2551	014632	001420			BEG 65	!CR IF DONE LINE
2552	014634	005301		551	DEC R1	!DEC SPACE COUNT
2553	014636	01371			BNE 43	!CONTINUE IF NOT DONE
2554	014640	012700	000033		MOV #33,R0	!SEND IT
2555	014644	104011			PRINTC	
2556	014646	012700	000061		MOV #61,R0	!SEND 1 * SET TAB
2557	014652	104011			PRINTC	
2558	014654	012700	000010		MOV #10,R0	!SET BACKSPACE
2559	014660	104011			PRINTC	
2560	014662	012700	000117		MOV #10,R0	!PRINT 0
2561	014666	104011			PRINTC	
2562	014670	005303			DEC R3	!DEC COLUMN COUNT
2563	014672	001390			BNE 35	!CONTINUE IF NOT DONE LINE
2564	014674	104014		651	CR	!SEND CR
2565	014676	013703	001112		MOV WIDTH,R3	!RESET COLUMN COUNT
2566	014702	014601	015046	1751	MOV 200(R4),R1	!RESET COLUMN COUNT FOR TAB
2567	014706	020127	000001		CMP R1,#1	!ADD 1 IF FIRST LINE
2568	014712	005001			BNE 143	
2569	014714	005201			INC R1	
2570	014716	004102	015072	1151	MOV 300(R4),R2	!SET FILL CHAR COUNT
2571	014722	104012			SUB R1,R3	!SUBTRACT TAB FROM COLUMN COUNT
2572	014724	022413			BLT 123	!BRANCH IF TOO MANY COLUMNS
2573	014726	012700	000011		MOV #11,R0	!SET TAB
2574	014732	104011			PRINTC	!SEND IT
2575	014734	005000		1451	CLR R0	!SET NULL CHAR = FILLS
2576	014736	104011			PRINTC	!SEND FILL CHARS
2577	014740	005302			DEC R2	!DEC FILL COUNT
2578	014742	001374			BNE 143	!CONTINUE FILLS
2579	014744	012700	000130		MOV #1X,R0	!SET X CHAR
2580	014750	104011			PRINTC	!SEND IT
2581	014752	000761			BR 113	!CONTINUE
2582	014754	000137	014760	1251	JMP #016X	!SKIP FOLLOWING AFTER FIRST TIME THRU

2583	014760	012737	015000	014756	1691	MOV	#155,128+2	
2584	014766	104014				CR		
2585	014770	012700	000130			MOV	#1X,R0	ISEND OR
2586	014774	104011				PRINTC		IPRINT X
2587	014776	013703	001112			MOV	WIDTH,R3	IRESET COLUMN COUNT
2588	015002	005303				DEC	R3	I SUBTRACT ONE FOR FIRST X CHAR
2589	015004	000736				BR	178	I CONTINUE
2590	015006	104004			1591	ORLF		ISEND OR LFP
2591	015010	005724				TS	(R2)+	I INC TABLE POINTER
2592	015012	016401	015046			MOV	200(R4),R1	I GET COLUMN COUNT FOR TAB
2593	015016	001403				BEQ	130	I EXIT IF DONE TABLE (0)
2594	015020	020137	001112			CMF	R1,WIDTH	I CHECK IF TOO LARGE
2595	015024	101662				BLOS	25	I CONTINUE TEST OK
2596	015026	012700	000033		1391	MOV	#33,R0	ICLEAR ALL TABS BEFORE EXITING
2597	015032	104011				PRINTC		
2598	015034	012700	000062			MOV	#68,R0	
2599	015040	104011				PRINTC		
2600	015042	104001				CHAIN		
2601	015044	000643				BR	TEST34	ISELECT TEST OR LOOP ON TEST
2602								I LOOP ON TEST
2603	015046	000001	000002	000004	2891	WORD	1,2,4,8,,16,,32,,64,,128,,256,,5	
2604	015054	000010	000020	000040				
2605	015062	000100	000200	000400				
2606	015070	000000						
2607	015072	000001	000002	000003	3091	WORD	1,2,3,5,9,,18,,36,,71,,73,,5	
2608	015100	000005	000011	000022				
2609	015106	000044	000107	000111				
2610	015114	000000						

2611						XXXXXXXXXXXXXXXXX		
2612						I		
2613						ITEST35 =	VERTICAL TAB OPTION	
2614						I		
2615						XXXXXXXXXXXXXXXXX		
2616						TEST35I 35		
2617	015116	000035				TEST35		
2618	015120	015116				PRTHDR		
2619	015122	104012				151		IPRINT TEST HEADER
2620	015124	104002				TYPEH		ITYPE INSTR
2621	015126	015437				205		
2622	015130	104013				READ		IWAIT FOR KYBD FLAG
2623	015132	012700	000036			MOV	#30,,R0	IDELAY FOR HALF DUPLEX
2624	015136	104003				DELAY		
2625	015140	022737	000177	001124		CMF	#177,TEMPCH	ICHECK CHAR
2626	015146	001505				BEQ	128	I EXIT TEST IF RUBOUT
2627	015150	005004				CLR	R4	ISET LINE COUNT
2628	015152	012700	000033			MOV	#33,R0	ICLEAR VERTICAL TABS
2629	015156	104011				PRINTC		
2630	015160	012700	000064			MOV	#64,R0	
2631	015164	104011				PRINTC		
2632	015166	104002			251	TYPEH		ITYPE REP LINE
2633	015170	015415				195		
2634	015172	005204				INC	R4	I INC LINE COUNT
2635	015174	020427	000013			CMF	R4,#13	ICHECK IT
2636	015200	003013				BOF	395	IBRANCH IF DONE REP.
2637	015202	010401				MOV	R4,R1	I GET LP COUNT
2638	015204	104010			351	LF		ISEND LF
2639	015206	005301				DEC	R1	IDEC LP COUNT
2640	015210	001375				BNE	35	I CONTINUE
2641	015212	012700	000033			MOV	#33,R0	ISET TAB FOR THIS LINE
2642	015216	104011				PRINTC		
2643	015220	012700	000063			MOV	#63,R0	
2644	015224	104011				PRINTC		
2645	015226	000797				BR	25	I CONTINUE
2646	015230	012700	000014		3591	MOV	#14,R0	ISEND FF
2647	015234	104011				PRINTC		
2648	015236	104002				TYPEH		ITYPE MESSG
2649	015242	015531				305		
2650	015244	104013				READ		IWAIT FOR KYBD FLAG
2651	015244	012700	000036			MOV	#30,,R0	IDELAY FOR HALF DUPLEX
2652	015250	104003				DELAY		
2653	015252	022737	000177	001124		CMF	#177,TEMPCH	ICHECK CHAR
2654	015260	001440				BEQ	129	I EXIT TEST IF RUBOUT
2655	015262	005004				CLR	R4	IRESET LP COUNT
2656	015264	104002			451	TYPEH		ITYPE REP LINE
2657	015266	015414				105		
2658	015270	005204				INC	R4	I INC LINE COUNT
2659	015272	020427	000013			CMF	R4,#13	ICHECK IT
2660	015276	003014				BOF	55	IBRANCH IF DONE
2661	015300	012700	000013			MOV	#13,R0	ISEND TAB
2662	015304	104011				PRINTC		
2663	015306	010401				MOV	R4,R1	ISET FILL COUNT
2664	015310	012701	000020			SUB	#16,,R1	ISUBTRACT 16



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DELDAC,P11 OPTION TESTS
2665 015314 003763
2666 015316 003000
2667 015320 104011
2668 015322 003301
2669 015324 001374
2670 015326 000756
2671 015330 012700 000033
2672 015334 104011
2673 015336 012700 000064
2674 015342 104011
2675 015344 012700 000014
2676 015350 104011
2677 015352 104006
2678 015354 104010
2679 015356 104001
2680 015360 000656
2681 015362 012700 000033
2682 015366 104011
2683 015370 012700 000064
2684 015374 104011
2685 015376 012700 000014
2686 015402 104011
2687 015404 104006
2688 015406 104010
2689 015410 000137 002490
2690
2691 015414 040
2692 015415 055 026495 026495 1081
2693 015422 026495 036074 036074 1581
2694 015430 036074 036074 006474
2695 015436 000
2696 015437 123 052105 030440 2081
2697 015444 020064 047111 044103
2698 015492 043040 051117 020115
2699 015460 042506 042105 200
2700 015465 104 050105 042522
2701 015472 051523 052040 050117
2702 015500 047440 020100 047506
2703 015506 046522 051040 051505
2704 015514 052105 051440 044527
2705 015522 041524 100110 005012
2706 015530 000
2707 015531 001 000401 042522 3081
2708 015536 047515 042520 027440
2709 015544 051040 051505 052105
2710 015552 051040 043105 000
2711 015560

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DELDAC,P11 DH11 VARIABLE PARAMETER TABLE
;SBTTL DH11 VARIABLE PARAMETER TABLE
;
;*****
;
;DH11 PROGRAMMABLE PRAMETER TABLE
;
;THIS TABLE IS PROVIDED TO ALLOW THE DEGREE OF FREEDOM AVAILABLE
;IN THE DH11 PROGRAMMABLE MULTIPLER, THERE ARE 256 ENTRIES, ONE
;FOR EACH OF THE POSSIBLE 16 LINES ON EACH OF THE POSSIBLE 16
;DH11/S, EACH OF THE 256 LINES ARE INITIALIZED AS FOLLOWS:(=16707)
; CHARACTER LENGTH = 8 BITS
; NO. OF STOP BITS = 2
; PARITY GEN. AND DET. NONE
; OPERATING MODE FULL DPLEX
; TRANSMITTER SPEED = 300 BAUD
; RECEIVER SPEED = 300 BAUD
;
;IF ANY LINE SHOULD DIFFER, THE APPROPRIATE ENTRY FOR THE LINE
;SHOULD BE CHANGED BEFORE RUNNING THE DIAGNOSTIC. REFER TO THE LINE
;PARAMETER REGISTER IN THE DH11 PROGRAMMING MANUAL FOR INSTRUCTIONS.
;
;*****
2712
2713
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2737 015560
2738 015560 016707
2739 015562 016707
2740 015564 016707
2741 015566 016707
2742 015570 016707
2743 015572 016707
2744 015574 016707
2745 015576 016707
2746 015600 016707
2747 015602 016707
2748 015604 016707
2749 015606 016707
2750 015610 016707
2751 015612 016707
2752 015614 016707
2753 015616 016707
2754 015620
2755 015620 016707
2756 015622 016707
2757 015624 016707
2758 015626 016707
2759 015630 016707
2760 015632 016707
2761 015634 016707
2762 015636 016707
2763 015640 016707
2764 015642 016707
2765 015644 016707

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2766	019646	016707	WORD	16707
2767	019650	016707	WORD	16707
2768	019652	016707	WORD	16707
2769	019654	016707	WORD	16707
2770	019656	016707	WORD	16707
2771	019660			
		DH(102)		
2772	019660	016707	WORD	16707
2773	019662	016707	WORD	16707
2774	019664	016707	WORD	16707
2775	019666	016707	WORD	16707
2776	019670	016707	WORD	16707
2777	019672	016707	WORD	16707
2778	019674	016707	WORD	16707
2779	019676	016707	WORD	16707
2780	019700	016707	WORD	16707
2781	019702	016707	WORD	16707
2782	019704	016707	WORD	16707
2783	019706	016707	WORD	16707
2784	019710	016707	WORD	16707
2785	019712	016707	WORD	16707
2786	019714	016707	WORD	16707
2787	019716	016707	WORD	16707
2788	019720			
		DH(103)		
2789	019720	016707	WORD	16707
2790	019722	016707	WORD	16707
2791	019724	016707	WORD	16707
2792	019726	016707	WORD	16707
2793	019730	016707	WORD	16707
2794	019732	016707	WORD	16707
2795	019734	016707	WORD	16707
2796	019736	016707	WORD	16707
2797	019740	016707	WORD	16707
2798	019742	016707	WORD	16707
2799	019744	016707	WORD	16707
2800	019746	016707	WORD	16707
2801	019750	016707	WORD	16707
2802	019752	016707	WORD	16707
2803	019754	016707	WORD	16707
2804	019756	016707	WORD	16707
2805	019760			
		DH(104)		
2806	019760	016707	WORD	16707
2807	019762	016707	WORD	16707
2808	019764	016707	WORD	16707
2809	019766	016707	WORD	16707
2810	019770	016707	WORD	16707
2811	019772	016707	WORD	16707
2812	019774	016707	WORD	16707
2813	019776	016707	WORD	16707
2814	010000	016707	WORD	16707
2815	010002	016707	WORD	16707
2816	010004	016707	WORD	16707
2817	010006	016707	WORD	16707
2818	010010	016707	WORD	16707
2819	010012	016707	WORD	16707

2820	010014	016707	WORD	16707
2821	010016	016707	WORD	16707
2822	010020			
		DH(105)		
2823	010020	016707	WORD	16707
2824	010022	016707	WORD	16707
2825	010024	016707	WORD	16707
2826	010026	016707	WORD	16707
2827	010030	016707	WORD	16707
2828	010032	016707	WORD	16707
2829	010034	016707	WORD	16707
2830	010036	016707	WORD	16707
2831	010040	016707	WORD	16707
2832	010042	016707	WORD	16707
2833	010044	016707	WORD	16707
2834	010046	016707	WORD	16707
2835	010050	016707	WORD	16707
2836	010052	016707	WORD	16707
2837	010054	016707	WORD	16707
2838	010056	016707	WORD	16707
2839	010060			
		DH(106)		
2840	010060	016707	WORD	16707
2841	010062	016707	WORD	16707
2842	010064	016707	WORD	16707
2843	010066	016707	WORD	16707
2844	010070	016707	WORD	16707
2845	010072	016707	WORD	16707
2846	010074	016707	WORD	16707
2847	010076	016707	WORD	16707
2848	010100	016707	WORD	16707
2849	010102	016707	WORD	16707
2850	010104	016707	WORD	16707
2851	010106	016707	WORD	16707
2852	010110	016707	WORD	16707
2853	010112	016707	WORD	16707
2854	010114	016707	WORD	16707
2855	010116	016707	WORD	16707
2856	010120			
		DH(107)		
2857	010120	016707	WORD	16707
2858	010122	016707	WORD	16707
2859	010124	016707	WORD	16707
2860	010126	016707	WORD	16707
2861	010130	016707	WORD	16707
2862	010132	016707	WORD	16707
2863	010134	016707	WORD	16707
2864	010136	016707	WORD	16707
2865	010140	016707	WORD	16707
2866	010142	016707	WORD	16707
2867	010144	016707	WORD	16707
2868	010146	016707	WORD	16707
2869	010150	016707	WORD	16707
2870	010152	016707	WORD	16707
2871	010154	016707	WORD	16707
2872	010156	016707	WORD	16707
2873	010160			
		DH(110)		

2874	016160	016707	WORD	16907
2875	016162	016707	WORD	16907
2876	016164	016707	WORD	16907
2877	016166	016707	WORD	16907
2878	016170	016707	WORD	16907
2879	016172	016707	WORD	16907
2880	016174	016707	WORD	16907
2881	016176	016707	WORD	16907
2882	016200	016707	WORD	16907
2883	016202	016707	WORD	16907
2884	016204	016707	WORD	16907
2885	016206	016707	WORD	16907
2886	016210	016707	WORD	16907
2887	016212	016707	WORD	16907
2888	016214	016707	WORD	16907
2889	016216	016707	WORD	16907
2890	016220			
2891	016220	016707	DH1111	WORD 16907
2892	016222	016707	WORD	16907
2893	016224	016707	WORD	16907
2894	016226	016707	WORD	16907
2895	016230	016707	WORD	16907
2896	016232	016707	WORD	16907
2897	016234	016707	WORD	16907
2898	016236	016707	WORD	16907
2899	016240	016707	WORD	16907
2900	016242	016707	WORD	16907
2901	016244	016707	WORD	16907
2902	016246	016707	WORD	16907
2903	016250	016707	WORD	16907
2904	016252	016707	WORD	16907
2905	016254	016707	WORD	16907
2906	016256	016707	WORD	16907
2907	016260			
2908	016260	016707	DH1121	WORD 16907
2909	016262	016707	WORD	16907
2910	016264	016707	WORD	16907
2911	016266	016707	WORD	16907
2912	016270	016707	WORD	16907
2913	016272	016707	WORD	16907
2914	016274	016707	WORD	16907
2915	016276	016707	WORD	16907
2916	016300	016707	WORD	16907
2917	016302	016707	WORD	16907
2918	016304	016707	WORD	16907
2919	016306	016707	WORD	16907
2920	016310	016707	WORD	16907
2921	016312	016707	WORD	16907
2922	016314	016707	WORD	16907
2923	016316	016707	WORD	16907
2924	016320			
2925	016320	016707	DH1131	WORD 16907
2926	016322	016707	WORD	16907
2927	016324	016707	WORD	16907

2928	016326	016707	WORD	16907
2929	016330	016707	WORD	16907
2930	016332	016707	WORD	16907
2931	016334	016707	WORD	16907
2932	016336	016707	WORD	16907
2933	016340	016707	WORD	16907
2934	016342	016707	WORD	16907
2935	016344	016707	WORD	16907
2936	016346	016707	WORD	16907
2937	016350	016707	WORD	16907
2938	016352	016707	WORD	16907
2939	016354	016707	WORD	16907
2940	016356	016707	WORD	16907
2941	016360			
2942	016360	016707	DH1141	WORD 16907
2943	016362	016707	WORD	16907
2944	016364	016707	WORD	16907
2945	016366	016707	WORD	16907
2946	016370	016707	WORD	16907
2947	016372	016707	WORD	16907
2948	016374	016707	WORD	16907
2949	016376	016707	WORD	16907
2950	016400	016707	WORD	16907
2951	016402	016707	WORD	16907
2952	016404	016707	WORD	16907
2953	016406	016707	WORD	16907
2954	016410	016707	WORD	16907
2955	016412	016707	WORD	16907
2956	016414	016707	WORD	16907
2957	016416	016707	WORD	16907
2958	016420			
2959	016420	016707	DH1151	WORD 16907
2960	016422	016707	WORD	16907
2961	016424	016707	WORD	16907
2962	016426	016707	WORD	16907
2963	016430	016707	WORD	16907
2964	016432	016707	WORD	16907
2965	016434	016707	WORD	16907
2966	016436	016707	WORD	16907
2967	016440	016707	WORD	16907
2968	016442	016707	WORD	16907
2969	016444	016707	WORD	16907
2970	016446	016707	WORD	16907
2971	016450	016707	WORD	16907
2972	016452	016707	WORD	16907
2973	016454	016707	WORD	16907
2974	016456	016707	WORD	16907
2975	016460			
2976	016462	016707	DH1161	WORD 16907
2977	016462	016707	WORD	16907
2978	016464	016707	WORD	16907
2979	016466	016707	WORD	16907
2980	016470	016707	WORD	16907
2981	016472	016707	WORD	16907

2982	016474	016707	WORD	16707
2983	016476	016707	WORD	16707
2984	016500	016707	WORD	16707
2985	016502	016707	WORD	16707
2986	016504	016707	WORD	16707
2987	016506	016707	WORD	16707
2988	016510	016707	WORD	16707
2989	016512	016707	WORD	16707
2990	016514	016707	WORD	16707
2991	016516	016707	WORD	16707
2992	016520			
2993	016522	016707	WORD	16707
2994	016524	016707	WORD	16707
2995	016526	016707	WORD	16707
2996	016528	016707	WORD	16707
2997	016530	016707	WORD	16707
2998	016532	016707	WORD	16707
2999	016534	016707	WORD	16707
3000	016536	016707	WORD	16707
3001	016540	016707	WORD	16707
3002	016542	016707	WORD	16707
3003	016544	016707	WORD	16707
3004	016546	016707	WORD	16707
3005	016550	016707	WORD	16707
3006	016552	016707	WORD	16707
3007	016554	016707	WORD	16707
3008	016556	016707	WORD	16707

DHE117)

3029			SBYTL	EXISTING LINE TABLE
3010				
3011				
3012				
3013				
3014				
3015				
3016				
3017				
3018				
3019				
3020				
3021				
3022				
3023				
3024				
3025				
3026				
3027				
3028				
3029				
3030				
3031				
3032				
3033	016562	177777	ELVAD	WORD 177777 IFIRST DH11
3034	016562	177777		
3035	016564	177777		
3036	016566	177777		
3037	016570	177777		
3038	016572	177777		
3039	016574	177777		
3040	016576	177777		
3041	016600	177777		
3042	016602	177777		
3043	016604	177777		
3044	016606	177777		
3045	016610	177777		
3046	016612	177777		
3047	016614	177777		
3048	016616	177777		

\*\*\*\*\*

EXISTING LINE TABLE

THIS IS WORD TABLE, ONE ENTRY FOR EACH OF THE POSSIBLE 16 DH11'S FOR DJ11'S INDICATES WHICH OF THE LINES HAVE A TERMINAL CONNECTED THIS TABLE SHOULD BE INITIALIZED BEFORE RUNNING THE DIAGNOSTIC. BIT 0 IS LINE #0 WHILE BIT 15 IS LINE #15. A 1 INDICATES THAT A TERMINAL IS NOT CONNECTED WHILE A 0 INDICATES THAT THE TERMINAL DOES EXIST ON THE LINE.

IF THERE ARE TERMINALS ON LINE #0, #5, #10 AND #15 ONLY, ON THE FIRST DH11 AND NO OTHER DH11 EXIST, SET THE FIRST ENTRY IN THIS TABLE TO 199736 AND ALL OTHER WORDS TO 177777. THE DIAGNOSTIC IS INITIALIZED SO THAT NO TERMINALS EXIST.

\*\*\*\*\*

```

3049
3050
3051
3052
3053 016620 007600 040513 047111 STARTHI ,ASCII <AORLF><17>/MAINDEC-11-DELADEC/<ACRLF>
3054 016626 042504 024503 030461
3055 016634 042055 046132 042101
3056 016642 041455 200
3057 016645 114 031501 020066
3058 016652 042524 044522 047111
3059 016660 044101 042040 040511
3060 016666 047107 051517 044524
3061 016674 100103
3062 016676 044104 030461 023040
3063 016704 042040 030512 020061
3064 016712 047111 042524 043122
3065 016720 041501 051505 005200
3066 016726 000
3067 016727 200 042412 042116
3068 016734 047440 020106 040520 ENDPASS ,ASCII <AORLF><12>/END OF PASS /
3069 016742 051523 020040
3070 016746 030060 030060 005200 PASSMSG ,ASCII /0000/<ACRLF><12>
3071 016754 000
3072 016755 060 020060 044104
3073 016762 030461 051447 032440
3074 016770 042116 051105 032040
3075 016776 051505 100124 000012
3076 017004 030060 042040 030512
3077 017012 023461 020123 047125
3078 017020 042504 020122 042524
3079 017026 052123 005200 000
3080 017033 200 005017 042524
3081 017040 052123 021440 000
3082 017045 060 030060 041440
3083 017052 046117 046525 051516
3084 017060 005200 000
3085 017063 124 050131 020105
3086 017070 047101 020131 051120
3087 017076 047111 040524 046102
3088 017104 020105 044103 051101
3089 017112 041501 042524 020122
3090 017120 047101 020104 044514
3091 017126 052123 047105 043040
3092 017134 051117 041040 046105
3093 017142 027114 027056 027056
3094 017150 027056 027056 027056
3095 017156 027056 027056 000
3096 017163 200 047516 020124
3097 017170 047105 052517 044107
3098 017176 041440 046117 046525
3099 017204 051516 000200
3100 017210 042000 044103 020117
3101 017216 042524 052123 052040
3102 017224 051105 044513 040516
    
```

```

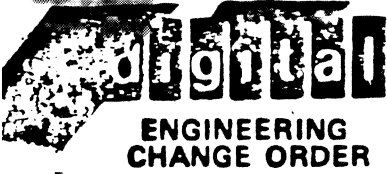
3103 017232 042524 100104 000
3104 017237 040 040
3105 017241 040 020040 040
3106
3107 017245 040 020040 020040
3108 017252 020040 100040 000
3109 017257 200 005017 042523
3110 017264 042514 052103 052040
3111 017272 051505 020124 020043
3112 017300 000040
3113
3114 017302 053105 047105
3115 017306 042117 020104
3116
3117
3118
3119
3120
3121 000001
    
```

EQ23M1 ,ASCII / / /  
 LINEB1 ,ASCII / / / MHEB0 FOR TEST E023  
 LINEB1 ,ASCII / /<ACRLF>  
 MHEB01 ,ASCII <AORLF><17><12>/SELECT TEST # /  
 EVEN1 ,ASCII /EVEN/  
 ODD1 ,ASCII /ODD /  
 .EVEN  
 .END

ACRIF # 000200	ACTIV 001222	ADTENP 004274	BAR 001190
BITTAB 001162	BIT0 # 000001	BIT1 # 000002	BIT10 # 000000
BIT11 # 004000	BIT12 # 010000	BIT13 # 020000	BIT14 # 040000
BIT15 # 100000	BIT2 # 000004	BIT3 # 000010	BIT4 # 000020
BIT5 # 000040	BIT6 # 000100	BIT7 # 000200	BIT8 # 000400
BIT9 # 001000	BTOASC# 104015	BUPR 012064	BYCR 001146
CARA 001144	CHAIN # 104001	CHANN # 001740	CHANN # 001772
CHARAC 000010	CLEAN # 104017	CNTDH # 001154	CNTLW # 001104
CNVCTR 004266	CR # 104014	CRLF # 104000	CSR # 001236
CURTST 001120	DELAY # 104003	DHADR # 001134	DHONT # 001230
DH11S 010755	DH1100 019500	DH1101 010420	DH1102 010600
DH1103 019720	DH1104 019760	DH1105 010420	DH1106 010600
DH1107 010120	DH1110 010160	DH1111 010420	DH1112 010200
DH1113 010320	DH1114 010360	DH1115 010420	DH1116 010400
DH1117 010520	DIGIT 004270	DISPRE 000174	DJONT # 001226
DJ11S 017004	DLY 004056	ECHO # 104021	ECHODJ 003442
ECCEND 017210	ELTAB 010500	EMTINT 000250	EMTTAB 000332
ENDIT 009262	ENDID 009254	ENDITR 000240	ENDPAB 010787
ENDS 001400	END4 001446	E000 # 010750	E001 # 011002
E01A 011030	E0210 011004	E022 # 010974	E022A 011102
E022B 011144	E023 011300	E023M 017237	E024 # 011702
E024R 011710	E024R 011770	E025 # 010466	E025MA 017063
E025HB 017163	EVEN 017302	FORWD # 104016	HDRMSG 017033
HDR0 # 017045	HERE 010000	INRDY # 104022	IOHW 001284
LF # 104010	LPCNT 001132	LINE0 # 001156	LINE2 000774
LINE3 007516	LINE5 017241	LINE5A 017249	LOGICA 010550
LPR 001142	MACHER 000004	MASK 001160	ME003 017297
MG24 011672	MG25 011676	MONIC 011154	MOVNUM 011600
NG 002544	NRCRA 001140	NXTST 001110	ODD # 017306
OPEN # 000000	OUTPUT 010002	PARITY 001126	PASCNT 010794
PAMES 010746	PC # 0000007	PCHAR 001130	PFALL 004100
POSP2 # 022626	PO01 001122	PRGTAB 003150	PRINTC # 104011
PRINTJ 009324	PRTHOR # 104012	PT0 # 000410	PT1 000444
PT10 010334	PT11 010472	PT12 010924	PT12A 010532
PT17 010614	PT17B 010004	PT17D 010020	PT2 000606
PT3 007236	PT4 007356	PT5 007934	PT5AL 007782
PT6 007740	PT7 010122	READ # 104013	REF # 007466
REPT 001114	RESTR 004136	RYNNO # 001100	R0 # 000000
R1 # 0000001	R2 # 0000002	R3 # 0000003	R4 # 0000004
R5 # 0000005	SAVR6 004134	SCANDH 003004	SCANDJ 003016
SCR 001136	SCR1 # 104007	SCR1 001232	SCR2 001234
SETD3 003124	SETERM 002600	SP # 0000000	SP0T 001100
SPC 000576	SPCNT 001116	SPSP 000050	SP2 000090
SR 001244	SSR 001192	START 001250	STARTM 010600
STARTX 001262	START1 001246	STORE 013773	STALN 011542
SWREG 000176	TBUF 001242	TGR 001240	TENPCM 001124
TENPWR 004272	TERM 012054	TESTC # 104020	TEST30 012570
TEST31 012792	TEST32 013970	TEST33 014020	TEST34 014594
TEST35 019116	TIMER 001102	TYVCTL # 104004	TYVJ 002092
TYVJA 002024	TYVJTL # 104005	TYV1 000052	TYV1A 002094
TYV1R 002104	TYV10 002410	TYV1H 000450	TYV1L 002510
TYV 003776	TYVE # 104000	TYPEN # 104002	TYPH 000026
T30SC 012750	WIDTH 001112	SBTASC 004202	SCLEAN 001732
SCR 004370	SCR1F 004356	SECHO 003400	SFORWD 002562

SINRDY 003536	SLF 004360	SPRMDR 004400	SPRTC 004494
SREAD 003600	SCLRF 004340	STESTC 004300	SPR1 # 017312

ERRORS DETECTED: 0  
 \*DELADC+DELADC/SOL  
 RUN=TIME: 9 10 0 SECONDS  
 CORE USED: 5K



ORIGINATOR R. Quenneville  
 TEL EXT 3328 DATE 2/16/76  
 LOCATION MC21-4/E10  
 COST CENTER NO. 301

ECO NO. MD-11-DZLAD-C1/03  
 SHEET 1 OF 2  
 DATE RECEIVED 19-FEB-76  
 ISSUE DATE \_\_\_\_\_  
 FINAL RELEASE \_\_\_\_\_

**PROBLEM**  
 Option Test #34 (Horizontal Tab) will fail intermittently giving misleading results on the 5th pattern in test.

**UNIT TO BE CHANGED**  
 MAINDEC-11  
 DZLAD-C

**CORRECTION**  
 Include 4 fill characters after each carriage return in Test # 34.

**PRODUCT FAMILIES AFFECTED**  
 LA-36's with

Horizontal Tab Option Installed

**TYPE OF ECO**  
 HARDWARE  
 SOFTWARE  
 PURCHASE SPEC.

**BREAK-IN/EFFECTIVITY**  
 Temporary Patch, for use if needed. *CONDITIONAL PATCH*  
 A Permanent solution will be included in the next revision of DZLAD.  
  
 MAR-76

**FIELD SERVICE AFFECTED**  
 YES  NO  
 D. P. R. DISTR.  
 L.O.U. CODE

**WHERE USED**

**QUICK-CHECK**

**TEST**

ITEM NO.	DOCUMENT/PART NO.	OLD REV	NEW REV	DESCRIPTION OF CHANGE/DISPOSITION OF MATERIAL
1	DZLAD-C-PB	C	C1	Use Patch given on sheet 2 of this ECO (if needed)

**APPROVAL SIGNATURE (TYPE NAME and SIGN)**  
 PROJECT ENGR. R. Quenneville  
 ENG. MGR. \_\_\_\_\_  
 TEL. EXT. 3328 COST CENTER NO. 301  
 DISC. PROJ. NO. V98-06691 DATE 2/16/76  
 COORD. NO. MC 0237 REF. NO. \_\_\_\_\_

**REVIEW SIGNATURES (SEE INSTRUCTIONS FOR APPLIC.)**  
 FIELD SERVICE \_\_\_\_\_  
 DIAGNOSTIC ENGR. R. Quenneville  
St. Kellieker



ENGINEERING  
CHANGE ORDER

CONTINUATION  
SHEET

ECO NO. ND 11-DZLAD-C/2

SHEET 2 OF 2

ITEM NO.	DOCUMENT/PART NO.	OLD REV	NEW REV	DISP CODE	DESCRIPTION OF CHANGE
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Patch for DZLAD-C Test #34

<u>CHANGE LOC.</u>	<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
000034	X	017400	Enable Trap
000036	X	000340	vector.
014612	104014	104777	Trap to Patch.
014674	104014	104777	Trap to Patch.
014766	104014	104777	Trap to Patch
017400	X	104014	Carriage Return
017402	X	012705	Into R5
017404	X	000004	Place a 4.
017406	X	012700	Into R6
017410	X	000006	Place the ACK code.
017412	X	104011	Transmit code
017414	X	005305	a total of
017416	X	101373	4 times.
017420	X	000002	Return to Mainline.