PRODUCT CODE:	MAINDEC-08-DILAB-D-D
PRODUCT NAME:	LA36 TERMINAL DIAGNOSTIC
DATE CREATED:	OCTOBER 1975
MAINTAINER:	DIAGNOSTIC GROUP
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1.0 ABSTRACT

THIS DIAGNOSTIC IS DIVIDED INTO FOUR BASIC SECTIONS:

1. A BRIEF CHECK OF THE 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 OPTION.

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. (NOTE) SEE CONSOLE PACKAGE ADDENDUM

2.0 REQUIREMENTS

2.1 EQUIPMENT

THIS DIAGNOSTIC IS WRITTEN TO BE RUN ON ANY PDP-8 OR PDP-12 COMPUTER WITH ANY SERIAL LINE INTERFACE (INCLUDING THE PT08 AND DC02 INTERFACES) AND AN LA36 TERMINAL.

2.2 STORAGE

THE DIAGNOSTIC PROGRAM USES LOCATIONS 0000 TO 7177(8). THIS INCLUDES 400(8) LOCATIONS AT THE END OF THE PROGRAM FOR PATTERN STORAGE USED DURING TEST 24.

2.3 PRELIMINARY PROGRAMS

ANY APPLICABLE PDP-8 OR PDP-12 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

LOAD THE HIGH RIM AND HIGH BINARY LOADERS, THEN LOAD THE LA36 DIAGNOSTIC PROGRAM TAPE FOLLOWING NORMAL PROCEDURES. THE BINARY TAPE FOR THIS DIAGNOSTIC IS IN IMAGE FORMAT.

4.0 STARTING PROCEDURE

4.1 STARTING ADDRESSES

200(8) = STANDARD CONSOLE INTERFACE
210(8) = GENERAL RESTART
300(8) = DC02 INTERFACE
400(8) = PT08 INTERFACE
520(8) = SELECT IOT'S

4.1.1 STANDARD CONSOLE INTERFACE = 200(8)

SET THE SWITCH REGISTER TO 200(8) AND DEPRESS LOAD ADDRESS TO RUN THE DIAGNOSTIC WITH AN LA36 CONNECTED TO THE STANDARD CONSOLE INTERFACE USING IOT CODES 03 AND 04.

4.1.2 GENERAL RESTART = 210(8)

THIS STARTING ADDRESS ALLOWS THE RESTART OF THE DIAGNOSTIC WITHOUT CHANGING THE I/O ROUTINES THAT ARE SET FOR THE SELECTED INTERFACE. STARTING AT THIS ADDRESS WILL AUTOMATICALLY SKIP PAST THE I/O TESTS. THIS RESTART DOES ALLOW, HOWEVER, THE RESELECTION OF THE DESIRED MAXIMUM NUMBER OF COLUMNS AND SELECTION OF THE DESIRED TEST CONTROL METHOD AFTER SETTING THE SWITCH REGISTER TO 210(8) AND DEPRESSING LOAD ADDRESS.

4.1.3 DC02 INTERFACE = 300(8)

TO RUN THE DIAGNOSTIC USING A DC02 MULTIPLEXOR INTERFACE, SET 300(8) IN THE SWITCH REGISTER AND PRESS LOAD ADDRESS, SET THE DESIRED STATION AND GROUP SELECTION CODE IN THE SWITCH REGISTER AND DEPRESS START. AFTER THE I/O ROUTINES ARE SET FOR THE DC02 INTERFACE, THE PROGRAM WILL HALT. AT THIS TIME, SET THE DESIRED CONTROL SWITCHES AND THE NUMBER OF COLUMNS AS IF STARTING AT ADDRESS 200(8), AND THEN PRESS CONTINUE TO START THE DIAGNOSTIC.

NOTE:

IF NO CHANNELS ARE SELECTED ALL SWITCHES LEFT DOWN(0), THE DIAGNOSTIC WILL TEST ALL CHANNELS. HOWEVER, ONLY THE PRINTING TESTS CAN BE RUN AND THERE WILL BE NO KEYBOARD CONTROL. TO RUN THE ECHO TESTS, THE CORRECT CHANNELS MUST BE SELECTED.

4.1.4 PT08 INTERFACE = 400(8)

TO RUN THE DIAGNOSTIC ON TERMINALS CONNECTED TO A PT08 INTERFACE OR TO DETERMINE WHAT IOT CODES ARE ACTIVE, SET 400(8) IN THE SWITCH REGISTER, PRESS LOAD ADDRESS AND START. THE PROGRAM WILL TEST ALL DEC STANDARD IOT ASSIGNMENTS AND DETERMINE WHICH IOT CODES ARE ACTIVE. A MESSAGE WILL BE PRINTED ON EACH ACTIVE TERMINAL INDICATING WHICH IOT CODES ARE IN USE BY THAT TERMINAL. UPON COMPLETION OF THE IOT TESTING, THE PROGRAM WILL HALT AND WAIT FOR AN IOT CODE SELECTION. SET THE DESIRED IOT CODES IN THE SWITCH REGISTER: BITS 0 TO 5 FOR THE TRANSMITTER (PRINTER) CODE, AND BITS 6 TO 11 FOR THE RECEIVER (KEYBOARD) CODE. THE DESIRED IOT CODES DO NOT NECESSARILY HAVE TO BE ANY OF THE STANDARD CODES, ANY IOT CODE WILL BE ACCEPTED BY THE PROGRAM. AFTER SETTING THE CODES IN THE SWITCH REGISTER, DEPRESS CONTINUE. THE PROGRAM WILL PRINT A SHORT MESSAGE ON THE SELECTED TERMINAL INDICATING THAT TERMINAL AS THE ONE UNDER TEST. AFTER PRINTING THIS MESSAGE THE PROGRAM WILL HALT AGAIN AND WAIT FOR THE NUMBER OF COLUMNS AND THE CONTROL SWITCH SETTINGS, AS IF STARTING AT 200(8). AFTER SETTING THE DESIRED SWITCHES, DEPRESS CONTINUE TO START THE DIAGNOSTIC.

4.1.5 SELECT IOT'S = 520(8)

TO SELECT SPECIFIC IOT CODES WITHOUT TESTING TO SEE WHICH CODES ARE AVAILABLE, OR TO LATER SELECT DIFFERENT IOT CODES, SET THE SWITCH REGISTER TO 520(8) AND PRESS LOAD ADDRESS. THEN SET THE DESIRED IOT CODES IN THE SWITCH REGISTER AND CONTINUE AS OUTLINED IN THE LATER PORTION OF SECTION 4.1.4.

4.2 CONTROL SWITCH SETTINGS

SET SWITCHES 4 TO 11 TO THE DESIRED MAXIMUM NUMBER OF COLUMNS THE DIAGNOSTIC IS TO TEST. THE NUMBER MUST BE SET IN THE SWITCHES IN BINARY FORM USING SWITCHES 4 TO 11 ONLY. SETTING A NUMBER LESS THAN 30(10) OR GREATER THAN 132(10) WILL DEFAULT TO 132(10). THUS, FOR NORMAL OPERATION TESTING THE FULL 132(10) COLUMNS, LEAVE SWITCHES 4 TO 11 DOWN (0).

TO SELECT A TEST, RATHER THAN AUTOMATICALLY STARTING THE PRINTING TEST SEQUENCE, PLACE SWITCH 3 UP BEFORE STARTING THE DIAGNOSTIC. UPON COMPLETION OF THE I-O TESTS (IF BEING RUN) THE PROGRAM WILL HALT WAITING FOR A TEST SELECTION.

AFTER SETTING THE CONSOLE SWITCHES AS DESIRED, DEPRESS START TO BEGIN THE DIAGNOSTIC.

5.0 OPERATING PROCEDURE

THE PROGRAM CAN BE CONTROLLED IN EITHER OF TWO METHODS! BY THE CONSOLE SWITCH REGISTER OR FROM THE KEYBOARD OF THE TERMINAL(S) UNDER TEST.

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
0	1(UP) = CONTINUE ON ERROR 0(DOWN) = HALT ON ERROR
1	1(UP) = HALT AT END OF TEST 0(DOWN) = CONTINUE TEST SEQUENCE
2	1(UP) = LOOP ON INDIVIDUAL TEST 0(DOWN) = NORMAL TEST SEQUENCE
3	1(UP) = RUN TEST ONCE AND HALT 0(DOWN) = LOOP ON TEST SEQUENCE
4	1(UP) = KEYBOARD CONTROL 0(DOWN) = SWITCH REGISTER CONTROL
6-11	TEST NUMBER SELECTION
4-11	NUMBER OF COLUMNS AT START-UP

5.1.1 SWITCH 0

PLACING SWITCH 0 IN THE UP POSITION WILL CAUSE THE PROGRAM TO CONTINUE ON ERRORS DURING ANY OF THE I=O TESTS ONLY. WITH SWITCH 0 DOWN, THE PROGRAM WILL HALT (AT LOCATION 3357) ON ANY ERRORS DURING THE I=O TESTS WITH THE LOCATION OF THE ERROR IN THE ACCUMULATOR. PRESSING CONTINUE WILL CAUSE THE PROGRAM TO CONTINUE.

NOTE

ERRORS CAN OCCUR ONLY DURING THE I=O TESTS. THE TERMINAL IS CONNECTED TO A SERIAL LINE AND THERE IS NO INFORMATION RETURNING TO THE CPU FROM THE TERMINAL; THE PROGRAM CONNOT DETECT ERRORS IN THE TERMINAL, ONLY ERRORS IN THE INTERFACE CAN BE DETECTED.

5.1.2 SWITCH 1

WITH SWITCH 1 IN THE UP POSITION, THE PROGRAM WILL HALT AT THE END OF THE CURRENT TEST. REPLACING SWITCH 1 TO THE DOWN POSITION AND PRESSING CONTINUE WILL CONTINUE THE NORMAL TEST OPERATION. DURING THE HALT, ANY OF THE CONTROL SWITCHES MAY BE CHANGED OR SET AS DESIRED.

5.1.3 SWITCH 2

PLACING SWITCH 2 UP AT ANY TIME WILL CAUSE THE PROGRAM TO LOOP ON THE CURRENT TEST AS LONG AS SWITCH 2 REMAINS UP. REPLACING SWITCH 2 DOWN WILL CAUSE THE PROGRAM TO RESUME NORMAL OPERATION AT THE COMPLETION OF THE TEST.

5.1.4 SWITCH 3

WITH SWITCH 3 IN THE DOWN POSITION THE PROGRAM WILL CONTINUE TO LOOP THROUGH THE PRESENT TEST SEQUENCE. PLACING SWITCH 3 UP WILL CAUSE THE PROGRAM TO HALT AT THE COMPLETION OF THE CURRENT TEST. SET SWITCHES 6 TO 11 TO THE NEXT DESIRED TEST NUMBER AND PRESS CONTINUE TO START THE TEST.

5.1.5 SWITCH 4

PLACING SWITCH 4 IN THE UP POSITION WILL CAUSE THE PROGRAM TO BE UNDER CONTROL BY THE TERMINAL KEYBOARD. WITH SWITCH 4 IN THIS POSITION, ALL OTHER SWITCHES HAVE NO EFFECT. REPLACING SWITCH 4 TO THE DOWN POSITION WILL CAUSE CONTROL TO REVERT BACK TO THE SWITCH REGISTER.

NOTE

SINCE SWITCH 4 IS ALSO USED FOR SELECTION OF THE MAXIMUM NUMBER OF COLUMNS AT START-UP, YOU MUST WAIT FOR THE PROGRAM TO START BEFORE SETTING SWITCH 4.

CAUTION

WHEN UNDER KEYBOARD CONTROL AND THE PROGRAM IS WAITING FOR A TEST SELECTION - TO RETURN TO SWITCH REGISTER CONTROL YOU MUST HALT THE PROGRAM AND RESTART.

5.1.6 SWITCHES 6 TO 11

SWITCHES 6 TO 11 ARE USED TO SELECT SPECIFIC TESTS WHEN UNDER SWITCH REGISTER CONTROL.

5.1.7 SWITCHES 4 TO 11 (AT START-UP ONLY)

AT START-UP ONLY, SWITCHES 4 TO 11 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 BINARY FORM.

5.2 KEYBOARD CONTROL

THE PROGRAM WILL BE UNDER KEYBOARD CONTROL WHENEVER SWITCH 4 ON THE CONSOLE SWITCH REGISTER IS IN THE UP POSITION. ALL OTHER SWITCHES ON THE CONSOLE SWITCH REGISTER WILL HAVE NO EFFECT WHEN UNDER PROGRAM CONTROL.

TO STOP ANY TEST AT ANY TIME, TYPE THE "RUBOUT" KEY ON THE KEYBOARD. THE TEST WILL TERMINATE AND THE FOLLOWING MESSAGE WILL BE TYPED:

SELECT TEST NUMBER

AT THIS TIME, TYPE THE DESIRED TEST NUMBER (AS A 2 DIGIT 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, ECHO, OR I-O TEST SEQUENCE UNTIL A "RUBOUT" IS TYPED.

THE L OR S MAY BE EITHER UPPER OR 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) THE MESSAGE WILL BE REPEATED.

6.0 TEST DESCRIPTIONS

6.1 PRINTING TESTS

THESE TESTS ARE DESIGNED AS A TEST OF THE PRINTING MECHANISM AND THE ASSOCIATED CONTROL LOGIC. AT THE BEGINNING OF EACH TEST, THE TEST NUMBER WILL BE PRINTED INDICATING WHICH TEST IS BEING EXECUTED AND, IF THE TEST IS A FUNCTION OF THE NUMBER OF COLUMNS, THE NUMBER OF COLUMNS BEING TESTED WILL BE INDICATED. A DETAILED DESCRIPTION AND SAMPLE PATTERNS FOR EACH PRINTING TEST FOLLOWS:

6.1.1 TEST 0 - DATA PATH TEST

THIS TEST IS USED TO TEST THE DATA LINES TO AND THROUGH THE INTERFACE AND TO THE TERMINAL. AN ALTERNATING BIT PATTERN IS SENT WHICH WILL PRINT ALTERNATING *'S AND U'S IN A CHECKERBOARD PATTERN TO THE MAXIMUM COLUMN WIDTH. THE STARTING CHARACTER FOR EACH LINE IS ALTERNATED AND A TOTAL OF FOUR LINES ARE 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:

```
*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U
U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*
*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U
U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*
```

6.1.2 TEST 1 - PRINTABLE CHARACTER TEST

THIS TEST PRODUCES A CHECK OF ALL 94(10) PRINTABLE CHARACTERS, THE CHARACTERS ARE PRINTED IN GROUPS OF THREE WITH THREE GROUPS PER LINE, SEPARATED BY THREE SPACES BETWEEN GROUPS. THE FIRST COLUMN WILL CONTAIN ALL ASCII CODES FROM 040 TO 077, COLUMN TWO WILL CONTAIN ALL ASCII CODES FROM 100 TO 137 - PRIMARILY THE CAPITAL LETTER SET, THE LAST COLUMN WILL CONTAIN ALL ASCII CODES FROM 140 TO 176 - PRIMARILY THE SMALL LETTER SET.

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:

```
        @@@     ```
!!!     AAA     AAA
"""     BBB     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:

```
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.

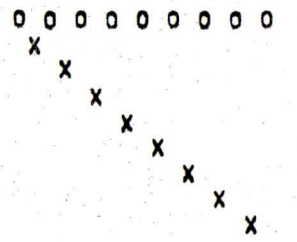
THE TEST PRINTS A FULL LINE OF ALTERNATING 0'S AND SPACES, STARTING WITH A 0. AT THE END OF THE LINE THE PRINT HEAD IS RETURNED TO THE LEFT MARGIN WITH A CARRIAGE RETURN. THE SPACES ARE THEN FILLED IN BY SPACING THE PRINT HEAD OUT FROM THE LEFT MARGIN TO THE FIRST SPACE, PRINTING AN "X", AND EXECUTING 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:

```
0X0X0X0X0X0X0X0X0X0X0X0X0X0X0X0X0X
```

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 DIAGINAL LINE OF X'S. TO CORRECTLY CHECK THE ENCODER, THE AUTO LINE FEED OPTION SHOULD BE DISABLED.

EXAMPLE:

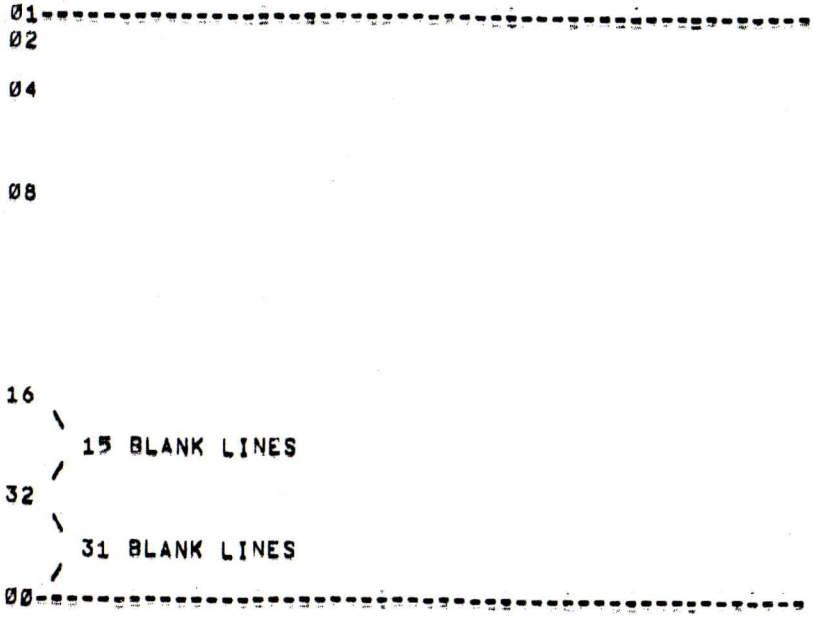


6.1.5 TEST 4 - MULTIPLE LINE FEED TEST

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:



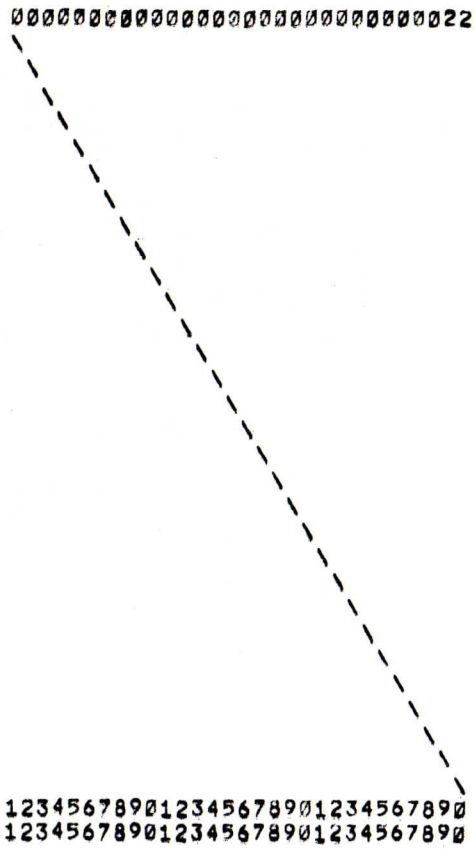
6.1.6 TEST 5 - SINGLE LINE FEED TEST

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:



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:

```
          0000000022
          \
           \
            \
             \
              \
               \
                \
          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:

```
          00000000000000000000000000000022
          XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
          12345678901234567890123456789O
          12345678901234567890123456789O
```

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-@
ROW 3 &-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
 @ @ @ @ @ @ @ @ @ @ @ @ @ @ @
& & & & & & & & & & & & & & &
```

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

 @ @ @ @ @ @ @ @ @
 @ @ @ @ @ @ @ @ @
 @ @ @ @ @ @ @ @ @

& & & & & & & & & &
& & & & & & & & & &
& & & & & & & & & &
```

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:

NEW DELAY = OLD DELAY + OLD DELAY/16 + 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:

NEW DELAY = OLD DELAY - OLD DELAY/16 - 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:

```
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
```

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
```

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:

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
BBBBBBBBBBBBBBBBBBBBBBBBBBBBBB
BBBBBBBBBBBBBBBBBBBBBBBBBBBBBB
```

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:

```
AAAAAAAAAAAAAAA

AAAAAAAAAAAAAAA
AAAAAAAAAAAAAAA
AAAAAAAAAAAAAAA
AAAAAAAAAAAAAAA
AAAAAAAAAAAAAAA

BBBBBBBBBBBBBBB

BBBBBBBBBBBBBBB
BBBBBBBBBBBBBBB
BBBBBBBBBBBBBBB
BBBBBBBBBBBBBBB
BBBBBBBBBBBBBBB
```

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.

IF THE LA36 IS IN HALF DUPLEX WITH THE AUTO LINE FEED OPTION AVAILABLE TYPING A CARRIAGE RETURN DURING THIS TEST MAY CAUSE A GARBLED RESULT ON THE LA36 TERMINAL.

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 CNTROL 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) OF SHIFT OUT (SO) WILL BE SENT FOLLOWED BY THE ENTIRE PRINTABLE CHARACTER SET. IF LESS THAN 98 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 32 LINES HAVE BEEN PRINTED (IF USING 98 OR MORE COLUMNS). THERE WILL BE A BLANK LINE BETWEEN EACH PAIR OF LINES TO SEPARATE EACH GROUPING. CHANGE LOCATION "T30SC" AT THE END OF TEST30 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= !"#$%&'()*+,-./PRIMARY CHARACTER SET.........
#2= !"#$%&'()*+,-./SECONDARY CHARACTER SET.......

#1= !"#$%&'()*+,-./PRIMARY CHARACTER SET.........
#2= !"#$%&'()*+,-./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 DE-SELECT THE TERMINAL WHERE THE MESSAGE WAS PRINTED.

THE TEST NEXT SENDS AN EOT DIRECTLY FOLLOWED BY A STX, WITH NO SELECT CHARAACTER. AGAIN, THE ERROR MESSAGE IS SENT TO ALL TERMINALS, WHICH SHOULD NOW BE ALL DE-SELECTED. 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 LISING 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 8 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 DE-SELECTED. NEXT AN ETX <003> FOLLOWED BY THE CURRENT UNIQYUE SELECT CHARACTER AND AN STX WILL BE SENT AND A PRINTED MESSAGE WILL INDICATE THE SELECT CHARACTER USED. ANOTHER EXT 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 LA36. 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 CAPIBILITY 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

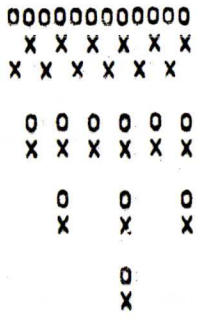
THIS TEST CHECKS THE ABILITY TO SET A TAB IN EVERY COLUMN AND AT PREDETERMINED INTERVALS, AS WELL AS THE ABILITY TO CLEAR ALL TABS. THE PROGRAM SETS A TAB IN THE PREDETERMINED COLUMN, DOES A BACKSPACE, AND PRINTS AN "O". AFTER THE LINE IS PRINTED AND THE TABS ARE SET, A CARRIAGE RETURN IS SENT AND THEN 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 TABED 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:

```
          0000000000
           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 WIL 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.

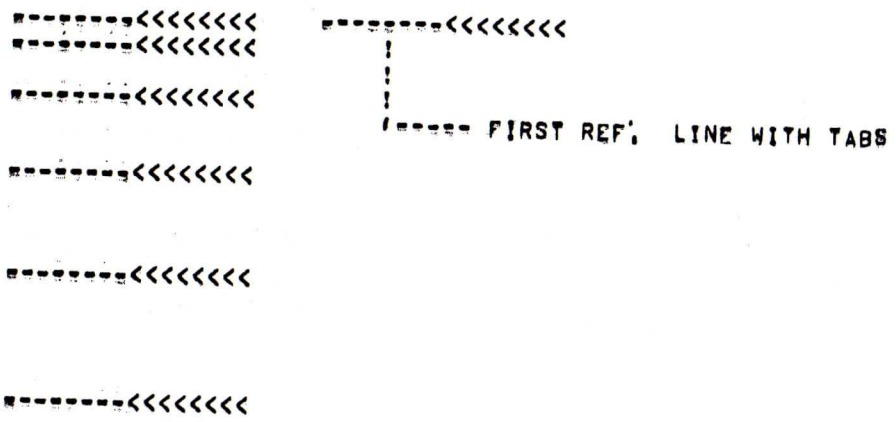
EXAMPLE:



6.3.6 TEST 35 - VERTICAL TAB OPTION

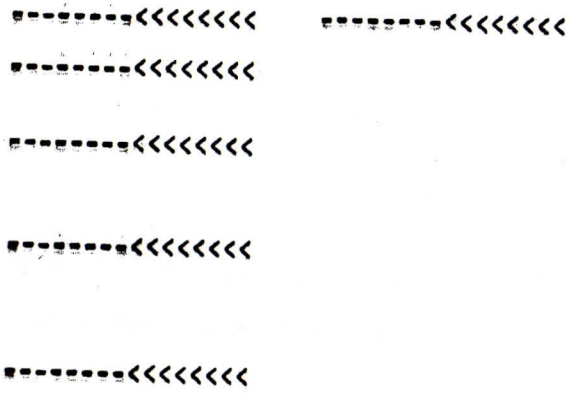
THIS TEST CHECKS THE VERTICAL TAB OPTION BY TESTING THE ABILITY TO SET TABS IN VARIOUS POSITIONS OF A 14 INCH FORM. AN INSTRUCTION IS PRINTED TELLING THE OPERATOR TO SET A 14 INCH FORM LENGTH AND DEPRESS THE TOP OF FORM RESET SWITCH. WHEN READY, TYPE ANY CHARACTER (EXCEPT RUBOUT) ON THE KEYBOARD TO CONTINUE. 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.

EXAMPLE:



THE REFERENCE PATTERN PRODUCED WILL BE DIFFERENT IF THE AUTO LINE FEED OPTION IS SET UP TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN. THERE WILL, IN FACT, BE ONE EXTRA LINE BETWEEN EACH REFERENCE LINE DUE TO THE AUTO LINE FEED.

EXAMPLE:



6',4 STANDARD I-O TESTS

THESE TESTS ARE DESIGNED AS A BRIEF CHECK OF THE CONSOLE OR PT08 INTERFACE LOGIC, EACH CHECK IS STRUCTURED AS AN INDEPENDENT TEST AND THE SWITCH REGISTER CONTROLS MAY BE USED, A DESCRIPTION OF EACH TEST FOLLOWS:

6',4',1 TEST 40 = CHECK KCC CLEARS AC

THIS TEST SETS THE AC = -1 THEN ISSUES A KCC INSTRUCTION AND CHECKS THAT THE AC IS CLEARED.

6',4',2 TEST 41 = CHECK KCC CLEARS FLAG

THIS TEST CHECKS THAT THE KCC INSTRUCTION CLEARS THE KEYBOARD FLAG.

6',4',3 TEST 42 = CHECK KSF DOESN'T SKIP WITH FLAG RESET

THIS TEST CHECKS THAT THE KSF INSTRUCTION DOESN'T SKIP WHEN THE KEYBOARD FLAG IS CLEARED.

6',4',4 TEST 43 = CHECK TSF SKIPS ON FLAG

THIS TEST SETS THE PRINTER FLAG THEN CHECKS THAT THE TSF INSTRUCTION SKIPS WITH THE FLAG SET.

6',4',5 TEST 44 = CHECK TSF DOESN'T SKIP WITH FLAG RESET

THIS TEST CLEARS THE PRINTER FLAG AND CHECKS THAT THE TSF INSTRUCTION DOESN'T SKIP WITH THE FLAG CLEARED.

6',4',6 TEST 45 = CHECK TCF CLEARS FLAG

THIS TEST SETS THE PRINTER FLAG THEN ISSUES A TCF INSTRUCTION AND CHECKS THAT THE FLAG GETS CLEARED.

6',4',7 TEST 46 = CHECK PRINTER INTERRUPT SYSTEM

THIS TEST CHECKS THE PRINTER INTERRUPT SYSTEM FOR UNWANTED OR UNEXPECTED INTERRUPTS AND FOR PROPER INTERRUPTS WHEN DESIRED.

6.5 DC02 I-O TESTS

THESE TESTS ARE DESIGNED AS A VERY BRIEF CHECK OF THE DC02 INTERFACE FLAGS. EACH CHECK IS STRUCTURED AS AN INDEPENDENT TEST AND THE SWITCH REGISTER CONTROLS A BRIEF DESCRIPTION OF EACH TEST FOLLOWS:

6.5.1 TEST 60 - CHECK XMTR FLAGS

THIS TEST CHECKS THAT NO TRANSMITTER FLAGS ARE UP IN ERROR. ANY FLAGS UP IN ERROR ARE STORED DURING THE TEST. REFER TO THE END OF TEST 60 IN THE LISTING TO CHECK WHAT FLAGS WERE IN ERROR.

6.5.2 TEST 61 - CHECK RCVR FLAGS

THIS TEST CHECKS THAT NO RECEIVER FLAGS ARE UP IN ERROR. ANY FLAGS UP IN ERROR ARE STORED DURING THE TEST. REFER TO THE END OF TEST 61 IN THE LISTING TO CHECK WHAT FLAGS WERE IN ERROR.

6.5.3 TEST 62 - CHECK MULTIPLE SKIPS

THIS TEST CHECKS THAT ALL MULTIPLE SKIPS OPERATE PROPERLY.

7',0 CONSOLE PACKAGE ADDENDUM

7',1 DESCRIPTION

THE CONSOLE PACKAGE HAS BEEN ADDED TO THIS DIAGNOSTIC TO ALLOW THE PROGRAM TO RUN WITH NO HARDWARE SWITCH REGISTER AND TO HAVE COMMUNICATIONS WITH THE DIAGNOSTIC VIA A TERMINAL. THE DIAGNOSTIC CAN BE RUN IN TWO MODES WITH THE CONSOLE PACKAGE.

1'. RUNNING WITH THE CONSOLE PACKAGE ACTIVE - THIS ALLOWS THE OPERATOR CONTROL OF THE DIAGNOSTIC THROUGH THE TERMINAL. THE DIAGNOSTIC WILL ASK FOR THE VALUE OF THE PSEUDO SWITCH REGISTER, BEFORE CONTINUING WITH EXECUTION OF THE DIAGNOSTIC. ALL ERRORS AND PASS COMPLETES WILL BE PRINTED AT THE TERMINAL. NO HALTS WILL BE EXECUTED.

2'. CONSOLE PACKAGE NOT ACTIVE - THIS WILL RESULT IN THE NORMAL STANDALONE OPERATION OF THE PROGRAM AS DESCRIBED IN SECTIONS 1 THROUGH 6 OF THIS DOCUMENT.

7',2 RESTRICTIONS

1'. WHEN RUNNING THE CONSOLE PACKAGE SOME SUBTESTS MAY NOT BE EXECUTED. ONLY TESTS 1 THROUGH 12 ARE EXECUTED UNDER THE CONSOLE PACKAGE.

2'. RUNNING THE CONSOLE PACKAGE REQUIRES THAT THE PSEUDO SWITCH REGISTER BE USED.

3'. ONCE RUNNING THE CONSOLE PACKAGE NONACTIVE AND NOW DESIRE TO RUN IT ACTIVE, ONE MUST RELOAD THE DIAGNOSTIC AND INITIALIZE IT FOR AN ACTIVE CONSOLE PACKAGE.

7',3 INITIALIZATION

FOR AN ACTIVE CONSOLE PACKAGE

1'. SET LOCATION 21 BIT0=0 TO INDICATE USE PSEUDO SWITCH REGISTERS.

2'. SET LOCATION 22 BIT3=1 TO INDICATE CONSOLE PACKAGE ACTIVE.

FOR A NON ACTIVE CONSOLE PACKAGE

1'. SET LOCATION 21 BIT0=1 TO INDICATE NOT TO USE PSEUDO SWITCH REGISTER, BUT TO USE HARDWARE SWITCHES.

2'. SET LOCATION 22 BIT3=0 TO INDICATE CONSOLE PACKAGE NOT ACTIVE.

7.4 CONTROL CHARACTERS

CONTROL CHARACTERS ARE USED TO GIVE THE OPERATOR THE ABILITY TO PERFORM THE FOLLOWING FUNCTIONS.

NOTE

THE PROGRAM WILL RESPOND TO THE CONTROL CHARACTER IN FIVE (5) SECONDS OR LESS.

CONTROL C — THIS WILL START THE LOADER THAT IS IN LOCATION 7600.

CONTROL R — THIS WILL RESTART THE PROGRAM AND REASK THE SWITCH REGISTER QUESTION AS DESCRIBED IN SECTION 7.6.

CONTROL E — THIS WILL CONTINUE THE PROGRAM FROM AN ERROR IF ALLOWED BY THE DIAGNOSTIC OR FROM A WAITING STATEMENT.

CONTROL L — THIS WILL SWITCH THE TERMINAL MESSAGES FROM THE DISPLAY TO A LINE PRINTER, TO RESTORE THE MESSAGES ON THE TERMINAL CONTROL L MUST BE TYPED AGAIN. IF NO PRINTER IS AVAILABLE AD CONTROL L IS TYPED THE RESULT WILL BE THAT THE CONSOLE PACKAGE WILL WAIT FOR CONTROL C OR R, THE CONTROL L WILL OUTPUT TO THE LINE PRINTER AND THE PROGRAM WILL ATTEMPT TO CONTINUE AS IF A CONTROL E WAS TYPED IN.

CONTROL D — THIS WILL ALLOW THE ABILITY TO CHANGE THE SWITCH REGISTER DURING PROGRAM OPERATION. TYPING THIS CHARACTER WILL RESULT IN AN INTERIGATION OF THE SWITCH REGISTER QUESTION AS DESCRIBED IN SECTION 7.6.

CONTROL S — THIS WILL STOP PROGRAM EXECUTION AND WAIT IN A LOOP FOR A CONTINUE. THE ONLY WAY TO CONTINUE WILL BE TO TYPE A CONTROL Q, R OR C. THIS IS A NON-PRINTING CHARACTER.

CONTROL Q — THIS IS TO CONTINUE A PROGRAM AFTER A CONTROL S IS TYPED. THIS IS A NON-PRINTING CHARACTER.

7.5 WAITING MESSAGE

THE WAITING MESSAGE IS USED TO ALLOW THE OPERATOR TIME TO MAKE A DECISION AS TO WHAT CONTROL CHARACTER TO TYPE. THIS MESSAGE MAY APPEAR AT THE END OF PASS MESSAGE IF THE HALT ON PASS BIT IS SET. THE CONTROL CHARACTERS MZY NOW BE USED TO PERFORM THE NEEDED FUNCTION.

THE WAITING MESSAGE MAY BE PRINTED AFTER A ERROR MESSAGE IF THE HALT ON ERROR BIT IS SET. HERE AGAIN THE CONTROL CHARACTERS MAY BE USED.

THE WAITING MESSAGE MAY BE PRINTED IF OPERATOR INTERVENTION IS REQUIRED.

7.6 SWITCH REGISTER MESSAGE

THIS MESSAGE IS USED TO SETUP THE PSEUDO SWITCH REGISTER BEFORE PROGRAM EXECUTION TAKES PLACE. THE SWITCH REGISTER IS SETUP WHEN THE FOURTH CHARACTER IS ENTERED OR A CARRIAGE RETURN IS TYPED

```
**********************************************************************
SR=0000    4000

UNDER SCORING INDICATES OPERATOR RESPONSE
```

7.7 END OF PASS

AN INDICATION WILL BE GIVEN WHEN THE DIAGNOSTIC HAS MADE A SUCCESSFUL PASS. THE PRINT OUT WILL INDICATE THE DIAGNOSTIC MAINDEC NUMBER THE WORD PASS AND A FOUR DIGIT PASS NUMBER. A PASS WILL BE A TIME PERIOD RATHER THAN A PROGRAM PASS OF THE DIAGNOSTIC. THE TIME PERIOD WILL BE IN THE RANGE OF ONE (1) TO FIVE (5) MINUTES. IF THE DIAGNOSTIC MAKES A PROGRAM PASS IN THE 1 TO 5 MINUTE RANGE THEN THE PASS COUNT WILL BE THE SAME AS THE NUMBER OF PROGRAM PASSES. IF THE PROGRAM MAKES A PROGRAM PASS IN LESS THAN ONE MINUTE THEN THE PASS COUNT WILL NOT BE THE SAME AS THE PASS COUNTER THE PASS COUNTER WILL REFLECT MORE HAN ONE PROGRAM PASS. THE NUMBER OF PROGRAM PASSES REQUIRED FOR A PASS MESSAGE CAN BE FOUND IN LOCATION CALLED "CNTVAL".

IF HALT AT END OF PASS IS SET THEN THE PASS MESSAGE WILL BE PRINTED AND A WAITING STATEMENT WILL ALSO BE PRINTED. A CONTROL CHARACTER IS NEEDED TO CONTINUE FROM THIS MESSAGE.

THE FORMAT OF THE END OF PASS MESSAGE IS:

```
**********************************************************************

NAME PASS 0001

**********************************************************************
```

7.8 ERRORS

THE STANDARD ERROR REPORTS AS DESCRIBED IN SECTION 6 OF THIS DOCUMENT WILL BE USED.

UPON DETECTION OF AN ERROR HALT THE DIAGNOSTIC WILL PRINT OUT HE STANDARD CONSOLE PACKAGE ERROR MESSAGE (SEE SECTION 7.8.2 FOR FORMAT.). THE PROGRAM WILL THEN CHECK THE SWITCH SETTING AND IF HALT ON ERROR IS SET, THE MESSAGE WAITING WILL BE PRINTED. THE OPERATOR MUST ENTER A CONTROL CHARACTER TO CONTINUE ON. IF THE HALT ON ERROR BIT IS NOT SET THEN THE PROGRAM WILL CONTINUE ON AFTER THE ERROR MESSAGE IS PRINTED.

7.8.1 ERROR HALTS

CONSOLE PACKAGE DEACTIVE WILL CAUSE NO ERROR MESSAGE TO BE PRINTED. A HALT WILL REPLACE THE ERROR CALL IN THE CODE AND THE DIAGNOSTIC WILL THEN GO TO THAT HALT. REFER TO THE LISTING FOR THE CAUSE OF THE ERROR. THE ERROR LOCATION WILL BE THE SAME IF THE CONSOLE PACKAGE WAS ACTIVE.

7.8.2 ERROR PRINTOUTS

THE STANDARD ERROR PRINTOUT FOR THE CONSOLE PACKAGE WILL CONTAIN THE FOLLOWING INFORMATION, LOCATION WHERE THE ERROR WAS DETECTED (PC=XXXX).

THE CONTENTS OF THE AC, THE CONTENTS OF THE MQ, THE STATE OF THE LINK, FIELD AND OTHER STATUS BIT STORED BY THE GET THE FLAGS COMMAND.

THE STANDARD CONSOLE ERROR MESSAGE IS:

```
**********************************************************************
MAINDEC NAME FAILED PC/AAAA AC/BBBB MQ/CCCC FL/DDDD
**********************************************************************
```

MAINDEC NAME= THE DIAGNOSTIC NAME
PC/AAAA THE ADDRESS AT WHICH THE FAILURE OCCURRED
AC/BBBB THE CONTENTS OF THE AC WHEN THE ERROR WAS DETECTED
MQ/CCCC CONTENTS OF MQ WHEN ERROR WAS DETECTED
FG/DDDD CPU FLAGS AT THE TIME OFTHE ERROR

BIT LOC.	OCTAL VALUE	WHAT IT IS
0	4000	LINK
1	2000	GREATER THAN FLAG
2	1000	INTERRUPT REQUEST LINE
3	400	INTERRUPT INHIBIT
4	200	INTERRUPT ENABLE
5	100	USER FLAG
6-8		INSTRUCTION FIELD
9-11		DATA FIELD

7.9 SWITCH REGISTER SETTINGS

THE STANDARD SWITCH SETTINGS AS DESCRIBED IN SECTION 5 OF THIS DOCUMENT WILL BE USED.

7.10 PARAMETER CONTROL WORDS

THE CONSOLE PACKAGE USES THE LOCATIONS 20, 21, 22 FOR THE FOLLOWING PURPOSES:

LOCATION 20
PSEUDO SWITCH REGISTER

LOCATION 21
HARDWARE IDENTIFIER 1

LOCATION 22
HARDWARE IDENTIFIER 2

LOCATION 0021

BIT	OCTAL VALUE	FUNCTION WHEN 0	FUNCTION WHEN 1
0	4000	USE PSEUDO SWITCHES	USE HARDWARE SWITCHES
1	2000	NO OPTION 1	HAS OPTION 1
2	1000	NO OPTION 2	HAS OPTION 2
3	400	NO 8A SIMULATOR	HAS 8A SIMULATOR
4	200	NO OPTION SIMULATOR	HAS OPTION SIMULATOR
5	100	NO ON 8A XOR	ON 8A XOR
6	40	NOT PDP8-E TYPE CPU	PDP8-E TYPE CPU
7-11		8A MEMORY SIZE EX, 1K=00 2K=01 7K=06 32K=31	

LOCATION 0022

BIT	OCTAL VALUE	FUNCTION WHEN 0	FUNCTION WHEN 1
0	4000	NOT ON ACT8A LINE	ON ACT 8A LINE
1	2000	NOT ON ACT8E LINE	ON ACT 8E LINE
2	1000	NOT YET DEFINED	
3	400	DEACTIVE CONSOLE PACKAGE	ACTIVE CONSOLE PACKAGE

7.11 LOCATION CHANGES

THE FOLLOWING LOCATIONS CAN BE CHANGED TO MEET THE SPECIFIC NEED FOR MODIFICATION OF THE DIAGNOSTIC.

4246 IS THE LOCATION FOR THE VALUE OF THE NUMBER OF PROGRAM PASSES NEED TO PRINT THE END OF PASS MESSAGE.

5242 IS THE LOCATION SET FOR THE NUMBER OF FILLER CHARACTERS AFTER A CRLF SET TO FOUR (4).

```
                        /MAINDEC-08-DILAB-D1  LA36/LA35 TERMINAL DIAGNOSTIC
                        /COPYRIGHT (C) 1975, 1974  DIGITAL EQUIPMENT CO.,MAYNARD,MASS. 01754
                        /AUTHOR:        ROBERT BAKER

                        /
                        /////////////
                        /CONSOLE PACKAGE EQUATES,
                        /
6661                            PSKF=   6661
6662                            PCLF=   6662
6663                            PSKE=   6663
6664                            PSTB=   6664
6665                            PSIE=   6665
6004                            GTF=    6004
7501                            MQA=    7501
6007                            CAF=    6007
7421                            MQL=    7421


4424                    C8PASS= JMS I XXC8PCS           /C8 PASS COMPLETION ROUTINE
4425                    C8CKSW= JMS I XXC8SW            /CHECK SW REG SETTING
4426                    C8TTYI= JMS I XXC8TTY           /FETCH CONSOL CHAR
4423                    C8CNTR= JMS I XXC8CNT           /CHECK FOR CONTROL CHAR
4427                    C8PRNT= JMS I XXC8PNT           /C8 PRINT A BUFFER
4430                    C8SWIT= JMS I XXC8PSW           /SET UP PSEUDO SW, REG
4431                    C8OCTA= JMS I XXC8OCT           /CONVERT ASCII
4432                    C8CRLF= JMS I XXC8CRL           /DO A CARRIGE RETUR & LINE FEED
4433                    C8ECHO= JMS I XXC8ECH           /CHECK INPUT CHAR
4434                    C8TYPE= JMS I XXC8TYP           /C8 PRINT ONE CHAR
4435                    C8ERR=  JMS I XXC8ERR           /C8 ERROR  HANDLER
4436                    C8INQU= JMS I XXC8IQ            /LOOK FOR OPERATOR INTERVENTION
4437                    C8CKPA= JMS I XXC8CKP           /CHECK IF CONTROL CHAR
4440                    C8PAUS= JMS I XXC8PU            /IF CONSOL PACKAGE RETURN CALL PLUS ONE
                                                        /IF NOT USING CONSOL REPLACE CALL WITH
                                                        /A HLT AND THEN GO TO THE HALT
4425                    LAS=C8CKSW                      /GET SWITCH REGISTER
```



```
                        /SWITCH REGISTER OPTIONS

                        /SWITCH NUMBER          DESCRIPTION

                        /       0               1 (UP)  = CONTINUE ON ERROR
                        /                       0 (DWN) = HALT ON ERROR

                        /       1               1 (UP)  = HALT AT END OF TEST
                        /                       0 (DWN) = CONTINUE TEST SEQUENCE

                        /       2               1 (UP)  = LOOP ON INDIVIDUAL TEST
                        /                       0 (DWN) = NORMAL TEST SEQUENCE

                        /       3               1 (UP)  = RUN TEST ONCE & HALT
                        /                       0 (DWN) = LOOP ON TEST SEQUENCE

                        /       4               1 (UP)  = KEYBOARD CONTROL OF TEST
                        /                       0 (DWN) = SWITCH REGISTER CONTROL OF TEST

                        /       6-11            TEST NUMBER SELECTION

                        /       4-11            NUMBER OF COLUMNS AT START-UP
```

```
                0000            *0
                                /
0000  0304                      304                     /REV. LEVEL "D",
                                /
0001  5516                      JMP I   INTSRV          /INTERRUPT SERVICE


                0010            *10

0010  0000      AUTPTR, 0000                            /AUTO TABLE POINTER


                0020            *20
                                /
                                //////////
                                /CONSOLE PACKAGE PARAMETER CONTROL WORDS,
                                /
0020  0204                      0204                    /PSEUDO SWITCH REGISTER
0021  4000                      4000                    /CONTROL OPTION 1 (USE PSEUDO SWITCHES)
0022  0166                      0166                    /CONTROL OPTION 2 (DEVICE CODE 66)
                                /
                                ///////////
                                /
                                //////////
                                /CONSOLE PACKAGE POINTERS,
                                /
0023  5400      XXC8CNT,        XC8CNT
0024  5226      XXC8PCS,        XC8PAS
0025  5306      XXC8SW,         XC8SW
0026  5317      XXC8TTY,        XC8TTY
0027  5330      XXC8PNT,        XC8PNT
0030  5656      XXC8PSW,        XC8PSW
0031  6027      XXC8OCT,        XC8OCT
0032  6052      XXC8CRL,        XC8CRL
0033  6120      XXC8ECH,        XC8ECH
0034  6132      XXC8TYP,        XC8TYP
0035  6200      XXC8ERR,        XC8ERR
0036  5634      XXC8IQ,         XC8INQ
0037  6075      XXC8CKP,        XC8CKP
0040  6311      XXC8PU,         XC8PAU
```



```
                                /CONSTANTS

0041  7774      M4,     7774
0042  7770      M10,    7770
0043  7766      M12,    7766
0044  7760      M20,    7760
0045  7756      M22,    7756
0046  7752      M26,    7752
0047  7715      M63,    7715
0050  7704      M74,    7704
0051  7701      M77,    7701
0052  7634      M144,   7634
0053  7601      M177,   7601
0054  7575      M203,   7575
0055  7574      M204,   7574
0056  7540      M240,   7540
0057  7401      M377,   7401
0060  6030      M1750,  6030

0061  0004      P4,     0004
0062  0007      P7,     0007
0063  0010      P10,    0010
0064  0014      P14,    0014
0065  0020      P20,    0020
0066  0033      P33,    0033
0067  0040      P40,    0040
0070  0057      P57,    0057
0071  0060      P60,    0060
0072  0072      P72,    0072
0073  0077      P77,    0077
0074  0100      P100,   0100
0075  0130      P130,   0130
0076  0134      P134,   0134
0077  0144      P144,   0144
0100  0177      P177,   0177
0101  0200      P200,   0200
0102  0204      P204,   0204
0103  0400      P400,   0400
0104  0444      P444,   0444
0105  7402      P7402,  7402
0106  7700      P7700,  7700
```

```
                    /FLAGS & POINTERS

0107  0000    STAT,   0000                    /UNIQUE DC02 STATION
0110  0000    SELECT, 0000                    /SELECTED DC02 STATIONS, GROUPS
0111  0000    TSTNO,  0000                    /TEST NUMBER STORAGE
0112  0000    TSTPTR, 0000                    /TEST POINTER
0113  0000    HDRPTR, 0000                    /TEST HEADER POINTER
0114  0000    TABPTR, 0000                    /TABLE POINTER
0115  0000    TABPT2, 0000
0116  0000    INTSRV, 0000                    /INTERRUPT SERVICE LOCATION

0117  0000    IOFLAG, 0000                    /I-O TEST SEQUENCE FLAG
0120  0000    DC02FL, 0000                    /DC02 FLAG,  7777 = DC02 IN USE
0121  0000    TLOOP,  0000                    /LOOP ON TEST FLAG
0122  0000    TRONE,  0000                    /ONE RUN FLAG (RUN TEST ONLY ONCE)


                    /WORKING STORAGE

0123  0000    WIDTH,  0000                    /NEGATIVE NUMBER OF COLUMNS
0124  0000    COLMN,  0000                    /NUMBER OF COLUMNS

0125  0000    CHAR,   0000                    /CHARACTER STORAGE
0126  0000    CHAR1,  0000
0127  0000    LPCNT,  0000                    /LOOP OR CHARACTER COUNT STORAGE
0130  0000    CHRCNT, 0000                    /CHARACTER COUNT STORAGE
0131  0000    PASCNT, 0000                    /END OF PASS COUNT FOR TEST 12
0132  0000    EOT,    0000                    /CHAR CHECK FLAG

0133  0000    THOUS,  0000
0134  0000    HUNDS,  0000                    /CONVERSION STORAGE
0135  0000    TENS,   0000
0136  0000    ONES,   0000

0137  0000    DELAY0, 0000                    /DELAY COUNTERS
0140  0000    DELAY1, 0000

                    /DC02 INSTRUCTION DEFINITIONS

                6113        MTPF=6113
                6115        MINT=6115
                6116        MKRB=6116
                6117        MTON=6117
                6123        MTKF=6123
                6125        MINS=6125
                6127        MTRS=6127
                6111        MKSF=6111
                6112        MKCC=6112
                6114        MKRS=6114
                6121        MTSF=6121
                6122        MTCF=6122
                6126        MTLS=6126
                6124        MTPC=6124
```



```
                    /TAGS

0141  4000    TKSF,   RKSF
0142  4005    TKCC,   RKCC
0143  4010    TKRS,   RKRS
0144  4013    TKRB,   RKRB
0145  4016    TTSF,   RTSF
0146  4023    TTCF,   RTCF
0147  4026    TTPC,   RTPC
0150  4031    TTLS,   RTLS

0151  0325    TDELAY, DELAY
0152  0314    TERR,   ERROR
0153  4034    TSET,   IOTSET
0154  4653    TCRLF,  CRLF
0155  4657    TCR,    CR
0156  4664    TLF,    LF
0157  4600    TPRINT, PRINT
0160  3643    TREAD,  READ
0161  4117    TMESG,  MESG
0162  4224    TPRHDR, PRTHDR
0163  6463    TTP0,   TP0
0164  4410    TEXITA, EXITA
0165  4407    TEXIT,  EXIT
0166  4640    TPCHAR, PCHAR
0167  3761    TSP,    SP
0170  3754    TPOCT,  POCT
0171  6325    TCHART, CHART
0172  4531    TDREFL, DREFL
0173  4671    TFLAG,  FLAG
0174  5000    TSETUP, SETUP
0175  0340    TSDLY,  SDLAY
0176  4200    TEEM,   EEM
0177  0000    CHART1, 0


        0200            *200

                /START ADDRESS FOR STANDARD CONSOLE INTERFACE = 200
                /
                //////////
                /CHECK FOR CONSOLE PACKAGE AND SR=,
                /IF CONSOLE PACKAGE THEN INTERIGATE WITH SR=,
                /IF NOT THEN USE NORMAL START 200,
                /

0200  4777'            JMS     APTCON          /CHECK FOR CONSOLE + SR=
0201  3120            DCA     DC02FL          /CLEAR DC02 FLAG
0202  1376            TAD     (NOP            /CLEAR RESTART INSTRUCTION
0203  3236            DCA     START1
0204  1375            TAD     (0304           /GET STANDARD IOT'S
0205  4553            JMS I   TSET            /RESET IOT INSTRUCTIONS
0206  5216            JMP     START           /GO TO START
```

```
                0210            *210

                                /RESTART ADDRESS = 210

0210  7300                      CLA CLL                 /CLEAR AC AND LINK
0211  1374                      TAD     (JMP START0     /SET RESTART INSTRUCTION
0212  3236                      DCA     START1
0213  3122                      DCA     TRONE           /CLEAR ONE RUN FLAG
0214  3121                      DCA     TLOOP           /CLEAR LOOP ON TEST FLAG
0215  3117                      DCA     IOFLAG          /CLEAR IO FLAG
0216  4425  START,               LAS                     /GET SWITCH REGISTER
0217  0373                      AND     (377            /MASK NUMBER OF COLUMNS
0220  3124                      DCA     COLMN           /STORE # COLUMNS
0221  1372                      TAD     (-36            /CHECK # COLUMNS
0222  1124                      TAD     COLMN
0223  7710                      SPA CLA                 /# COLUMNS < 30(10) ?
0224  5231                      JMP     START2          /YES, SET TO 132
0225  1055                      TAD     M204            /CHECK # COLUMNS AGAIN
0226  1124                      TAD     COLMN
0227  7710                      SPA CLA                 /IS # COLUMNS > 132 (10) ?
0230  5233                      JMP     .+3             /NO,  CONTINUE
0231  1102  START2,              TAD     P204            /YES,  SET TO 132 (10)
0232  3124                      DCA     COLMN           /STORE NEW VALUE
0233  1124                      TAD     COLMN           /GET NUMBER OF COLUMNS
0234  7041                      CIA                     /NEGATE IT
0235  3123                      DCA     WIDTH           /STORE IN WIDTH
0236  7000  START1,              NOP
0237  7240                      CLA CMA                 /SET AC = -1 (7777)
0240  3117                      DCA     IOFLAG          /SET IO TEST SEQUENCE FLAG
0241  1120                      TAD     DC02FL          /GET DC02 FLAG
0242  7640                      SZA CLA                 /FLAG SET?
0243  5246                      JMP     .+3             /YES,  SET POINTER FOR DC02 IO TESTS
0244  1067                      TAD     P40             /NO,  SET POINTER FOR STANDARD IO TESTS
0245  7410                      SKP
0246  1071                      TAD     P60
0247  3111  START0,              DCA     TSTNO           /STORE TEST NUMBER
0250  7240                      CLA CMA
0251  3113                      DCA     HDRPTR          /CLEAR TEST HEADER POINTER
0252  3132                      DCA     EOT             /ALLOW CHAR CHECK IN READ
0253  7000  START4,              NOP
0254  4561                      JMS I   TMESG           /PRINT TEST TITLE FIRST TIME THROUGH
0255  6546                      HDRMSG
0256  1371                      TAD     (JMP START3)
0257  3253                      DCA     START4
0260  1111  START3,              TAD     TSTNO           /GET TEST NUMBER AGAIN
0261  1163                      TAD     TTP0            /ADD TABLE ADDRESS
0262  3114                      DCA     TABPTR          /STORE TEST POINTER
0263  1514                      TAD I   TABPTR          /GET TEST ADDRESS
0264  7450                      SNA                     /THIS TEST SELECTED IN TABLE?
0265  5565                      JMP I   TEXIT           /NO, CHECK NEXT TEST IN SEQUENCE
0266  3112                      DCA     TSTPTR          /SET TEST ADDRESS
0267  4425                      LAS                     /GET SWITCH REGISTER
0270  7106                      CLL RTL                 /CHECK SWITCH 3
0271  7104                      CLL RAL
0272  7700                      SMA CLA                 /WANT TEST SELECTION HALT ?
```



```
0273  5512                      JMP I   TSTPTR          /NO, GO TO TEST
0274  1117                      TAD     IOFLAG          /YES, CHECK IO FLAG
0275  7640                      SZA CLA                 /WANT IO TESTS?
0276  5512                      JMP I   TSTPTR          /YES, GO TO IO TESTS
0277  5574                      JMP I   TSETUP          /NO, GO TO TEST SET UP HALT

                0300            *300

                                /START ADDRESS FOR DC02 INTERFACE = 300

0300  7240                      CLA CMA                 /SET AC = -1 (7777)
0301  3120                      DCA     DC02FL          /SET DC02 FLAG
0302  1376                      TAD     (NOP            /RESET RESTART INSTRUCTION
0303  3236                      DCA     START1
0304  4425                      LAS                     /GET SWITCH REGISTER
0305  3110                      DCA     SELECT          /STORE SELECTED CHANNELS, GROUPS
0306  7240                      CLA CMA                 /SET AC = -1 (7777)
0307  6117                      MTON                    /SELECT ALL CHANNELS
0310  6112                      MKCC                    /CLEAR ALL DC02 FLAGS
0311  7300                      CLA CLL                 /CLEAR AC AND LINK
0312  7402                      HLT                     /HALT, WAIT FOR OPERATOR TO SET SWITCHES
                                                        /FOR NORMAL START OF PROGRAM,

                                /PRESS CONTINUE WHEN READY,

0313  5216                      JMP     START           /GO TO NORMAL START ROUTINE

                                /ERROR HANDLING ROUTINE

0314  0000  ERROR,  0
0315  4425                      LAS                     /GET SW REG
0316  7710                      SPA CLA                 /CONTINUE ON ERROR?
0317  5512                      JMP I   TSTPTR          /YES, RETURN TO TEST
0320  7240                      CLA CMA                 /NO, SET AC = -1
0321  1314                      TAD     ERROR           /SET ERROR LOC IN AC
0322  4435                      C8ERR                   /GO TO ERROR HANDLER
0323  7300                      CLA CLL                 /CLEAR AC AND LINK
0324  5512                      JMP I   TSTPTR          /RETURN TO TEST
```

```
                        /LONG DELAY ROUTINE, ENTER WITH DELAY LOOP COUNT IN AC
                        /ROUTINE DELAYS APPROXIMATELY 30.2 TO 35.5 MSEC. PER LOOP

0325  0000  DELAY,  0
0326  3137          DCA     DELAY0          /STORE DELAY LOOP COUNT
0327  1104  DELAYA, TAD     P444            /GET DELAY COUNT
0330  3140          DCA     DELAY1          /SET DELAY COUNT
0331  2140          ISZ     DELAY1          /DELAY
0332  5331          JMP     .-1
0333  2140          ISZ     DELAY1          /DELAY
0334  5333          JMP     .-1
0335  2137          ISZ     DELAY0          /DONE DELAY?
0336  5327          JMP     DELAYA          /NO, CONTINUE
0337  5725          JMP I   DELAY           /YES, EXIT

                        /SHORT DELAY ROUTINE, ENTER WITH DELAY LOOP COUNT IN AC
                        /ROUTINE DELAYS APPROXIMATELY 1.8 TO 1.18 MSEC. PER LOOP.

0340  0000  SDLAY,  0
0341  3137          DCA     DELAY0          /STORE DELAY COUNT
0342  1370  SDLAYA, TAD     (7471           /GET DELAY COUNT
0343  3140          DCA     DELAY1          /STORE COUNT
0344  2140          ISZ     DELAY1          /DELAY
0345  5344          JMP     .-1
0346  2137          ISZ     DELAY0          /DONE?
0347  5342          JMP     SDLAYA          /NO, CONTINUE DELAY
0350  5740          JMP I   SDLAY           /YES, EXIT

0351  0405  T32M2,  TEXT    /DEPRESS CONTROL-E/
0352  2022
0353  0523
0354  2340
0355  0317
0356  1624
0357  2217
0360  1455
0361  0500
0362  5555  T33M1,  TEXT    /+++---?/
0363  5555
0364  5577
0365  2000
0370  7471
0371  5260
0372  7742
0373  0377
0374  5247
0375  0304
0376  7000
0377  0521
```



```
0400        PAGE

                        /STARTING ADDRESS FOR MULTIPLE TERMINALS WITHOUT DC02 = 400

0400  7300          CLA CLL                 /CLEAR AC AND LINK
0401  3120          DCA     DC02FL          /CLEAR DC02 FLAG
0402  1377          TAD     (NOP            /RESET RESTART INSTRUCTION
0403  3746          DCA I   TSTRT1
0404  3117          DCA     IOFLAG          /CLEAR ACTIVE IOT POINTERS
0405  1376          TAD     (IOTTAB-1       /GET TABLE ADDRESS
0406  3010          DCA     AUTPTR          /STORE TABLE ADDRESS
0407  1410  IOTA,   TAD I   AUTPTR          /GET IOT PAIR
0410  7450          SNA                     /DONE CHECKING IOT'S?
0411  5225          JMP     IOTE            /YES
0412  4553          JMS I   TSET            /SET IO INSTRUCTIONS
0413  4550          JMS I   TTLS            /CLEAR FLAG
0414  1041          TAD     M4              /SET DELAY COUNT
0415  4551          JMS I   TDELAY          /WAIT 120 MILLISECONDS
0416  4545          JMS I   TTSF            /SKIP IF FLAG IS SET
0417  7410          SKP                     /AC = 0; CLEAR FLAG FOR THIS IOT
0420  7201          CLA IAC                 /SET AC = 1; SET FLAG FOR THIS IOT
0421  1117          TAD     IOFLAG          /SET FLAG FOR THIS IOT
0422  7104          CLL RAL                 /SHIFT FLAGS
0423  3117          DCA     IOFLAG          /STORE FLAG
0424  5207          JMP     IOTA            /CONTINUE
0425  1375  IOTE,   TAD     (IOTTAB
0426  3114          DCA     TABPTR          /RESET IOT TABLE POINTER
0427  1117          TAD     IOFLAG          /GET TABLE FLAGS READY
0430  7106          CLL RTL
0431  7106          CLL RTL
0432  3117  IOTF,   DCA     IOFLAG          /STORE FLAGS
0433  1117  IOTF1,  TAD     IOFLAG          /GET FLAGS AGAIN
0434  7510          SPA                     /THIS IOT ACTIVE?
0435  5245          JMP     IOTG            /YES
0436  2114          ISZ     TABPTR          /NO, INCREMENT TABLE POINTER
0437  7104          CLL RAL                 /GET NEXT IOT FLAG
0440  3117          DCA     IOFLAG          /STORE FLAG
0441  1514          TAD I   TABPTR          /CHECK NEXT TABLE DATA
0442  7640          SZA CLA                 /DONE CHECKING TABLE?
0443  5233          JMP     IOTF1           /NO, CONTINUE
0444  5317          JMP     IOTH            /YES, WAIT FOR IOT SELECTION
0445  7200  IOTG,   CLA                     /CLEAR AC
0446  1514          TAD I   TABPTR          /GET IOT'S
0447  4553          JMS I   TSET            /SET INSTRUCTIONS WITH THIS IOT
0450  4561          JMS I   TMESG           /TYPE MESSAGE,  THIS IOT
0451  5200          IMES1
0452  1514          TAD I   TABPTR          /GET IOT'S
0453  7112          CLL RTR
0454  7112          CLL RTR
0455  7112          CLL RTR
0456  0073          AND     P77             /GET XMTR IOT
0457  3125          DCA     CHAR            /STORE XMTR IOT
0460  1125          TAD     CHAR            /GET IOT AGAIN
0461  7012          RTR                     /GET HIGH DIGIT
0462  7010          RAR
```

```
0463  4570          JMS I   TPOCT           /PRINT DIGIT
0464  1125          TAD     CHAR            /GET XMTR IOT AGAIN
0465  4570          JMS I   TPOCT           /PRINT DIGIT
0466  1070          TAD     P57             /SET "/" CHAR
0467  4557          JMS I   TPRINT          /PRINT CHAR
0470  1514          TAD I   TABPTR          /GET IOT'S AGAIN
0471  7012          RTR                     /GET RCVR IOT HIGH DIGIT
0472  7010          RAR
0473  4570          JMS I   TPOCT           /PRINT DIGIT
0474  1514          TAD I   TABPTR          /GET IOT
0475  4570          JMS I   TPOCT           /PRINT DIGIT
0476  4561          JMS I   TMESG           /PRINT MESSAGE
0477  5217          IMES2
0500  2114          ISZ     TABPTR          /INCREMENT TABLE POINTER
0501  1514          TAD I   TABPTR          /GET NEXT IOT'S
0502  7650          SNA CLA                 /DONE?
0503  5317          JMP     IOTH            /YES
0504  1117          TAD     IOFLAG          /NO,  CONTINUE PRINTING
0505  7104          CLL RAL                 /INCREMENT FLAG POINTER
0506  5232          JMP     IOTF            /CONTINUE

      0517          *517

                /STARTING ADDRESS TO SELECT IOT'S WITHOUT TESTING AVAILABLE LINES = 520

0517  7402  IOTH,   HLT                     /WAIT FOR OPERATOR TO SELECT IOT'S
0520  5334          JMP     NRMALL          /NORMAL STARTUP.
```



```
                ////////////
                /CHECK FOR CONSOLE PACKAGE,
                /IF CONSOLE THEN INTERIGATE WITH SR=,
                /AFTER INTERIGATION THEN SETUP DEVICE CODE,
                /IF NOT RETURN FOR NORMAL START AT 200,
                /
0521  0000  APTCON, 0
0522  7300          CLA CLL                 /CLEAR AC + LINK,
0523  4430  C8DOR,  C8SWIT                  /CHECK FOR SETUP PSEUDO SWITCHES,
0524  1022          TAD     22              /GET CONTROL WORD 2,
0525  0103          AND     P400            /MASK CONSOLE BIT,
0526  7650          SNA CLA                 /ON CONSOLE?
0527  5721          JMP I   APTCON          /NO, NORMAL START AT 200,
0530  1022          TAD     22              /YES, SETUP DEVICE CODES,
0531  0073          AND     P77             /MASK DEVICE CODES,
0532  1345          TAD     K300            /MAKE 03 RECIEVE CODE,
0533  7410          SKP                     /START PROGRAM,
                /
                ////////////
                /
0534  4425  NRMALL, LAS                     /GET SWITCH REGISTER
0535  4553          JMS I   TSET            /SET IO INSTRUCTIONS
0536  4561          JMS I   TMESG           /PRINT MESSAGE ON SELECTED TERMINAL
0537  6577          IMES3
                /
                //////////
                /CHECK FOR CONSOLE PACKAGE,
                /IF SELECTED INHIBIT HALT,
                /
0540  1022          TAD     22              /GET CONTROL WORD,
0541  0103          AND     P400            /MASK CONSOLE BIT
0542  7650          SNA CLA                 /INHIBIT HALT,
0543  7402          HLT                     /NO, WAIT FOR SWITCH SELECTION
0544  5747          JMP I   TSTART          /YES, GO TO NORMAL START

0545  0300  K300,   0300
0546  0236  TSTRT1, START1
0547  0216  TSTART, START
0575  4107
0576  4106
0577  7000
```

```
                0600            PAGE

                        /TEST0 - DATA PATHS TEST

0600  4562    TEST0,  JMS I   TPRHDR          /PRINT TEST HEADER
0601  1041            TAD     M4              /SET LINE COUNT FOR 4 LINES
0602  3127            DCA     LPCNT
0603  1123    T0A,    TAD     WIDTH           /GET # OF COLUMNS
0604  3130            DCA     CHRCNT          /STORE NEGATIVE COUNT
0605  7201            CLA IAC                 /CHECK LINE COUNT
0606  0127            AND     LPCNT
0607  7640            SZA CLA                 /START CHAR = ?
0610  5216            JMP     T0C             /START WITH "U"
0611  1377    T0B,    TAD     (52             /GET "*" CHAR CODE
0612  4557            JMS I   TPRINT          /PRINT CHAR
0613  2130            ISZ     CHRCNT          /INCREMENT CHAR COUNT
0614  7410            SKP                     /CONTINUE
0615  5222            JMP     T0D             /SEND CR-LF
0616  1376    T0C,    TAD     (125            /GET "U" CHAR CODE
0617  4557            JMS I   TPRINT          /PRINT CHAR
0620  2130            ISZ     CHRCNT          /DONE LINE?
0621  5211            JMP     T0B             /NO,  CONTINUE
0622  4554    T0D,    JMS I   TCRLF           /SEND CR-LF
0623  2127            ISZ     LPCNT           /DONE TEST?
0624  5203            JMP     T0A             /NO, CONTINUE
0625  5565            JMP I   TEXIT           /YES, EXIT
```



```
                        /TEST1 - CHARACTER TEST

0626  4562    TEST1,  JMS I   TPRHDR          /PRINT TEST HEADER
0627  1067            TAD     P40             /GET FIRST CHAR (SPACE)
0630  3177            DCA     CHART1          /STORE FIRST CHAR
0631  7346    T1S,    CLA CLL CMA RTL         /SET CHAR COUNT FOR 3 CHARS PER GROUP
0632  3130            DCA     CHRCNT          /STORE COUNT
0633  1177    T1A,    TAD     CHART1          /GET CHAR
0634  4557            JMS I   TPRINT          /PRINT CHAR
0635  2130            ISZ     CHRCNT          /DONE THIS CHAR?
0636  5233            JMP     T1A             /NO,  CONTINUE
0637  7346            CLA CLL CMA RTL         /SET SPACE COUNT
0640  4567            JMS I   TSP             /PRINT 3 SPACES
0641  7346            CLA CLL CMA RTL
0642  3130            DCA     CHRCNT          /RESET CHARACTER COUNT
0643  1067    T1B,    TAD     P40
0644  1177            TAD     CHART1          /GET CHAR FOR SECOND COLUMN
0645  4557            JMS I   TPRINT          /PRINT CHAR
0646  2130            ISZ     CHRCNT          /DONE CHAR?
0647  5243            JMP     T1B             /NO,  CONTINUE
0650  7346            CLA CLL CMA RTL         /SET SPACE COUNT
0651  4567            JMS I   TSP             /PRINT 3 SPACES
0652  7346            CLA CLL CMA RTL         /RESET CHARACTER COUNT
0653  3130            DCA     CHRCNT
0654  1051            TAD     M77             /DONE TEST?
0655  1177            TAD     CHART1
0656  7650            SNA CLA
0657  5270            JMP     T1Z             /YES, EXIT
0660  1074    T1C,    TAD     P100            /NO,  GET CHAR FOR THIRD COLUMN
0661  1177            TAD     CHART1
0662  4557            JMS I   TPRINT          /PRINT CHAR
0663  2130            ISZ     CHRCNT          /DONE THIS CHAR?
0664  5260            JMP     T1C             /NO, CONTINUE
0665  4554            JMS I   TCRLF           /YES,  SEND CR-LF
0666  2177            ISZ     CHART1          /GET NEXT CHAR
0667  5231            JMP     T1B             /CONTINUE

0670  4554    T1Z,    JMS I   TCRLF           /SEND CR-LF
0671  5565            JMP I   TEXIT           /EXIT
```

```
                        /TEST2 = NON-PRINTABLE CHARACTER TEST

0672  4562    TEST2,  JMS I   TPRHDR          /PRINT TEST HEADER
0673  1171            TAD     TCHART          /GET TABLE ADDRESS
0674  3114            DCA     TABPTR          /SET TABLE POINTER
0675  7346    T2A,    CLA CLL CMA RTL         /SET COUNT FOR 3 GROUPS PER LINE
0676  3127            DCA     LPCNT           /STORE COUNT
0677  5302            JMP     .+3             /CONTINUE
0700  7344    T2B,    CLA CLL CMA RAL         /SET SPACE COUNT
0701  4567            JMS I   TSP             /SEND 2 SPACES
0702  1514            TAD I   TABPTR          /GET CODE AND FIRST CHAR
0703  0073            AND     P77             /MASK CODE
0704  3177            DCA     CHART1          /STORE CODE
0705  1051            TAD     M77             /CHECK IF DEL CODE
0706  1177            TAD     CHART1
0707  7650            SNA CLA                 /DEL CODE?
0710  5356            JMP     T2D             /YES, SET CHAR = DEL
0711  1177            TAD     CHART1          /NO, GET CODE
0712  1375            TAD     (-7
0713  7650            SNA CLA                 /DONE TEST; BELL CODE ?
0714  5362            JMP     T2X             /YES, EXIT
0715  4570    T2BA,   JMS I   TPOCT           /PRINT "0"  (OR "1" IF DEL)
0716  1177            TAD     CHART1          /GET CODE
0717  7012            RTR                     /GET HIGH DIGIT
0720  7010            RAR
0721  4570            JMS I   TPOCT           /PRINT DIGIT
0722  1177            TAD     CHART1          /GET LOW DIGIT
0723  4570            JMS I   TPOCT           /PRINT DIGIT
0724  7344            CLA CLL CMA RAL         /SET SPACE COUNT
0725  4567            JMS I   TSP             /SEND 2 SPACES
0726  1514            TAD I   TABPTR          /GET TABLE DATA AGAIN
0727  7012            RTR                     /GET FIRST CHAR
0730  7012            RTR
0731  7012            RTR
0732  4566            JMS I   TPCHAR          /PRINT CHAR
0733  2114            ISZ     TABPTR          /INCREMENT TABLE POINTER
0734  1514            TAD I   TABPTR          /GET NEXT CHARS
0735  4566            JMS I   TPCHAR          /PRINT SECOND CHAR
0736  1514            TAD I   TABPTR          /GET NEXT CHAR
0737  7012            RTR                     /GET LAST CHAR
0740  7012            RTR
0741  7012            RTR
0742  4566            JMS I   TPCHAR          /PRINT LAST CHAR
0743  7346            CLA CLL CMA RTL         /SET CHAR COUNT TO SEND 3 CHARS
0744  3130            DCA     CHRCNT          /STORE COUNT
0745  1177    T2C,    TAD     CHART1          /GET CHAR
0746  4557            JMS I   TPRINT          /PRINT CHAR
0747  2130            ISZ     CHRCNT          /DONE SENDING DATA?
0750  5345            JMP     T2C             /NO, CONTINUE
0751  2114            ISZ     TABPTR          /INCREMENT TABLE POINTER
0752  2127            ISZ     LPCNT           /INCREMENT GROUP COUNT
0753  5300            JMP     T2B             /CONTINUE
0754  4554            JMS I   TCRLF           /DONE LINE, SEND CR-LF
0755  5275            JMP     T2A             /RESET GROUP COUNT
0756  1100    T2D,    TAD     P177            /GET ASCII FOR DEL
```



```
0757  3177            DCA     CHART1          /STORE CHAR
0760  7201            CLA IAC                 /SET AC = +1
0761  5315            JMP     T2BA            /CONTINUE
0762  4554    T2X,    JMS I   TCRLF           /SEND CR-LF
0763  5565            JMP I   TEXIT           /EXIT TEST


0775  7771
0776  7125
0777  7052
      1000            PAGE

                        /TEST3 = CARRIAGE RETURN TEST

1000  4562    TEST3,  JMS I   TPRHDR          /PRINT TEST HEADER
1001  1123            TAD     WIDTH           /GET NUMBER OF COLUMNS
1002  3130            DCA     CHRCNT          /RESET COUNT
1003  4570    T3D,    JMS I   TPOCT           /PRINT "0"
1004  2130            ISZ     CHRCNT          /DONE LINE?
1005  7410            SKP                     /NO, SEND SPACE
1006  5213            JMP     T3E             /YES, SEND CR
1007  1067            TAD     P40             /GET SPACE CODE
1010  4557            JMS I   TPRINT          /PRINT SPACE
1011  2130            ISZ     CHRCNT          /DONE LINE?
1012  5203            JMP     T3D             /NO, CONTINUE
1013  4555    T3E,    JMS I   TCR             /SEND CR
1014  7240            CLA CMA                 /SET AC = -1 (7777)
1015  3127            DCA     LPCNT           /STORE SPACE COUNT
1016  1127    T3F,    TAD     LPCNT           /GET SPACE COUNT
1017  4567            JMS I   TSP             /SEND SPACES
1020  1075            TAD     P130            /YES, GET "X" CODE
1021  4557            JMS I   TPRINT          /PRINT X
1022  4555            JMS I   TCR             /SEND CR
1023  7344            CLA CLL CMA RAL         /ADD 2 TO SPACE COUNT
1024  1127            TAD     LPCNT
1025  3127            DCA     LPCNT           /STORE NEW COUNT
1026  7240            CLA CMA                 /SET AC = -1
1027  1127            TAD     LPCNT           /SUBTRACT SPACE COUNT
1030  1124            TAD     COLMN           /ADD # COLUMNS
1031  7700            SMA CLA                 /DONE TEST?
1032  5216            JMP     T3F             /NO, CONTINUE
1033  4556            JMS I   TLF             /SEND LF
1034  5565            JMP I   TEXIT           /EXIT TEST
```

```
                    /TEST4 - MULTIPLE LINE FEED TEST

1035  4562  TEST4,  JMS I   TPRHDR          /PRINT TEST HEADER
1036  1377          TAD     (T4TAB          /GET TABLE ADDRESS
1037  3114          DCA     TABPTR          /STORE POINTER
1040  4561          JMS I   TMESG           /PRINT START OF TEST MESSAGE
1041  5162          T4SMES
1042  1063          TAD     P10             /SUBTRACT 10 FROM # COLUMNS
1043  1123          TAD     WIDTH
1044  3130          DCA     CHRCNT          /STORE COUNT
1045  1376          TAD     (55             /GET ASCII FOR DASH
1046  4557          JMS I   TPRINT          /PRINT DASH
1047  2130          ISZ     CHRCNT          /DONE DASHES?
1050  5245          JMP     .-3             /NO, CONTINUE
1051  4555          JMS I   TCR             /SEND CR
1052  3135  T4A,    DCA     TENS            /CLEAR CONVERSION COUNTERS
1053  3136          DCA     ONES
1054  1514          TAD I   TABPTR          /GET TABLE DATA
1055  7041          CIA                     /NEGATE IT
1056  3127          DCA     LPCNT           /STORE LF COUNT
1057  4556          JMS I   TLF             /SEND LF
1060  2127          ISZ     LPCNT           /DONT LF'S ?
1061  5257          JMP     .-2             /NO, SEND ANOTHER
1062  2114          ISZ     TABPTR          /YES, INCREMENT TABLE POINTER
1063  1514          TAD I   TABPTR          /GET TABLE DATA
1064  7450          SNA                     /DONE TEST?
1065  5304          JMP     T4X             /YES, EXIT TEST
1066  2135          ISZ     TENS            /CONVERT NUMBER TO ASCII
1067  1043          TAD     M12
1070  7500          SMA
1071  5266          JMP     .-3
1072  3136          DCA     ONES
1073  7240          CLA CMA
1074  1135          TAD     TENS
1075  1071          TAD     P60
1076  4557          JMS I   TPRINT          /PRINT TENS DIGIT
1077  1136          TAD     ONES
1100  1072          TAD     P72
1101  4557          JMS I   TPRINT          /PRINT ONES DIGIT
1102  4555          JMS I   TCR             /SEND CR
1103  5252          JMP     T4A             /CONTINUE TEST

1104  4561  T4X,    JMS I   TMESG           /PRINT END OF TEST MESSAGE
1105  5167          T4EMES
1106  7326          CLA CLL CML RTL         /SUBTRACT 2 FROM # COLUMNS
1107  1123          TAD     WIDTH
1110  3130          DCA     CHRCNT          /STORE COUNT
1111  1376          TAD     (55             /GET ASCII FOR DASH
1112  4557          JMS I   TPRINT          /PRINT DASH
1113  2130          ISZ     CHRCNT          /DONE DASHES?
1114  5311          JMP     .-3             /NO, CONTINUE
1115  4554          JMS I   TCRLF           /SEND CR-LF
1116  5565          JMP I   TEXIT           /EXIT TEST
```



```
1117  0001  T4TAB,  0001                    /LF COUNT TABLE
1120  0002          0002
1121  0004          0004
1122  0010          0010
1123  0020          0020
1124  0040          0040
1125  0000          0000                    /END OF TABLE


                    /TEST5 - SINGLE LINE FEED TEST

1126  4562  TEST5,  JMS I   TPRHDR          /PRINT TEST HEADER
1127  7326          CLA CLL CML RTL         /SUBTRACT 2 FROM  # COLUMNS
1130  1123          TAD     WIDTH
1131  3130          DCA     CHRCNT          /STORE COUNT
1132  4570          JMS I   TPOCT           /PRINT ZERO
1133  2130          ISZ     CHRCNT          /DONE ZEROS?
1134  5332          JMP     .-2             /NO, SEND MORE ZEROS
1135  7326          CLA CLL CML RTL         /GET "2"
1136  4570          JMS I   TPOCT           /PRINT 2
1137  7326          CLA CLL CML RTL         /GET "2"
1140  4570          JMS I   TPOCT           /PRINT 2
1141  1102          TAD     P204
1142  1123          TAD     WIDTH
1143  7640          SZA CLA                 /WIDTH = 132(10) COLUMNS?
1144  5354          JMP     T5B             /NO, DELAY FOR LCV
1145  1050          TAD     M74             /YES, SEND 3'S
1146  3130          DCA     CHRCNT          /STORE CHAR COUNT
1147  1375          TAD     (3              /GET 3
1150  4570          JMS I   TPOCT           /PRINT 3
1151  2130          ISZ     CHRCNT          /DONE 3'S?
1152  5347          JMP     .-3             /NO, CONTINUE
1153  5356          JMP     .+3             /YES, CONTINUE TEST
1154  1050  T5B,    TAD     M74             /SET DELAY COUNT
1155  4551          JMS I   TDELAY          /DELAY 1.8 SECONDS
1156  4554          JMS I   TCRLF           /SEND CR-LF
1157  1123          TAD     WIDTH           /GET # COLUMNS
1160  3130          DCA     CHRCNT          /STORE COUNT
1161  1076  T5A,    TAD     P134            /GET BACKSLASH
1162  4557          JMS I   TPRINT          /PRINT CHAR
1163  4556          JMS I   TLF             /SEND LF
1164  2130          ISZ     CHRCNT          /DONE?
1165  5361          JMP     T5A             /NO, CONTINUE
1166  4555          JMS I   TCR             /YES, SEND CR
1167  4572          JMS I   TDREFL          /SEND DOUBLE REFERENCE LINE
1170  5565          JMP I   TEXIT           /EXIT TEST
1175  0003
1176  0055
1177  1117
```

```
                1200            PAGE

                                /TEST6 - BACKSPACE TEST

        1200  4562    TEST6,  JMS I   TPRHDR          /PRINT TEST HEADER
        1201  7326            CLA CLL CML RTL         /SUBTRACT 2 FROM # COLUMNS
        1202  1123            TAD     WIDTH           /GET # COLUMNS
        1203  3130            DCA     CHRCNT          /STORE COUNT
        1204  4570            JMS I   TPOCT           /PRINT ZERO
        1205  2130            ISZ     CHRCNT          /DONE ZEROS?
        1206  5204            JMP     .-2             /NO, SEND ANOTHER ZERO
        1207  7326            CLA CLL CML RTL         /YES, GET 2
        1210  4570            JMS I   TPOCT           /PRINT 2
        1211  7326            CLA CLL CML RTL         /GET 2
        1212  4570            JMS I   TPOCT           /PRINT 2
        1213  1050            TAD     M74             /SET DELAY COUNT
        1214  4551            JMS I   TDELAY          /WAIT 1.8 SECONDS FOR LCV
        1215  4554            JMS I   TCRLF           /SEND CR-LF
        1216  1123            TAD     WIDTH           /GET # COLUMNS
        1217  3130            DCA     CHRCNT          /STORE COUNT
        1220  1070    T6A,    TAD     P57             /GET "/" CODE
        1221  4557            JMS I   TPRINT          /PRINT CHAR
        1222  1063            TAD     P10             /GET BS CODE
        1223  4557            JMS I   TPRINT          /PRINT BACKSPACE
        1224  1076            TAD     P134            /GET "\" CODE
        1225  4557            JMS I   TPRINT          /PRINT CHAR
        1226  2130            ISZ     CHRCNT          /DONE?
        1227  5220            JMP     T6A             /NO, CONTINUE
        1230  4554            JMS I   TCRLF           /YES, SEND CR-LF
        1231  4572            JMS I   TDREFL          /SEND DOUBLE REFERENCE LINES
        1232  5565            JMP I   TEXIT           /EXIT TEST
```



```
                                /TEST7 - OVERPRINT TEST

        1233  4562    TEST7,  JMS I   TPRHDR          /PRINT TEST HEADER
        1234  1377            TAD     (T7TAB-1        /GET TABLE ADDRESS
        1235  3010            DCA     AUTPTR          /SET TABLE POINTER
        1236  7346    T7AA,   CLA CLL CMA RTL         /SET LOOP COUNT FOR 3 OVER PRINTS
        1237  3127            DCA     LPCNT           /STORE COUNT
        1240  1410            TAD I   AUTPTR          /GET TABLE DATA
        1241  7450            SNA                     /DONE TEST?
        1242  5565            JMP I   TEXIT           /YES, EXIT TEST
        1243  3125            DCA     CHAR            /STORE CHARACTER
        1244  1125            TAD     CHAR            /GET TABLE DATA AGAIN
        1245  7012            RTR                     /GET OTHER CHARACTER
        1246  7012            RTR
        1247  7012            RTR
        1250  3126            DCA     CHAR1           /STORE OTHER CHARACTER
        1251  1123    T7A,    TAD     WIDTH           /GET NUMBER OF COLUMNS
        1252  3130            DCA     CHRCNT          /STORE COUNT
        1253  1125    T7B,    TAD     CHAR            /GET FIRST CHAR
        1254  4566            JMS I   TPCHAR          /PRINT CHAR
        1255  2130            ISZ     CHRCNT          /DONE LINE?
        1256  7410            SKP                     /NO, CONTINUE
        1257  5264            JMP     T7C             /YES, CHECK LINE COUNT
        1260  1126            TAD     CHAR1           /GET SECOND CHAR
        1261  4566            JMS I   TPCHAR          /PRINT SECOND CHAR
        1262  2130            ISZ     CHRCNT          /DONE LINE?
        1263  5253            JMP     T7B             /NO, SEND ANOTHER CHAR
        1264  4555    T7C,    JMS I   TCR             /YES, SEND CR
        1265  2127            ISZ     LPCNT           /DONE OVERPRINT
        1266  5251            JMP     T7A             /NO, PRINT ANOTHER LINE
        1267  4556            JMS I   TLF             /SEND LF
        1270  5236            JMP     T7AA            /CONTINUE TEST


        1271  4015    T7TAB,  4015                    /SP-M
        1272  0040            0040                    /@-SP
        1273  4046            4046                    /SP-&
        1274  0000            0000                    /END OF TABLE
```

```
                    /TEST10 - PRINTING FREQUENCY SWEEP TEST

1275  4562  TEST10, JMS I   TPRHDR          /PRINT TEST HEADER
1276  7344          CLA CLL CMA RAL         /SET LOOP COUNT FOR 2 LINES OF INCR'NG DELAY
1277  3127          DCA     LPCNT           /STORE COUNT
1300  1376          TAD     (-36            /SET FIRST DELAY COUNT FOR 30 (10) MSECONDS
1301  3125          DCA     CHAR            /STORE COUNT
1302  1376  T10A,   TAD     (-36            /GET COUNT FOR 30(10) CHARACTERS PER LINE
1303  3130          DCA     CHRCNT          /STORE COUNT
1304  5312          JMP     T10C            /CONTINUE
1305  4344  T10B,   JMS     T10W            /GET DELAY CHANGE
1306  1125          TAD     CHAR            /ADD OLD DELAY
1307  3125          DCA     CHAR            /STORE NEW DELAY
1310  1125          TAD     CHAR            /GET NEW DELAY COUNT
1311  4575          JMS I   TSDLY           /DELAY
1312  1063  T10C,   TAD     P10             /GET "H"
1313  4566          JMS I   TPCHAR          /PRINT H
1314  2130          ISZ     CHRCNT          /DONE LINE?
1315  5305          JMP     T10B            /NO, DELAY AND PRINT NEXT H
1316  4554          JMS I   TCRLF           /YES, SEND CR-LF
1317  2127          ISZ     LPCNT           /DONE INCREMENTING DELAY?
1320  5302          JMP     T10A            /NO, CONTINUE
1321  7344          CLA CLL CMA RAL         /RESET LINE COUNT FOR 2 LINES
1322  3127          DCA     LPCNT           /STORE COUNT
1323  1376  T10D,   TAD     (-36            /RESET CHARACTER COUNT FOR 30 H'S PER LINE
1324  3130          DCA     CHRCNT          /STORE COUNT
1325  5334          JMP     T10F            /CONTINUE
1326  4344  T10E,   JMS     T10W            /GET DELAY CHANGE
1327  7041          CIA                     /NEGATE CHANGE VALUE
1330  1125          TAD     CHAR            /ADD OLD DELAY
1331  3125          DCA     CHAR            /STORE NEW DELAY
1332  1125          TAD     CHAR            /GET NEW DELAY COUNT
1333  4575          JMS I   TSDLY           /DELAY
1334  1063  T10F,   TAD     P10             /GET "H"
1335  4566          JMS I   TPCHAR          /PRINT H
1336  2130          ISZ     CHRCNT          /DONE LINE?
1337  5326          JMP     T10E            /NO, CONTINUE
1340  4554          JMS I   TCRLF           /YES, SEND CR-LF
1341  2127          ISZ     LPCNT           /DONE TEST?
1342  5323          JMP     T10D            /NO, CONTINUE
1343  5565          JMP I   TEXIT           /YES, EXIT
```



```
                    /ROUTINE TO COMPUTE TIME DELAY CHANGE)

                    /CHANGE IN DELAY = OLD DELAY/16 + OLD DELAY/128

1344  0000  T10W,   0000
1345  7300          CLA CLL                 /CLEAR AC AND LINK
1346  1125          TAD     CHAR            /GET OLD DELAY
1347  7130          STL RAR                 /DIVIDE BY 16
1350  7130          STL RAR
1351  7130          STL RAR
1352  7130          STL RAR
1353  3126          DCA     CHAR1           /STORE OLD/16
1354  1126          TAD     CHAR1
1355  7130          STL RAR                 /CONTINUE DIVIDE BY 128
1356  7130          STL RAR
1357  7130          STL RAR
1360  1126          TAD     CHAR1           /ADD OLD/16
1361  5744          JMP I   T10W            /RETURN


1376  7742
1377  1270
      1400          PAGE

                    /TEST 11 - RIBBON  FEED TEST

1400  4562  TEST11, JMS I   TPRHDR          /PRINT TEST HEADER
1401  1377          TAD     (-30            /GET LINE COUNT
1402  3127          DCA     LPCNT           /STORE COUNT
1403  1075  T11A,   TAD     P130            /GET ASCII "X"
1404  4557          JMS I   TPRINT          /PRINT X
1405  4554          JMS I   TCRLF           /SEND CR-LF
1406  2127          ISZ     LPCNT           /DONE TEST?
1407  5203          JMP     T11A            /NO, CONTINUE
1410  5565          JMP I   TEXIT           /YES, EXIT

                    /TEST 12 - BELL TEST (8 BELLS)

1411  4562  TEST12, JMS I   TPRHDR          /PRINT TEST HEADER
1412  1042          TAD     M10             /GET CHARACTER COUNT FOR 8 BELLS
1413  3127          DCA     LPCNT           /STORE CHAR COUNT
1414  1062          TAD     P7              /GET BELL CODE
1415  4557          JMS I   TPRINT          /SEND BELL CODE
1416  2127          ISZ     LPCNT           /DONE TEST?
1417  5214          JMP     .-3             /NO, CONTINUE
1420  1106          TAD     P7700           /SET DELAY COUNT FOR 2.5 SEC DELAY
1421  4551          JMS I   TDELAY          /WAIT FOR BELLS
                    /
                    /CHECK FOR CONSOLE PACKAGE AND PASS COMPLETE PRINTOUT.
                    /
1422  4424          C8PASS                  /CHECK FOR PRINTOUT.
1423  7000          NOP
                    /
1424  5565          JMP I   TEXIT           /EXIT
```

```
                        /TEST 17 - LIFE TEST

1425  4562  TEST17, JMS I   TPRHDR          /PRINT TEST HEADER
1426  1376          TAD     (41             /SET FIRST CHARACTER CODE
1427  3125          DCA     CHAR            /STORE CHAR
1430  1123  T17A,   TAD     WIDTH           /GET # COLUMNS
1431  3130          DCA     CHRCNT          /STORE COUNT
1432  1125  T17B,   TAD     CHAR            /GET CHAR
1433  0100          AND     P177            /MASK BIT 8
1434  4557          JMS I   TPRINT          /PRINT CHAR
1435  2130          ISZ     CHRCNT          /DONE LINE?
1436  5232          JMP     T17B            /NO, SEND ANOTHER CHAR
1437  4554          JMS I   TCRLF           /YES, SEND CR-LF
1440  1041          TAD     M4              /SET OVERPRINT COUNT
1441  3127          DCA     LPCNT           /STORE COUNT
1442  1123  T17C,   TAD     WIDTH           /GET # COLUMNS
1443  3130          DCA     CHRCNT          /STORE COUNT
1444  1125  T17D,   TAD     CHAR            /GET CHAR
1445  0100          AND     P177            /MASK BIT 8
1446  4557          JMS I   TPRINT          /PRINT CHAR
1447  2130          ISZ     CHRCNT          /DONE LINE?
1450  5244          JMP     T17D            /NO, PRINT ANOTHER CHAR
1451  4555          JMS I   TCR             /YES, SEND CR
1452  2127          ISZ     LPCNT           /DONE OVERPRINTS?
1453  5242          JMP     T17C            /NO, CONTINUE
1454  4556          JMS I   TLF             /YES, SEND LF
1455  2125          ISZ     CHAR            /SET NEXT CHAR
1456  1125          TAD     CHAR            /GET CHAR
1457  0100          AND     P177            /MASK BIT 8
1460  1053          TAD     M177            /CHECK CHAR
1461  7640          SZA CLA                 /DONE TEST?
1462  5230          JMP     T17A            /NO, CONTINUE
1463  2131          ISZ     PASCNT          /INCREMENT PASS COUNT
1464  7000          NOP
1465  4554          JMS I   TCRLF           /SEND CR-LF
1466  4561          JMS I   TMESG           /PRINT MESSAGE
1467  5152          ENDPAS                  /"END OF PASS"
1470  7300          CLA CLL                 /CLEAR AC AND LINK
1471  3133          DCA     THOUS           /CLEAR CONVERSION COUNTERS
1472  3134          DCA     HUNDS
1473  3135          DCA     TENS
1474  3136          DCA     ONES
1475  1131          TAD     PASCNT          /GET PASS COUNT
1476  2133          ISZ     THOUS           /INCREMENT THOUS COUNT
1477  1060          TAD     M1750           /SUBTRACT 1000(10)
1500  7500          SMA
1501  5276          JMP     .+3
1502  1375          TAD     (1750
1503  2134          ISZ     HUNDS           /INCREMENT HUNDS COUNT
1504  1052          TAD     M144            /SUBTRACT 100(10)
1505  7500          SMA
1506  5303          JMP     .+3
1507  1077          TAD     P144
1510  2135          ISZ     TENS            /INCREMENT TENS COUNT
1511  1043          TAD     M12             /SUBTRACT 10(10)
```



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1512  7500          SMA
1513  5310          JMP     .+3
1514  3136          DCA     ONES            /STORE ONES DIGIT
1515  7240          CLA CMA                 /SET AC = -1
1516  1133          TAD     THOUS           /ADD THOUS COUNT
1517  1071          TAD     P60             /MAKE ASCII
1520  4557          JMS I   TPRINT          /PRINT THOUSANDS DIGIT
1521  1070          TAD     P57             /SET AC = 57
1522  1134          TAD     HUNDS           /MAKE HUNDREDS DIGIT ASCII
1523  4557          JMS I   TPRINT          /PRINT HUNDREDS DIGIT
1524  1070          TAD     P57             /SET AC = 57
1525  1135          TAD     TENS            /MAKE TENS DIGIT ASCII
1526  4557          JMS I   TPRINT          /PRINT TENS DIGIT
1527  1072          TAD     P72             /SET AC = 72
1532  1136          TAD     ONES            /MAKE ONES DIGIT ASCII
1531  4557          JMS I   TPRINT          /PRINT ONES DIGIT
1532  4554          JMS I   TCRLF           /SEND CR LF
1533  5565          JMP I   TEXIT           /YES, EXIT
```

```
                        /TEST20 - CHARACTER ECHO TEST

1534  4562  TEST20, JMS I   TPRHDR          /PRINT TEST HEADER
1535  4560  T20A,   JMS I   TREAD           /READ CHARACTER
1536  0100          AND     P177            /MASK BIT 8
1537  4557          JMS I   TPRINT          /ECHO CHAR
1540  5335          JMP     T20A            /CONTINUE TEST


                        /TESTS 21 AND 22 - LINE ECHO TESTS (WITH AND WITHOUT LCV)

1541  4562  T21T22, JMS I   TPRHDR          /PRINT TEST HEADER
1542  1374          TAD     (260            /SET CHAR = "0"
1543  3125          DCA     CHAR            /STORE CHAR
1544  1123  T21A,   TAD     WIDTH           /GET # COLUMNS
1545  3130          DCA     CHRCNT          /STORE COUNT
1546  1130  T21B,   TAD     CHRCNT          /CHECK CHARACTER COUNT
1547  7650          SNA CLA                 /DONE LINE?
1550  5344          JMP     T21A            /YES, RESET CHARACTER COUNT
1551  1125          TAD     CHAR            /GET CHAR
1552  0100          AND     P177            /MASK BIT 8
1553  4557          JMS I   TPRINT          /PRINT CHAR
1554  1125          TAD     CHAR            /GET CHARACTER
1555  1036          TAD     M240            /CHECK CHARACTER
1556  7700          SMA CLA                 /PRINTABLE CHARACTER?
1557  2130          ISZ     CHRCNT          /YES, INCREMENT CHARACTER COUNT
1560  7410          SKP                     /CONTINUE
1561  4554          JMS I   TCRLF           /SEND CR-LF AT END OF LINE
1562  1045          TAD     M22             /CHECK TEST NUMBER
1563  1111          TAD     TSTNO
1564  7640          SZA CLA                 /WANT LCV (TEST22)
1565  5370          JMP     .+3             /NO, SKIP DELAY
1566  1050          TAD     M74             /SET DELAY COUNT
1567  4551          JMS I   TDELAY          /DELAY 1.8 SECONDS
1570  5346          JMP     T21B            /SEND CHAR
1574  0240
1575  1750
1576  0041
1577  7750
```



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1600                    PAGE

                        /TEST23 - CHARACTER / CODE TEST

1600  4562  TEST23, JMS I   TPRHDR          /PRINT TEST HEADER
1601  1171  T23A,   TAD     TCHART          /GET TABLE ADDRESS
1602  3114          DCA     TABPTR          /RESET TABLE POINTER
1603  4560          JMS I   TREAD           /READ CHARACTER
1604  7344          CLA CLL CMA RAL         /SEND 2 SPACES
1605  4567          JMS I   TSP             /INCASE ON HALF DUPLEX
1606  1125          TAD     CHAR            /GET CHAR AGAIN
1607  7012          RTR                     /GET HIGHEST DIGIT OF CODE
1610  7012          RTR
1611  7012          RTR
1612  4570          JMS I   TPOCT           /PRINT HIGHEST DIGIT
1613  1125          TAD     CHAR            /GET CODE AGAIN
1614  7012          RTR                     /GET MIDDLE DIGIT OF CODE
1615  7010          RAR
1616  4570          JMS I   TPOCT           /PRINT MIDDLE DIGIT
1617  1125          TAD     CHAR            /GET CODE AGAIN
1620  4570          JMS I   TPOCT           /PRINT LAST DIGIT OF CODE
1621  7346          CLA CLL CMA RTL         /GET SPACE COUNT FOR 3 SPACES
1622  4567          JMS I   TSP             /SEND 3 SPACES
1623  1125          TAD     CHAR            /GET CODE
1624  7450          SNA                     /CODE = 0 ?
1625  5255          JMP     T23M            /YES, PRINT "NUL"
1626  1377          TAD     (-241           /CHECK CHAR
1627  7710          SPA CLA                 /PRINTABLE CHAR?
1630  5235          JMP     T23B            /NO, CHECK TABLE
1631  1125          TAD     CHAR            /YES, GET CHAR
1632  0100          AND     P177            /MASK BIT 8
1633  4557          JMS I   TPRINT          /PRINT CHAR
1634  5253          JMP     T23C            /GET NEXT CHAR
1635  1514  T23B,   TAD I   TABPTR          /GET TABLE DATA
1636  0073          AND     P77             /MASK CODE
1637  3126          DCA     CHAR1           /SAVE CODE
1640  1126          TAD     CHAR1           /GET CODE AGAIN
1641  1101          TAD     P200            /MAKE ASCII
1642  7041          CIA                     /NEGATE CODE
1643  1125          TAD     CHAR            /ADD CHAR CODE
1644  7650          SNA CLA                 /THIS CODE IN TABLE ?
1645  5255          JMP     T23M            /YES, PRINT MNEMONIC
1646  2114          ISZ     TABPTR          /SET TABLE POINTER FOR NEXT CODE
1647  2114          ISZ     TABPTR
1650  1514          TAD I   TABPTR
1651  7640          SZA CLA                 /DONE TABLE?
1652  5235          JMP     T23B            /NO, CHECK THIS CODE
1653  4554  T23C,   JMS I   TCRLF           /YES, SEND CR-LF
1654  5201          JMP     T23A            /CONTINUE
```

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1655  1514   T23M,   TAD I   TABPTR          /GET TABLE DATA
1656  7012           RTR                     /GET FIRST CHAR AND MAKE ASCII
1657  7012           RTR
1660  7012           RTR
1661  4566           JMS I   TPCHAR          /PRINT CHAR
1662  2114           ISZ     TABPTR          /INCREMENT TABLE POINTER
1663  1514           TAD I   TABPTR          /GET TABLE DATA
1664  4566           JMS I   TPCHAR          /PRINT SECOND CHAR
1665  1514           TAD I   TABPTR          /GET LAST CHAR
1666  7012           RTR
1667  7012           RTR
1670  7012           RTR
1671  4566           JMS I   TPCHAR          /PRINT LAST CHAR
1672  4554           JMS I   TCRLF           /SEND CR-LF
1673  5201           JMP     T23A            /CONTINUE TEST


                     /TEST24 - SELECTED PATTERN ECHO TEST

1674  4562   TEST24, JMS I   TPRHDR          /PRINT TEST HEADER
1675  3562           DCA I   TPRHDR          /CLEAR RETURN ADDRESS FROM SUBROUTINE
1676  1376   T24S,   TAD     (T24TAB         /GET TABLE ADDRESS
1677  3114           DCA     TABPTR          /STORE TABLE ADDRESS FOR POINTER
1700  1375           TAD     (-400           /SET TABLE LENGTH COUNT
1701  7410           SKP                     /CONTINUE
1702  7240   T24AA,  CLA CMA                 /STOP STORING CHARACTERS
1703  3127           DCA     LPCNT           /STORE COUNT
1704  4560   T24A,   JMS I   TREAD           /READ CHAR
1705  1054           TAD     M203
1706  7650           SNA CLA                 /CHAR = ^C (CNTRL C) ?
1707  5323           JMP     T24B            /YES, END OF CHAR STRING
1710  2127           ISZ     LPCNT           /END OF TABLE?
1711  7410           SKP                     /NO, ECHO & STORE CHAR
1712  5302           JMP     T24AA           /YES, IGNORE CHAR
1713  1125           TAD     CHAR            /GET CHAR
1714  0100           AND     P177            /MASK BIT 8
1715  4557           JMS I   TPRINT          /ECHO CHAR
1716  1125           TAD     CHAR            /GET CHAR
1717  3514           DCA I   TABPTR          /STORE CHAR IN TABLE
1720  3125           DCA     CHAR            /CLEAR OUT CHARACTER
1721  2114           ISZ     TABPTR          /INCREMENT TABLE POINTER
1722  5304           JMP     T24A            /READ ANOTHER CHAR
```



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1723  3125   T24B,   DCA     CHAR            /CLEAR OUT CHARACTER
1724  1376           TAD     (T24TAB         /GET TABLE ADDRESS
1725  7041           CIA                     /NEGATE
1726  1114           TAD     TABPTR          /ADD TABLE POINTER
1727  7650           SNA CLA                 /POINTER AT BEGINNING OF TABLE?
1730  5333           JMP     T24C            /YES, DON'T STORE CNT-C IN TABLE
1731  1374           TAD     (3              /GET ^C CODE = SET AC = 3
1732  3514           DCA I   TABPTR          /STORE IN TABLE
1733  1376   T24C,   TAD     (T24TAB         /GET TABLE START ADDRESS
1734  3114           DCA     TABPTR          /RESET TABLE POINTER
1735  7346           CLA CLL CMA RTL
1736  1514           TAD I   TABPTR          /CHECK FIRST CHARACTER IN TABLE
1737  7650           SNA CLA                 /FIRST CHAR = CNTL C ?
1740  5276           JMP     T24S            /YES, ABORT ECHO
1741  7346   T24E,   CLA CLL CMA RTL
1742  1514           TAD I   TABPTR          /NO, GET CHAR FROM TABLE
1743  7650           SNA CLA                 /END OF TABLE
1744  5333           JMP     T24C            /YES, RESTART TABLE
1745  1514           TAD I   TABPTR          /NO, GET CHAR AGAIN
1746  0100           AND     P177            /MASK BIT 8
1747  4557           JMS I   TPRINT          /PRINT CHAR
1750  2114           ISZ     TABPTR          /INCREMENT TABLE POINTER
1751  5341           JMP     T24E            /CONTINUE

1752  1041   T24R,   TAD     M4              /SET TIME DELAY COUNT
1753  4551           JMS I   TDELAY          /DELAY 120 MSEC,
1754  4554           JMS I   TCRLF           /YES, SEND CR-LF
1755  4556           JMS I   TLF             /SEND BLANK LINE
1756  5276           JMP     T24S            /RESTART TEST
1774  0003
1775  7400
1776  6747
1777  7537
```

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                2000            PAGE

                                /TEST25 - BELL TEST (COLUMN 64)

2000  7300    TEST25, CLA CLL                 /CLEAR AC AND LINK
2001  1186            TAD     P7700           /CHECK WIDTH
2002  1124            TAD     COLMN
2003  7710            SPA CLA                 /WIDTH > 64 (10) COLUMNS ?
2004  5221            JMP     T25B            /NO,  PRINT ERROR MESSAGE
2005  4562            JMS I   TPRHDR          /YES, PRINT TEST HEADER
2006  4561    T25A,   JMS I   TMESG           /PRINT TEST MESSAGE
2007  6615            T25M
2010  4560    T25AA,  JMS I   TREAD           /READ CHAR
2011  1056            TAD     M240            /CHECK CHAR
2012  7710            SPA CLA                 /PRINTABLE CHAR?
2013  5210            JMP     T25AA           /NO, READ ANOTHER CHAR
2014  1125            TAD     CHAR            /YES, GET CHAR AGAIN
2015  0100            AND     P177            /MASK BIT 8
2016  4557            JMS I   TPRINT          /ECHO CHAR
2017  4554            JMS I   TCRLF           /SEND CR-LF
2020  5206            JMP     T25A            /CONTINUE TEST

2021  3107    T25B,   DCA     STAT            /CLEAR SINGLE DC22 FLAG
2022  4561            JMS I   TMESG           /PRINT ERROR MESSAGE
2023  2025            T25M1
2024  5565            JMP I   TEXIT           /EXIT TEST


2025  1617    T25M1,  TEXT    /NOT ENOUGH COLUMNS/
2026  2440
2027  0516
2030  1725
2031  0710
2032  4803
2033  1714
2034  2515
2035  1623
2036  0000
```



```
                                /**********************
                                /
                                / OPTION TESTS
                                /
                                /**********************

                                /TEST30 - SECONDARY CHARACTER SET OPTION

2037  4562    TEST30, JMS I   TPRHDR          /PRINT TEST HEADER
2040  1042            TAD     M10             /SET PASS COUNT
2041  3127            DCA     LPCNT
2042  1377    T30A,   TAD     (17             /SET ASCII SET
2043  4557            JMS I   TPRINT
2044  4561            JMS I   TMESG           /INDICATE PRIMARY SET
2045  2122            T30M1
2046  1100            TAD     P177            /GET END CHAR
2047  4272            JMS     T30S            /PRINT CHAR SET
2050  1377            TAD     (17             /SET ASCII SET
2051  4557            JMS I   TPRINT
2052  4561            JMS I   TMESG           /INDICATE SECONDARY SET
2053  2125            T30M2
2054  1330            TAD     T30L            /CHECK CHAR SET LIMIT
2055  1057            TAD     M377
2056  7650            SNA CLA                 /USING 8 BIT ADDRESSING INSTEAD OF SI?
2057  5262            JMP     T30B            /YES, CONTINUE & DON'T SEND SI
2060  1376            TAD     (16             /SEND SI = SET SECONDARY SET
2061  4557            JMS I   TPRINT
2062  1330    T30B,   TAD     T30L            /GET END CHAR
2063  4272            JMS     T30S            /PRINT CHAR SET
2064  4554            JMS I   TCRLF           /SEND BLANK LINE
2065  2127            ISZ     LPCNT           /DONE TEST?
2066  5242            JMP     T30A            /NO, CONTINUE TEST
2067  1377            TAD     (17             /YES, RESET ASCII SET BEFORE EXITING TEST
2070  4557            JMS I   TPRINT
2071  5565            JMP I   TEXIT           /EXIT TEST

2072  0000    T30S,   0
2073  3126            DCA     CHAR1           /SAVE END CHAR
2074  1126            TAD     CHAR1           /GET IT AGAIN
2075  0375            AND     (240            /SET START CHAR
2076  3125            DCA     CHAR            /SAVE START CHAR
2077  1374            TAD     (3
2100  1123            TAD     WIDTH           /SET COLUMN COUNT = 3
2101  3130            DCA     CHRCNT          /STORE COUNT
2102  1125    T30SA,  TAD     CHAR            /GET CHAR
2103  4557            JMS I   TPRINT          /PRINT IT
2104  2125            ISZ     CHAR            /NEXT CHAR
2105  1126            TAD     CHAR1           /CHECK CHAR
2106  7041            CIA
2107  1125            TAD     CHAR
2110  7650            SNA CLA
2111  5320            JMP     T30SB           /EXIT IF DONE
2112  2130            ISZ     CHRCNT          /INC CHAR COUNT
2113  5302            JMP     T30SA           /FINISH LINE
2114  4554            JMS I   TCRLF           /SEND CR-LF
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2115  1123          TAD     WIDTH           /RESET CHAR COUNT
2116  3130          DCA     CHRCNT
2117  5302          JMP     T30SA           /CONTINUE
2120  4554  T30SB,  JMS I   TCRLF           /SEND CR-LF
2121  5672          JMP I   T30S            /RETURN TO TEST

2122  4361  T30M1,  TEXT    /#1=?/
2123  7577
2124  0000
2125  4362  T30M2,  TEXT    /#2=?/
2126  7577
2127  0000
2130  0177  T30L,   177                     /CHAR SET LIMIT
                                            /CHANGE TO 377 IF USING 8 BIT CHAR SELECTIUON


2131  0522  T31EM,  TEXT    /ERROR, ALL TERMINALS SHOULD BE OFF/
2132  2217
2133  2254
2134  4001
2135  1414
2136  4024
2137  0522
2140  1511
2141  1601
2142  1423
2143  4023
2144  1017
2145  2514
2146  0440
2147  0205
2150  4017
2151  0606
2152  0000
2153  0722  T31M1,  TEXT    /GROUP ?/
2154  1725
2155  2040
2156  7700
2157  2305  T31M2,  TEXT    /SELECT CHAR = ?/
2160  1405
2161  0324
2162  4003
2163  1001
2164  2240
2165  7540
2166  7700
2174  0003
2175  0240
2176  0016
2177  0017
      2200          PAGE
```



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                    /TEST31 - SELECTIVE ADDRESSING OPTION

2200  7300  TEST31, CLA CLL                 /CLEAR
2201  3107          DCA     STAT
2202  1347          TAD     T31DES
2203  4557          JMS I   TPRINT          /SEND EOT
2204  4561          JMS I   TMESG           /TRY PRINTING ERROR MESG
2205  2131          T31EM
2206  1062          TAD     P7              /SEND BEL CHAR
2207  4557          JMS I   TPRINT
2210  7326          CLA CLL CML RTL         /SEND STX
2211  4557          JMS I   TPRINT
2212  3113          DCA     HDRPTR          /ALWAYS PRINT TEST HEADER
2213  4562          JMS I   TPRHDR          /PRINT TEST HEADER ON ALL TERMINALS
2214  1347          TAD     T31DES          /SEND EOT
2215  4557          JMS I   TPRINT
2216  7326          CLA CLL CML RTL         /SEND STX + NO SELECT CHAR
2217  4557          JMS I   TPRINT
2220  4561          JMS I   TMESG           /TRY PRINTING ERROR MESG
2221  2131          T31EM
2222  1377          TAD     (T31GS          /SET TABLE POINTER FOR GROUP SELECT CHARS
2223  3114          DCA     TABPTR
2224  1514  T31A,   TAD I   TABPTR          /GET FIRST SELECT CHAR
2225  7650          SNA CLA                 /END OF GROUP SELECT CHAR TABLE?
2226  5246          JMP     T31B            /YES, DO UNIQUE SELECT CHARS
2227  1347          TAD     T31DES          /NO, SEND EOT
2230  4557          JMS I   TPRINT
2231  1514          TAD I   TABPTR          /GET SELECT CODE AGAIN
2232  4557          JMS I   TPRINT          /SEND IT
2233  7326          CLA CLL CML RTL         /SEND STX
2234  4557          JMS I   TPRINT
2235  4561          JMS I   TMESG           /TYPE MESG ON SELECTED TERMINALS
2236  2153          T31M1
2237  4561          JMS I   TMESG
2240  2157          T31M2
2241  1514          TAD I   TABPTR          /GET SELECT CHAR
2242  4557          JMS I   TPRINT          /TYPE IT FOR MESG
2243  4554          JMS I   TCRLF           /SEND CR-LF
2244  2114          ISZ     TABPTR          /INC TABLE POINTER
2245  5224          JMP     T31A            /CONTINUE
2246  1376  T31B,   TAD     (T31US          /SET TABLE POINTER
2247  3114          DCA     TABPTR
2250  1514  T31C,   TAD I   TABPTR          /GET SELECT CHAR
2251  7690          SNA CLA                 /CHECK CHAR
2252  5340          JMP     T31D            /EXIT TEST IF DONE TABLE
2253  1347          TAD     T31DES          /SEND EOT
2254  4557          JMS I   TPRINT
2255  1514          TAD I   TABPTR          /GET SELECT CHAR
2256  4557          JMS I   TPRINT          /SEND IT
2257  4561          JMS I   TMESG           /TRY PRINTING ERROR MESG
2260  2131          T31EM
2261  7326          CLA CLL CML RTL
2262  4557          JMS I   TPRINT          /SEND STX
2263  4561          JMS I   TMESG           /TYPE SELECT MESG ON TERMINAL SELECTED
2264  2157          T31M2
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2265  1514          TAD I   TABPTR          /GET SELECT CHAR AGAIN
2266  4557          JMS I   TPRINT          /PRINT IT FOR MESG
2267  4554          JMS I   TCRLF           /SEND CR-LF
2270  4561          JMS I   TMESG           /PRINT INSTRUCTIONS
2271  6656          T31M3
2272  4560          JMS I   TREAD           /READ CHAR
2273  4557          JMS I   TPRINT          /ECHO CHAR
2274  3107          DCA     STAT
2275  7240          CLA CMA
2276  4551          JMS I   TDELAY          /DELAY
2277  4554          JMS I   TCRLF           /SEND CR-LF
2300  1347          TAD     T31DES          /SEND EOT
2301  4557          JMS I   TPRINT
2302  1350          TAD     T31DS           /SEND DUMMY SELECT CHAR
2303  4557          JMS I   TPRINT
2304  7326          CLA CLL CML RTL         /SEND STX
2305  4557          JMS I   TPRINT
2306  4561          JMS I   TMESG           /TRY PRINTING ERROR MESG
2307  2131          T31EM
2310  1375          TAD     (3              /SEND ETX
2311  4557          JMS I   TPRINT
2312  1514          TAD I   TABPTR          /GET UNIQUE SELECT CHAR
2313  4557          JMS I   TPRINT          /SEND IT
2314  7326          CLA CLL CML RTL         /SEND STX
2315  4557          JMS I   TPRINT
2316  4561          JMS I   TMESG           /PRINT MESG ON SELECTED TERMINAL
2317  2137          T31M2
2320  1514          TAD I   TABPTR          /PRINT SELECT CHAR FOR MESG
2321  4557          JMS I   TPRINT
2322  4554          JMS I   TCRLF           /SEND CR-LF
2323  1375          TAD     (3              /SEND ETX
2324  4557          JMS I   TPRINT
2325  1350          TAD     T31DS           /GET DUMMY SELECT CHAR AGAIN
2326  4557          JMS I   TPRINT          /SEND IT
2327  7326          CLA CLL CML RTL         /SEND STX
2330  4557          JMS I   TPRINT
2331  4561          JMS I   TMESG           /PRINT MESG ON SELECTED TERMINALS
2332  2137          T31M2
2333  1514          TAD I   TABPTR          /GET SELECT CHAR
2334  4557          JMS I   TPRINT          /PRINT IT FOR MESG
2335  4554          JMS I   TCRLF           /SEND CR-LF
2336  2114          ISZ     TABPTR          /INC TABLE POINTER
2337  5250          JMP     T31C            /CONTINUE
2340  1347  T31D,   TAD     T31DES          /ENABLE ALL LINES BEFORE EXITING TEST
2341  4557          JMS I   TPRINT
2342  1062          TAD     P7
2343  4557          JMS I   TPRINT
2344  7326          CLA CLL CML RTL
2345  4557          JMS I   TPRINT
2346  5565          JMP I   TEXIT           /EXIT TEST
```



```
2347  0004  T31DES, 004             /DESELECT CHAR = "EOT"

2350  0045  T31DS,  045                     /DUMMY SELECT CHARACTER = %
                                            /IF "%" IS USED AS A GROUP OR UNIQUE
                                            /SELECT CHARACTER, REPLACE WITH THE
                                            /ASCII CODE OF ANY UNUSED CHARACTER.

2351  0107  T31GS,  107                     /GROUP SELECT CHARACTER TABLE
2352  0000          0                       /FIRST ZERO = END OF TABLE
2353  0000          0
2354  0000          0
2355  0000          0
2356  0000          0
2357  0000          0
2360  0000          0
2361  0000          0

2362  0125  T31US,  125                     /UNIQUE SELECT CHARACTER TABLE
2363  0000          0                       /FIRST ZERO = END OF TABLE
2364  0000          0
2365  0000          0
2366  0000          0
2367  0000          0
2370  0000          0
2371  0000          0
2372  0000          0

2375  2003
2376  2362
2377  2351
      2400          PAGE
```

```
                        /TEST32 - AUTO ANSWER BACK OPTION

2400  7300  TEST32, CLA CLL                 /CLEAR AC AND LINK
2401  1107         TAD     STAT            /GET DC02 UNIQUE SELECT CODE
2402  3345         DCA     STORE           /SAVE IT
2403  4562         JMS I   TPRHDR          /PRINT TEST HEADER
2404  1345         TAD     STORE           /RESET SELECT CODE
2405  3107         DCA     STAT
2406  1120         TAD     DC02FL          /GET DC02 FLAG
2407  7650         SNA CLA                 /USING DC02?
2410  5225         JMP     T32A            /NO, START TEST
2411  1107         TAD     STAT            /YES, GET SELECT CODE
2412  0110         AND     SELECT
2413  7640         SZA CLA                 /HAVE A SELECT CODE?
2414  5225         JMP     T32A            /YES, START TEST
2415  3107         DCA     STAT
2416  4561         JMS I   TMESG           /NO, PRINT SELECT MESG
2417  6000         T32M0
2420  4560         JMS I   TREAD           /FIND TEST TERMINAL
2421  1053         TAD     M177            /CHECK INPUT CHAR
2422  7650         SNA CLA                 /CONTINUE IF OK
2423  5326         JMP     T32X            /EXIT IF RUBOUT
2424  4554         JMS I   TCRLF           /SEND CR-LF
2425  1377  T32A,  TAD     (5              /SEND ENQ CHAR
2426  4557         JMS I   TPRINT
2427  4237         JMS     T32S            /READ AND PRINT MESG
2430  4561         JMS I   TMESG           /PRINT INSTRUCTIONS
2431  2531         T32M1
2432  4237         JMS     T32S            /READ AND PRINT MESG
2433  4561         JMS I   TMESG           /PRINT INSTRUCTIONS
2434  0351         T32M2
2435  4237         JMS     T32S            /READ AND PRINT MESG
2436  5565         JMP I   TEXIT           /EXIT TEST

2437  0000  T32S,  0
2440  1376         TAD     (STORE-1        /SET TABLE POINTER
2441  3010         DCA     AUTPTR
2442  1120         TAD     DC02FL          /CHECK DC02 FLAG
2443  7640         SZA CLA                 /USING DC02?
2444  5251         JMP     T32C            /YES, USE DC02 INPUT ROUTINE
2445  4541         JMS I   TKSF            /NO, WAIT FOR CONSOLE KYBD FLAG
2446  5245         JMP     .-1
2447  4544  T32B,  JMS I   TKRB            /READ CHAR
2450  5256         JMP     T32D            /CONTINUE
2451  1107  T32C,  TAD     STAT            /SET SELECT CODE
2452  6117         MTON                    /SELECT TEST TERMINAL ONLY
2453  6111         MKSF                    /WAIT FOR KYBD FLAG
2454  5253         JMP     .-1
2455  6116  T32CA, MKRB                    /READ CHAR
2456  0100  T32D,  AND     P177            /MASK UNWANTED BITS
2457  3125         DCA     CHAR
2460  1125         TAD     CHAR            /GET CHAR AGAIN
2461  1053         TAD     M177            /CHECK CHAR
2462  7650         SNA CLA
2463  5326         JMP     T32X            /EXIT IF RUBOUT
```



```
2464  1125         TAD     CHAR            /GET CHAR
2465  3410         DCA I   AUTPTR          /STORE CHAR IN TABLE (BUFFER)
2466  1047         TAD     M63
2467  3137         DCA     DELAY0
2470  1060  T32K,  TAD     M1750           /SET TIME DELAY
2471  3140         DCA     DELAY1
2472  1120  T32F,  TAD     DC02FL          /USING DC02?
2473  7640         SZA CLA
2474  5300         JMP     T32G            /YES, USE DC02 READ
2475  4541         JMS I   TKSF            /NO, USE CONSOLE KYBD FLAG
2476  5307         JMP     T32H            /NOT SET, CONTINUE
2477  5247         JMP     T32B            /YES, READ CHAR
2500  6111  T32G,  MKSF                    /DC02 KYBD FLAG SET?
2501  7410         SKP
2502  5255         JMP     T32CA           /YES, READ CHAR
2503  7000         NOP                     /ADDED INSTRUCTIONS FOR TIMING
2504  7000         NOP
2505  7000         NOP
2506  7000         NOP
2507  2140  T32H,  ISZ     DELAY1          /NO, WAIT
2510  5272         JMP     T32F
2511  2137         ISZ     DELAY0
2512  5270         JMP     T32K
2513  7300         CLA CLL                 /END OF STRING
2514  3410         DCA I   AUTPTR          /STORE NULL CHAR IN BUFFER
2515  1375         TAD     (STORE-3        /RESET TABLE POINTER
2516  3010         DCA     AUTPTR
2517  1410  T32I,  TAD I   AUTPTR          /GET CHAR
2520  7450         SNA                     /END OF STRING?
2521  5324         JMP     T32J            /YES, RETURN TO MAIN TEST
2522  4557         JMS I   TPRINT          /NO, PRINT CHAR ON TEST TERMINAL
2523  5317         JMP     T32I            /CONTINUE
2524  4554  T32J,  JMS I   TCRLF           /SEND CR-LF
2525  5637         JMP I   T32S            /RETURN TO TEST

2526  1041  T32X,  TAD     M4              /DELAY FOR HALF DUPLEX
2527  4551         JMS I   TDELAY
2530  5565         JMP I   TEXIT           /EXIT TEST
2531  0405  T32M1, TEXT    /DEPRESS HERE IS KEY/
2532  2022
2533  0523
2534  2340
2535  1005
2536  2205
2537  4011
2540  2340
2541  1305
2542  3100
2543  0015         15                      /CR-LF
2544  0012         12
2545  0000  STORE, ZBLOCK  25              /20 CHAR + TERMINATOR BUFFER
2575  2542
2576  2544
2577  0005
      2600         PAGE
```

```
                    /TEST33 - TOP OF FORM OPTION

2600  4562  TEST33, JMS I   TPRHDR          /PRINT TEST HEADER
2601  1377        TAD     (T33T1-1        /SET TABLE POINTERS
2602  3010        DCA     AUTPTR
2603  1376        TAD     (T33T2
2604  3114        DCA     TABPTR
2605  7326        CLA CLL CML RTL
2606  1114        TAD     TABPTR
2607  3115        DCA     TABPT2
2610  4561        JMS I   TMESG           /PRINT INSTRUCTIONS
2611  6702        T33M4
2612  4561        JMS I   TMESG
2613  6721        T33M5
2614  4561        JMS I   TMESG
2615  4353        T33M7
2616  4561        JMS I   TMESG
2617  3005        T33M6
2620  1044        TAD     M20             /SET LF COUNT TO 16
2621  3130        DCA     CHRCNT          /STORE IT
2622  4560        JMS I   TREAD           /WAIT FOR KYBD FLAG
2623  1053        TAD     M177            /CHECK CHAR
2624  7650        SNA CLA
2625  5331        JMP     T33X            /EXIT IF RUBOUT
2626  7240        CLA CMA
2627  4551        JMS I   TDELAY          /DELAY FOR HALF DUPLEX
2630  3107        DCA     STAT
2631  4555        JMS I   TCR             /SEND CR
2632  4556  T33A, JMS I   TLF             /SEND LF
2633  2130        ISZ     CHRCNT          /INC COUNT
2634  5232        JMP     T33A            /CONTINUE LF'S
2635  1064        TAD     P14             /SEND FORM FEED
2636  4557        JMS I   TPRINT
2637  1334        TAD     T33T1           /GET FILL COUNT
2640  3130        DCA     CHRCNT          /SAVE IT
2641  4557  T33B, JMS I   TPRINT          /SEND NULL
2642  2130        ISZ     CHRCNT          /INC COUNT
2643  5241        JMP     T33B            /FINISH NULLS
2644  4561        JMS I   TMESG           /PRINT INSTRUCTIONS
2645  3005        T33M6
2646  4560  T33BA, JMS I   TREAD          /WAIT FOR KYBD FLAG
2647  1053        TAD     M177            /CHECK CHAR
2650  7650        SNA CLA
2651  5331        JMP     T33X            /EXIT IF RUBOUT
2652  7240        CLA CMA
2653  4551        JMS I   TDELAY          /DELAY FOR HALF DUPLEX
2654  3107        DCA     STAT
2655  4555        JMS I   TCR             /SEND CR
2656  1064        TAD     P14             /SEND FF
2657  4557        JMS I   TPRINT
2660  1410        TAD I   AUTPTR          /GET FILL COUNT
2661  3130        DCA     CHRCNT
2662  4557  T33C, JMS I   TPRINT          /SEND NULL
2663  2130        ISZ     CHRCNT          /INC FILL COUNT
2664  5262        JMP     T33C
```



```
2665  4561        JMS I   TMESG           /PRINT MESG
2666  0362        T33M1
2667  1514  T33D, TAD I   TABPTR          /PRINT FIRST CHAR
2670  7012        RTR
2671  7012        RTR
2672  7012        RTR
2673  4566        JMS I   TPCHAR          /PRINT CHAR
2674  1514        TAD I   TABPTR          /GET CHARS
2675  2114        ISZ     TABPTR          /INC TABLE POINTER
2676  0073        AND     P77             /MASK CHAR
2677  7450        SNA                     /DONE?
2700  5303        JMP     T33E            /YES, NEXT PART OF MESG
2701  4566        JMS I   TPCHAR          /NO, SEND CHAR
2702  5267        JMP     T33D            /CONTINUE
2703  4561  T33E, JMS I   TMESG           /PRINT MORE OF MESG
2704  6675        T33M2
2705  1515  T33F, TAD I   TABPT2          /GET CHARS
2706  7012        RTR
2707  7012        RTR
2710  7012        RTR
2711  4566        JMS I   TPCHAR          /PRINT FIRST CHAR
2712  1515        TAD I   TABPT2
2713  2115        ISZ     TABPT2          /INC TABLE POINTER
2714  0073        AND     P77             /MASK CHAR
2715  7450        SNA                     /DONE?
2716  5321        JMP     T33G            /YES, CONTINUE MESG
2717  4566        JMS I   TPCHAR          /NO, PRINT CHAR
2720  5305        JMP     T33F            /CONTINUE
2721  4561  T33G, JMS I   TMESG           /PRINT LAST OF MESG
2722  3000        T33M3
2723  4561        JMS I   TMESG
2724  0362        T33M1
2725  1515        TAD I   TABPT2          /CHECK NEXT ENTRY IN TABLE
2726  7640        SZA CLA                 /DONE TEST?
2727  5246        JMP     T33BA           /NO, CONTINUE TEST
2730  4554        JMS I   TCRLF           /YES, SEND CR-LF
2731  7240  T33X, CLA CMA
2732  4551        JMS I   TDELAY          /DELAY FOR HALF DUPLEX
2733  5565        JMP I   TEXIT          /EXIT TEST
```

```
2734  7776   T33T1,  -2                      /FILL COUNT TABLE
2735  7773           -5
2736  7770           -10
2737  7757           -21
2740  7754           -24
2741  7746           -32
2742  7740           -40
2743  7735           -43
2744  7716           -62
2745  7710           -70
2746  7674           -104

2776  6432
2777  2733
      3000           PAGE

3000  4240   T33M3,  TEXT    /" NEXT "/
3001  1605
3002  3024
3003  4077
3004  0000
3005  5555   T33M6,  TEXT    /-=-- SET  3 INCH FORMFEED --=-"/
3006  5555
3007  4023
3010  0524
3011  4040
3012  6340
3013  1116
3014  0310
3015  4006
3016  1722
3017  1506
3020  0505
3021  0440
3022  5555
3023  5555
3024  7700
```



```
                /TEST34 - HORIZONTAL TAB OPTION

3025  4562   TEST34, JMS I   TPRHDR          /PRINT TEST HEADER
3026  1377           TAD     (T34T1          /SET TABLE POINTERS
3027  3114           DCA     TABPTR
3030  1376           TAD     (T34T2
3031  3115           DCA     TABPT2
3032  1375           TAD     (T34AC          /RESET JMP INSTR FOR FIRST TIME THRU TEST
3033  3317           DCA     T34AB
3034  1123   T34B,   TAD     WIDTH           /SET COLUMN COUNT
3035  3130           DCA     CHRCNT
3036  1066           TAD     P33             /CLEAR OLD HORIZONTAL TABS
3037  4557           JMS I   TPRINT
3040  7326           CLA CLL CML RTL
3041  4570           JMS I   TPOCT
3042  4555           JMS I   TCR             /RETURN CARRIAGE
3043  1514   T34C,   TAD I   TABPTR          /GET SPACE COUNT FOR TAB
3044  3127           DCA     LPCNT           /SAVE IT
3045  5253           JMP     T34E            /CONTINUE
3046  1067   T34D,   TAD     P40             /SEND SPACE
3047  4557           JMS I   TPRINT
3050  2130           ISZ     CHRCNT          /INC COLUMN COUNT
3051  7410           SKP
3052  5267           JMP     T34F            /SEND CR WHEN DONE LINE
3053  2127   T34E,   ISZ     LPCNT           /INC SPACE COUNT
3054  5246           JMP     T34D            /CONTINUE IF NOT DONE
3055  1066           TAD     P33             /SET TAB
3056  4557           JMS I   TPRINT
3057  7301           CLA CLL IAC
3060  4570           JMS I   TPOCT
3061  1063           TAD     P10             /SEND BACKSPACE
3062  4557           JMS I   TPRINT
3063  1374           TAD     (117            /PRINT "O"
3064  4557           JMS I   TPRINT
3065  2130           ISZ     CHRCNT          /INC COLUMN COUNT
3066  5243           JMP     T34C            /FINISH LINE
3067  4555   T34F,   JMS I   TCR             /SEND CR
3070  1124           TAD     COLMN           /RESET COLUMN COUNT
3071  3130           DCA     CHRCNT
3072  1514   T34G,   TAD I   TABPTR          /GET COLUMN COUNT FOR TAB
3073  7001           IAC                     /ADD ONE
3074  7650           SNA CLA
3075  7040           CMA                     /SUBTRACT 1 FROM COUNT IF FIRST LINE
3076  1514           TAD I   TABPTR
3077  3127           DCA     LPCNT           /STORE COLUMN COUNT FOR TAB
3100  1515   T34H,   TAD I   TABPT2          /GET FILL CHAR COUNT
3101  3131           DCA     PASCNT          /SAVE IT
3102  1130           TAD     CHRCNT          /GET COLUMN COUNT
3103  1127           TAD     LPCNT           /SUBTRACT TAB FROM COLUMN COUNT
3104  7510           SPA
3105  5717           JMP I   T34AB          /JUMP IF TOO MANY COLUMNS
3106  3130           DCA     CHRCNT          /STORE NEW COUNT
3107  1373           TAD     (11             /SEND TAB
3110  4557           JMS I   TPRINT
3111  4557   T34I,   JMS I   TPRINT          /SEND NULL
```

```
3112  2131            ISE     PASCNT          /INC FILL COUNT
3113  5311            JMP     T34I            /CONTINUE FILLS
3114  1075            TAD     P130            /PRINT X
3115  4557            JMS I   TPRINT
3116  5300            JMP     T34H            /CONTINUE
3117  3120  T34AB,    T34AC
3120  7300  T34AC,    CLA CLL                 /SKIP FOLLOWING CODE AFTER FIRST TIME THRU
3121  1372            TAD     (T34AD
3122  3317            DCA     T34AB
3123  4555            JMS I   TCR             /SEND CR
3124  1075            TAD     P130            /PRINT X
3125  4557            JMS I   TPRINT
3126  7240            CLA CMA                 /RESET COLUMN COUNT = 1
3127  1124            TAD     COLMN
3130  3130            DCA     CHRCNT          /STORE COUNT
3131  5272            JMP     T34G            /CONTINUE
3132  4554  T34AD,    JMS I   TCRLF           /SEND CR-LF
3133  2114            ISZ     TABPTR          /INC TABLE POINTERS
3134  2115            ISZ     TABPT2
3135  1514            TAD I   TABPTR          /GET COLUMN COUNT FOR TAB
3136  7450            SNA                     /END OF TABLE?
3137  5343            JMP     T34AE           /YES, EXIT TEST
3140  1124            TAD     COLMN           /CHECK IF TOO LARGE
3141  7700            SMA CLA
3142  5234            JMP     T34B            /OK - CONTINUE
3143  5565  T34AE,    JMP I   TEXIT           /EXIT TEST

3144  7777  T34T1,    -1                      /COLUMN COUNTS FOR TABS
3145  7776            -2
3146  7774            -4
3147  7770            -10
3150  7760            -20
3151  7740            -40
3152  7700            -100
3153  7600            -200
3154  7574            -204
3155  0000            0                       /END OF TABLE

3156  7777  T34T2,    -1                      /FILL COUNTS FOR TABS
3157  7776            -2
3160  7775            -3
3161  7773            -5
3162  7767            -11
3163  7757            -21
3164  7737            -41
3165  7677            -101
3166  7675            -103
3172  3132
3173  0011
3174  0117
3175  3120
3176  3156
3177  3144
```



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3200                    PAGE

                        /TEST35 - VERTICAL TAB OPTION

3200  4562  TEST35,   JMS I   TPRHDR          /PRINT TEST HEADER
3201  4561            JMS I   TMESG           /PRINT INSTRUCTIONS
3202  3340            T35M1
3203  4561            JMS I   TMESG
3204  3353            T35M2
3205  4556            JMS I   TLF             /SEND BLANK LINES
3206  4556            JMS I   TLF
3207  4560            JMS I   TREAD           /WAIT FOR KYBD FLAG
3210  1053            TAD     M177            /CHECK CHAR
3211  7650            SNA CLA
3212  5326            JMP     T35X            /EXIT IF RUBOUT
3213  7240            CLA CMA
3214  4551            JMS I   TDELAY          /DELAY FOR HALF DUPLEX
3215  3107            DCA     STAT
3216  3127            DCA     LPCNT           /SET LINE COUNT
3217  1066            TAD     P33             /CLEAR VERTICAL TABS
3220  4557            JMS I   TPRINT
3221  1061            TAD     P4
3222  4570            JMS I   TPOCT
3223  4555            JMS I   TCR
3224  1067            TAD     P40
3225  4557            JMS I   TPRINT
3226  4561  T35A,     JMS I   TMESG           /TYPE REF LINE
3227  6736            T35M3
3230  4555            JMS I   TCR             /SEND CR
3231  7240            CLA CMA                 /INC LINE COUNT
3232  1127            TAD     LPCNT
3233  3127            DCA     LPCNT
3234  1377            TAD     (13             /CHECK LINE COUNT
3235  1127            TAD     LPCNT
3236  7650            SNA CLA                 /DONE?
3237  5252            JMP     T35C            /YES, CHECK TABS
3240  1127            TAD     LPCNT
3241  3130            DCA     CHRCNT          /STORE LINE COUNT
3242  4556  T35B,     JMS I   TLF             /SEND LF
3243  2130            ISZ     CHRCNT          /INC COUNT
3244  5242            JMP     T35B            /CONTINUE LF'S
3245  1066            TAD     P33             /SET TAB
3246  4557            JMS I   TPRINT
3247  1376            TAD     (3)
3250  4570            JMS I   TPOCT
3251  5226            JMP     T35A            /CONTINUE SETTING TABS
3252  1064  T35C,     TAD     P14             /SEND FF
3253  4557            JMS I   TPRINT
3254  4331            JMS     T35H            /SEND FILLS
3255  4561            JMS I   TMESG           /TYPE MESG
3256  5751            T35M4
3257  4560            JMS I   TREAD           /WAIT FOR KYBD FLAG
3260  1053            TAD     M177            /CHECK CHAR
3261  7650            SNA CLA
3262  5326            JMP     T35X            /EXIT IF RUBOUT
```

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3263  3107           DCA     STAT
3264  7240           CLA CMA
3265  4551           JMS I   TDELAY          /DELAY FOR HALF DUPLEX
3266  7300   T35D,   CLA CLL                 /CLEAR AC AND LINK
3267  1067           TAD     P40             /SEND SPACE
3270  4557           JMS I   TPRINT
3271  4561           JMS I   TMESG           /PRINT REF LINE
3272  6736           T35M3
3273  4555           JMS I   TCR
3274  7240           CLA CMA                 /INC LINE COUNT
3275  1127           TAD     LPCNT
3276  3127           DCA     LPCNT           /STORE NEW COUNT
3277  1377           TAD     (13             /CHECK LINE COUNT
3300  1127           TAD     LPCNT
3301  7650           SNA CLA
3302  5315           JMP     T35F            /JUMP IF DONE
3303  1377           TAD     (13
3304  4557           JMS I   TPRINT          /SEND TAB
3305  1065           TAD     P20             /SUBTRACT 16 FROM LINE COUNT
3306  1127           TAD     LPCNT
3307  7500           SMA
3310  5266           JMP     T35D            /SKIP FILLS IF COUNT <= 0
3311  3130           DCA     CHRCNT          /SET FILL COUNT
3312  5557   T35E,   JMP I   TPRINT          /SEND FILL
3313  2130           ISZ     CHRCNT          /INC FILL COUNT
3314  5312           JMP     T35E            /CONTINUE SENDING FILLS
3315  1066   T35F,   TAD     P33             /CLEAR VERTICAL TABS
3316  4557           JMS I   TPRINT
3317  1061           TAD     P4
3320  4570           JMS I   TPOCT
3321  1064           TAD     P14             /SEND FF
3322  4557           JMS I   TPRINT
3323  4331           JMS     T35H            /SEND FILLS
3324  4554           JMS I   TCRLF           /SEND CR-LF
3325  4556           JMS I   TLF             /BLANK LINE
3326  7240   T35X,   CLA CMA
3327  4551           JMS I   TDELAY          /DELAY INCASE HALF DUPLEX
3330  5565           JMP I   TEXIT           /EXIT TEST


3331  0000   T35H,   0
3332  1044           TAD     M20             /SET FILL COUNT
3333  3127           DCA     LPCNT
3334  4557   T35G,   JMS I   TPRINT          /SEND FILLS
3335  2127           ISZ     LPCNT           /INC COUNT
3336  5334           JMP     T35G            /FINISH FILLS
3337  5731           JMP I   T35H            /RETURN
```



```
3340  2305   T35M1,  TEXT    /SET 14 INCH FORMFEED/
3341  2440
3342  6164
3343  4011
3344  1603
3345  1040
3346  0617
3347  2215
3350  0605
3351  1504
3352  0000
3353  0405   T35M2,  TEXT    /DEPRESS TOP OF FORM RESET SWITCH/
3354  2022
3355  0523
3356  2340
3357  2417
3360  2040
3361  1706
3362  4006
3363  1722
3364  1540
3365  2205
3366  2305
3367  2440
3370  2327
3371  1124
3372  0310
3373  0000
3376  0003
3377  0013
      3400           PAGE
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                        /**************************
                        /     STANDARD I-O TESTS
                        /**************************

                        /TEST40 - CHECK KCC CLEARS AC

3400  7300  TEST40, CLA CLL                 /CLEAR AC & LINK
3401  1052        TAD     M144            /SET LOOP COUNT FOR 100(10) TESTS
3402  3127        DCA     LPCNT           /STORE LOOP COUNT
3403  7240  T40A,   CLA CMA               /SET AC = #1 (7777)
3404  4542        JMS I   TKCC            /ISSUE KCC TO CLEAR AC AND FLAG
3405  7440        SZA                     /IS AC = 0 ?
3406  4552        JMS I   TERR            /NO,  ERROR
3407  2127        ISZ     LPCNT           /DONE TEST?
3410  5203        JMP     T40A            /NO,  CONTINUE
3411  5564        JMP I   TEXITA          /YES, EXIT TEST


                        /TEST41 - CHECK KCC CLEARS FLAG

3412  7300  TEST41, CLA CLL                 /CLEAR AC AND LINK
3413  1052        TAD     M144            /SET LOOP COUNT FOR 100(10) TESTS
3414  3127        DCA     LPCNT           /STORE LOOP COUNT
3415  4542  T41A,   JMS I   TKCC            /ISSUE KCC - CLEAR FLAG
3416  4541        JMS I   TKSF            /SKIP IF FLAG SET = 1
3417  7410        SKP                     /FLAG CLEAR, CONTINUE
3420  4552        JMS I   TERR            /ERROR, FLAG DID NOT CLEAR
3421  2127        ISZ     LPCNT           /DONE TEST?
3422  5215        JMP     T41A            /NO, TEST AGAIN
3423  5564        JMP I   TEXITA          /YES, EXIT TEST


                        /TEST42 - CHECK KSF DOESN'T SKIP WITH FLAG RESET

3424  7300  TEST42, CLA CLL                 /CLEAR AC AND LINK
3425  1052        TAD     M144            /SET LOOP COUNT FOR 100 (100 TESTS
3426  3127        DCA     LPCNT           /STORE LOOP COUNT
3427  4542  T42A,   JMS I   TKCC            /ISSUE KCC - CLEAR FLAG
3430  4541        JMS I   TKSF            /SKIP IF FLAG IS SET
3431  7410        SKP
3432  4552        JMS I   TERR            /ERROR, SKIPPED WITH FLAG RESET
3433  2127        ISZ     LPCNT           /DONE TEST?
3434  5227        JMP     T42A            /NO, CONTINUE
3435  5564        JMP I   TEXITA          /YES,  EXIT TEST
```



```
                        /TEST43 - CHECK TSF SKIPS ON FLAG

3436  7300  TEST43, CLA CLL                 /CLEAR AC AND LINK
3437  1042        TAD     M10             /SET LOOP COUNT FOR 8(10) TESTS
3440  3127        DCA     LPCNT           /STORE LOOP COUNT
3441  3261  T43A,   DCA     T43D            /CLEAR DELAY COUNTS
3442  3262        DCA     T43E
3443  4550        JMS I   TTLS            /CLEAR FLAG
3444  4545  T43B,   JMS I   TTSF            /SKIP IF FLAG SET
3445  5253        JMP     T43C
3446  4545        JMS I   TTSF            /SKIP IF FLAG SET
3447  4552        JMS I   TERR            /ERROR, DID NOT SKIP
3450  2127        ISZ     LPCNT           /DONE TEST?
3451  5241        JMP     T43A            /NO, CONTINUE TEST
3452  5564        JMP I   TEXITA          /YES,  EXIT TEST
3453  2261  T43C,   ISZ     T43D            /STILL WAIT FOR FLAG?
3454  7410        SKP
3455  2262        ISZ     T43E
3456  5244        JMP     T43B            /YES, CONTINUE
3457  4552        JMS I   TERR            /ERROR, FLAG DID NOT COME UP
3460  5241        JMP     T43A            /CONTINUE AFTER ERROR

3461  0000  T43D,   0000                    /DELAY COUNTS
3462  0000  T43E,   0000


                        /TEST44 - CHECK TSF DOESN'T SKIP WITH FLAG RESET

3463  7300  TEST44, CLA CLL                 /CLEAR AC AND LINK
3464  1052        TAD     M144            /SET LOOP COUNT FOR 100(10) TESTS
3465  3127        DCA     LPCNT           /STORE COUNT
3466  4546  T44A,   JMS I   TTCF            /CLEAR FLAG
3467  4545        JMS I   TTSF            /SKIP IF FLAG SET
3470  7410        SKP                     /OK CONTINUE
3471  4552        JMS I   TERR            /ERROR, SKIP WITH FLAG RESET
3472  2127        ISZ     LPCNT           /DONE TEST?
3473  5266        JMP     T44A            /NO, CONTINUE
3474  5564        JMP I   TEXITA          /YES, EXIT TEST
```

```
                    /TEST45 - CHECK TCF CLEARS FLAG

3475  7300  TEST45, CLA CLL                 /CLEAR AC AND LINK
3476  1042        TAD     M10             /SET LOOP COUNT FOR 8(10) TESTS
3477  3127        DCA     LPCNT           /STORE COUNT
3500  4550  T45A,  JMS I   TTLS            /CLEAR FLAG
3501  4545        JMS I   TTSF            /WAIT FOR FLAG TO SET
3502  5301        JMP     .-1
3503  4546        JMS I   TTCF            /CLEAR FLAG
3504  4545        JMS I   TTSF            /SKIP IF FLAG SET
3505  7410        SKP                     /OK, CONTINUE
3506  4552        JMS I   TERR            /ERROR, FLAG NOT CLEARED
3507  2127        ISZ     LPCNT           /DONE TEST?
3510  5300        JMP     T45A            /NO, CONTINUE
3511  5564        JMP I   TEXITA          /YES, EXIT


                    /TEST46 - CHECK PRINTER INTERRUPT SYSTEM

3512  7300  TEST46, CLA CLL                 /CLEAR AC AND LINK
3513  1042        TAD     M10             /SET LOOP COUNT FOR 8(10) TESTS
3514  3127        DCA     LPCNT           /STORE COUNT
3515  1377        TAD     (T46A           /SET INTERRUPT RETURN ADDRESS
3516  3116        DCA     INTSRV
3517  4542        JMS I   TKCC            /CLEAR KEYBOARD FLAG
3520  4550        JMS I   TTLS            /CLEAR PRINTER FLAG
3521  4545        JMS I   TTSF            /WAIT FOR FLAG TO COME UP
3522  5321        JMP     .-1
3523  4546        JMS I   TTCF            /CLEAR PRINTER FLAG
3524  6001        ION                     /ENABLE INTERRUPT SYSTEM
3525  7000        NOP                     /WAIT
3526  6002        IOF                     /DISABLE INTERRUPT SYSTEM
3527  7410        SKP                     /CONTINUE
3530  4552  T46A,  JMS I   TERR            /ERROR, UNEXPECTED INTERRUPT
3531  1376  T46C,  TAD     (T46B           /SET RETURN ADDRESS FOR INTERRUPT
3532  3116        DCA     INTSRV
3533  4550        JMS I   TTLS            /CLEAR FLAG
3534  4545        JMS I   TTSF            /WAIT FOR FLAG TO SET
3535  5334        JMP     .-1
3536  6001        ION                     /ENABLE INTERRUPT SYSTEM
3537  7000        NOP                     /WAIT
3540  4552        JMS I   TERR            /ERROR, PRINTER FLAG FAILED TO INTERRUPT
3541  5331        JMP     T46C            /CONTINUE AFTER ERROR
3542  6002  T46B,  IOF                     /DISABLE INTERRUPT
3543  2127        ISZ     LPCNT           /DONE TEST?
3544  5331        JMP     T46C            /NO, CONTINUE
3545  3116        DCA     INTSRV          /YES, RESET HALT FOR INTERRUPT
3546  5564        JMP I   TEXITA          /EXIT TEST
```



```
                    /TEST60 - ANY TRANSMITER FLAGS UP IN ERROR?

3547  7300  TEST60, CLA CLL                 /CLEAR AC AND LINK
3550  1052        TAD     M144            /SET LOOP COUNT FOR 100(10) TESTS
3551  3127        DCA     LPCNT           /STORE LOOP COUNT
3552  7240        CLA CMA                 /SET AC = -1
3553  6117        MTON                    /SELECT ALL CHANNELS
3554  6122        MTCF                    /CLEAR FLAGS
3555  7240  T60A,  CLA CMA                 /SET AC = -1 (7777)
3556  0110        AND     SELECT          /TEST ONLY SELECTED TERMINALS
3557  7450        SNA
3560  7040        CMA                     /TEST ALL CHANNELS IF NONE SELECTED
3561  6117        MTON                    /SELECT CHANNELS
3562  6113        MTPF                    /READ ALL PRINTER FLAGS
3563  7440        SZA                     /ARE ALL ZERO?
3564  5370        JMP     T60B            /NO, STORE FLAGS THAT ARE UP IN ERROR
3565  2127  T60D,  ISZ     LPCNT           /ALL OK, DONE TEST?
3566  5355        JMP     T60A            /NO, CONTINUE
3567  5564        JMP I   TEXITA          /YES, EXIT TEST
3570  3373  T60B,  DCA     T60C            /STORE FLAGS IN ERROR
3571  4552        JMS I   TERR            /ERROR
3572  5365        JMP     T60D            /CONTINUE AFTER ERROR

3573  0000  T60C,  0000                    /XMTR FLAGS SET IN ERROR

3576  3542
3577  3530
      3600        PAGE


                    /TEST61 - ANY RECEIVER FLAGS UP IN ERROR?

3600  7300  TEST61, CLA CLL                 /CLEAR AC AND LINK
3601  1052        TAD     M144            /SET LOOP COUNT FOR 100(10) TESTS
3602  3127        DCA     LPCNT           /STORE LOOP COUNT
3603  7240        CLA CMA                 /SET AC = -1
3604  6117        MTON                    /SELECT ALL CHANNELS
3605  6112        MKCC                    /CLEAR FLAGS
3606  7240  T61A,  CLA CMA                 /SET AC = 7777 TO TEST JAM XFER
3607  0110        AND     SELECT          /TEST ONLY SELECTED TERMINALS
3610  7450        SNA
3611  7040        CMA                     /TEST ALL CHANNELS IF NONE SELECTED
3612  6117        MTON                    /SELECT CHANNELS
3613  6123        MTKF                    /READ ALL KYBD FLAGS
3614  7440        SZA                     /ARE ALL ZERO?
3615  5221        JMP     T61B            /NO, STORE FLAGS SET IN ERROR
3616  2127  T61D,  ISZ     LPCNT           /ALL OK, DONE TEST?
3617  5206        JMP     T61A            /NP, CONTINUE
3620  5564        JMP I   TEXITA          /YES, EXIT TEST
3621  3224  T61B,  DCA     T61C            /STORE FLAGS SET IN ERROR
3622  4552        JMS I   TERR            /ERROR
3623  5216        JMP     T61D            /CONTINUE AFTER ERROR

3624  0000  T61C,  0000                    /RECEIVER FLAGS SET IN ERROR
```

```
                        /TEST62 - ALL MULTIPLE SKIPS OK?

3625  7300  TEST62, CLA CLL                 /CLEAR AC AND LINK
3626  1052        TAD     M144            /SET LOOP COUNT FOR 100(10) TESTS
3627  3127        DCA     LPCNT           /STORE LOOP COUNT
3630  7240  T62A,   CLA CMA               /SET AC = 7777
3631  0110        AND     SELECT          /TEST ONLY SELECTED TERMINALS
3632  7450        SNA
3633  7040        CMA                     /TEST ALL CHANNELS IF NONE SELECTED
3634  6117        MTON                    /SELECT ALL STATIONS
3635  6125        MINS                    /MULTIPLE SKIP
3636  7410        SKP                     /SKIP OK
3637  4552        JMS I   TERR            /ERROR, ILLEGAL SKIP
3640  2127        ISZ     LPCNT           /DONE TEST?
3641  5230        JMP     T62A            /NO, CONTINUE
3642  5564        JMP I   TEXITA          /YES, EXIT TEST
```



```
                        /ROUTINE TO ACCEPT CHARACTERS FROM KEYBOARD,  RETURN WITH CHARACTER IN AC,
                        /GO TO ECHO TEST EXIT ROUTINE IF CHARACTER = RUBOUT

3643  0000  READ,   0000
3644  7200        CLA                     /CLEAR AC
3645  1120        TAD     DC02FL          /GET DC02 FLAG
3646  7650        SNA CLA                 /USING DC02?
3647  5321        JMP     CREAD           /NO,  GO TO CONSOLE READ ROUTINE

                        /DC02 READ ROUTINE

3650  1041  DC02R,  TAD     M4              /SET GROUP COUNT
3651  3350        DCA     CNT1            /STORE GROUP COUNT
3652  1065        TAD     P20             /GET GROUP CODE
3653  3352        DCA     STRG            /STORE GROUP CODE
3654  7200  NXTG,   CLA                   /CLEAR AC
3655  1042        TAD     M10             /GET STATION COUNT
3656  3351        DCA     CNT2            /STORE STATION COUNT
3657  1063        TAD     P10             /GET STATION CODE
3660  3353        DCA     STRS            /STORE STATION CODE
3661  1352        TAD     STRG            /GET GROUP CODE
3662  7110        CLL RAR                 /SET NEXT GROUP
3663  3352        DCA     STRG            /STORE NEXT GROUP
3664  7200  NXTS,   CLA                   /CLEAR AC
3665  1353        TAD     STRS            /GET STATION CODE
3666  7104        CLL RAL                 /SET NEXT STATION
3667  3353        DCA     STRS            /STORE NEXT STATION CODE
3670  1352        TAD     STRG            /GET GROUP CODE
3671  1353        TAD     STRS            /ADD STATION CODE
3672  3107        DCA     STAT            /STORE UNIQUE STATION CODE
3673  1110        TAD     SELECT          /CHECK FOR SELECTED DC02'S
3674  7450        SNA                     /SKIP IS STATIONS SELECTED
3675  5303        JMP     RD1             /NONE SELECTED
3676  0107        AND     STAT            /THIS STATION SELECTED?
3677  7041        CIA
3700  1107        TAD     STAT
3701  7440        SZA                     /SKIP IS THIS STATION SELECTED
3702  5313        JMP     DC021           /CHECK NEXT STATION, GROUP
3703  7200  RD1,    CLA                   /CLEAR AC
3704  1107        TAD     STAT            /GET UNIQUE STATION CODE
3705  6117        MTON                    /SELECT STATION
3706  7300        CLA CLL                 /CLEAR AC & LINK
3707  6111        MKSF                    /DC02 FLAG ON THIS STATION, GROUP
3710  5313        JMP     DC021           /NO,  CHECK NEXT STATION, GROUP
3711  6116        MKRB                    /YES,  READ CHARACTER
3712  5326        JMP     CKCHAR          /CHECK CHAR

3713  7200  DC021,  CLA                   /CLEAR AC
3714  2351        ISZ     CNT2            /DONE ALL STATIONS?
3715  5264        JMP     NXTS            /NO,  CHECK NEXT STATION
3716  2350        ISZ     CNT1            /YES,  DONE ALL GROUPS?
3717  5254        JMP     NXTG            /NO,  CHECK NEXT GROUP
3720  5250        JMP     DC02R           /YES,  KEEP LOOKING FOR FLAG
```

```
                        /CONSOLE READ ROUTINE

3721  4541    CREAD,  JMS I   TKSF            /READY?
3722  5321            JMP     .-1             /NO,  WAIT FOR FLAG
3723  4544            JMS I   TKRB            /READ CHARACTER
3724  0100            AND     P177
3725  1101            TAD     P200
3726  3125    CKCHAR, DCA     CHAR            /STORE CHAR
3727  1125            TAD     CHAR            /GET CHARACTER!
3730  3777'           DCA     CBCHAR          /SAVE FOR CONSOLE PACKAGE!
3731  7240            CLA CMA                 /SET DELAY COUNT FOR 38 MSEC
3732  4551            JMS I   TDELAY          /DELAY
3733  1132            TAD     EOT             /CHECK IF WANT END OF TEST MESSAGE
3734  7710            SPA CLA
3735  5346            JMP     CK0             /BYPASS MESSAGE
                      /
                      //////////
                      /CHECK FOR CONSOLE PACKAGE CONTROL CHARACTERS,
                      /
3736  2776'           ISZ     INMODE          /SET CHAR. FLAG
3737  4423            CBCNTR                  /CHECK FOR CHARACTERS,
3740  7000            NOP
                      /
                      //////////
                      /
3741  7200            CLA
3742  1125            TAD     CHAR            /GET INPUT CHARACTER
3743  1057            TAD     M377            /CHECK CHAR
3744  7650            SNA CLA                 /CHAR = RUBOUT?
3745  5576            JMP I   TEEM            /YES,  EXIT TEST
3746  1125    CK0,    TAD     CHAR            /GET CHAR AGAIN
3747  5643            JMP I   READ            /RETURN TO TEST

3750  0000    CNT1,   0000                    /WORKING STORAGE LOCATIONS
3751  0000    CNT2,   0000
3752  0000    STRG,   0000
3753  0000    STRS,   0000

                        /ROUTINE TO GENERATE ASCII CODE OF OCTAL DIGIT AND PRINT CHARACTER

3754  0000    POCT,   0
3755  0062            AND     P7              /MASK CHAR
3756  1071            TAD     P60             /MAKE ASCII
3757  4557            JMS I   TPRINT          /PRINT DIGIT
3760  5754            JMP I   POCT            /EXIT
```



```
                        /ROUTINE TO PRINT MULTIPLE SPACES

3761  0000    SP,     0
3762  3370            DCA     SP0             /SAVE COUNT
3763  1067    SP1,    TAD     P40             /GET SPACE CODE
3764  4557            JMS I   TPRINT          /PRINT SPACE
3765  2370            ISZ     SP0             /DONE?
3766  5363            JMP     SP1             /NO, SEND ANOTHER
3767  5761            JMP I   SP              /YES, RETURN

3770  0000    SP0,    0000                    /CHARACTER COUNT
3776  6131
3777  5457
      4000            PAGE

                        /I=O INSTRUCTIONS

4000  0000    RKSF,   0000
4001  6031    IO1,    KSF                     /SKIP IS FLAG IS SET
4002  7410            SKP
4003  2200            ISZ     RKSF            /INCREMENT RETURN ADDRESS FOR SKIP
4004  5600            JMP I   RKSF            /RETURN

4005  0000    RKCC,   0000
4006  6032    IO2,    KCC                     /CLEAR FLAG
4007  5605            JMP I   RKCC            /RETURN

4010  0000    RKRS,   0000
4011  6034    IO3,    KRS                     /READ BUFFER (STATIC)
4012  5610            JMP I   RKRS            /RETURN

4013  0000    RKRB,   0000
4014  6036    IO4,    KRB                     /CLEAR AC, READ BUFFER, CLEAR FLAG
4015  5613            JMP I   RKRB            /RETURN

4016  0000    RTSF,   0000
4017  6041    IO5,    TSF                     /SKIP IS FLAG IS SET
4020  7410            SKP
4021  2216            ISZ     RTSF            /INCREMENT RETURN ADDRESS FOR SKIP
4022  5616            JMP I   RTSF            /RETURN

4023  0000    RTCF,   0000
4024  6042    IO6,    TCF                     /CLEAR FLAG
4025  5623            JMP I   RTCF            /RETURN

4026  0000    RTPC,   0000
4027  6044    IO7,    TPC                     /LOAD BUFFER
4030  5626            JMP I   RTPC            /RETURN

4031  0000    RTLS,   0000
4032  6046    IO8,    TLS                     /PRINT CHARACTER
4033  5631            JMP I   RTLS            /RETURN
```

```
                        /ROUTINE TO SET I-O INSTRUCTIONS FOR SELECTED IOT'S

4034  0000  IOTSET, 0000
4035  3305        DCA     IOTSEL          /SAVE IOT'S
4036  1305        TAD     IOTSEL          /GET IOT SELECTIONS
4037  0106        AND     P7700           /MASK XMT IOT
4040  7110        CLL RAR                 /SHIFT BITS TO CORRECT POSTIONS
4041  7112        CLL RTR
4042  3306        DCA     IOCODE          /STORE XMT IOT
4043  1301        TAD     IOT1            /GET KSF
4044  1306        TAD     IOCODE          /ADD IOT
4045  3201        DCA     IO1             /SET KSF INSTRUCTION
4046  1302        TAD     IOT2            /GET KCC
4047  1306        TAD     IOCODE          /ADD IOT
4050  3206        DCA     IO2             /SET KCC INSTRUCTION
4051  1303        TAD     IOT3            /GET KRS
4052  1306        TAD     IOCODE          /ADD IOT
4053  3211        DCA     IO3             /SET KRS INSTRUCTION
4054  1304        TAD     IOT4            /GET KRB
4055  1306        TAD     IOCODE          /ADD IOT
4056  3214        DCA     IO4             /SET KRB INSTRUCTION
4057  1305        TAD     IOTSEL          /GET IOT SELECTION AGAIN
4060  0073        AND     P77             /MASK RCVR IOT
4061  7104        CLL RAL                 /SHIFT BITS TO CORRECT POSITION
4062  7106        CLL RTL
4063  3306        DCA     IOCODE          /STORE RCVR IOT CODE
4064  1301        TAD     IOT1            /GET TSF
4065  1306        TAD     IOCODE          /ADD IOT
4066  3217        DCA     IO5             /SET TSF INSTRUCTION
4067  1302        TAD     IOT2            /GET TCF
4070  1306        TAD     IOCODE          /ADD IOT
4071  3224        DCA     IO6             /SET TCF INSTRUCTION
4072  1303        TAD     IOT3            /GET TPC
4073  1306        TAD     IOCODE          /ADD IOT
4074  3227        DCA     IO7             /SET TPC INSTRUCTION
4075  1304        TAD     IOT4            /GET TLS
4076  1306        TAD     IOCODE          /ADD IOT
4077  3232        DCA     IO8             /SET TLS INSTRUCTION
4100  5634        JMP I   IOTSET          /RETURN

4101  6001  IOT1,   6001                  /KSF = TSF
4102  6002  IOT2,   6002                  /KCC = TCF
4103  6004  IOT3,   6004                  /KRS = TPC
4104  6006  IOT4,   6006                  /KRB = TLS
4105  0000  IOTSEL, 0000                  /IOT STORAGE
4106  0000  IOCODE, 0000                  /WORKING STORAGE

4107  0304  IOTTAB, 0304                  /TABLE OF STANDARD IOT'S
4110  1112        1112
4111  3031        3031
4112  4041        4041
4113  4243        4243
4114  4445        4445
4115  4647        4647
4116  0000        0000                  /END OF TABLE
```



```
                        /TYPE MESSAGE ROUTINE

4117  0000  MESG,   0000
4120  7300        CLA CLL                 /CLEAR AC & LINK
4121  1717        TAD I   MESG            /GET MESSAGE ADDRESS
4122  3363        DCA     MSAVE           /STORE MESSAGE ADDRESS
4123  2317        ISZ     MESG            /GET RETURN ADDRESS
4124  5326        JMP     .+2
4125  2363  MESGA,  ISZ     MSAVE         /SET NEXT CHAR ADDRESS
4126  7300        CLA CLL                 /CLEAR AC AND LINK
4127  1763        TAD I   MSAVE           /GET CHAR PAIR
4130  7012        RTR                     /GET FIRST CHAR
4131  7012        RTR
4132  7012        RTR
4133  0073        AND     P77             /MASK CHAR
4134  7450        SNA                     /END OF LINE?
4135  5361        JMP     MESGB           /YES, SEND CR-LF
4136  3364        DCA     CSAVE           /SAVE CHAR
4137  1051        TAD     M77             /CHECK CHAR
4140  1364        TAD     CSAVE
4141  7650        SNA CLA                 /END OF MESSAGE?
4142  5717        JMP I   MESG            /YES, EXIT
4143  1364        TAD     CSAVE           /NO, GET CHAR AGAIN
4144  4566        JMS I   TPCHAR          /PRINT CHAR
4145  1763        TAD I   MSAVE           /GET CHAR PAIR AGAIN
4146  0073        AND     P77             /SAVE SECOND CHAR
4147  7450        SNA                     /END OF LINE?
4150  5361        JMP     MESGB           /YES,SEND CR-LF
4151  3364        DCA     CSAVE           /SAVE CHAR
4152  1051        TAD     M77             /CHECK CHAR
4153  1364        TAD     CSAVE
4154  7650        SNA CLA                 /END OF MESSAGE
4155  5717        JMP I   MESG            /YES, EXIT
4156  1364        TAD     CSAVE           /NO, GET CHAR AGAIN
4157  4566        JMS I   TPCHAR          /PRINT CHAR
4160  5325        JMP     MESGA           /CONTINUE
4161  4554  MESGB,  JMS I   TCRLF         /SEND CR-LF
4162  5717        JMP I   MESG            /RETURN

4163  0000  MSAVE,  0000                  /STORAGE FOR CHARACTER ADDRESS
4164  0000  CSAVE,  0000                  /CHARACTER STORAGE
      4200        PAGE
```

```
                    /PRINT EXIT MESSAGE FOR ECHO TESTS

4200  3107  EEM,    DCA     STAT            /CLEAR SINGLE DC02 FLAG
4201  1111          TAD     TSTNO           /GET TEST NUMBER
4202  1044          TAD     M20             /CHECK NUMBER
4203  7510          SPA                     /PRINTING TEST?
4204  5574          JMP I   TSETUP          /YES, GO TO SETUP
4205  1044          TAD     M20             /CHECK TEST NUMBER AGIAN
4206  7700          SMA CLA                 /ECHO TEST?
4207  5574          JMP I   TSETUP          /NO, GO TO SETUP
4210  1041          TAD     M4              /SET TIME DELAY COUNT
4211  4551          JMS I   TDELAY          /DELAY 120 MSEC,
4212  4554          JMS I   TCRLF           /SEND CR-LF
4213  4556          JMS I   TLF             /SEND BLANK LINE
4214  4561          JMS I   TMESG           /PRINT MESSAGE
4215  4330          EEM1
4216  4425          LAS                     /GET SWITCH REGISTER
4217  7106          CLL RTL                 /GET SWITCH 4
4220  7106          CLL RTL
4221  7710          SPA CLA                 /KEYBOARD CONTROL?
4222  5574          JMP I   TSETUP          /YES, GO TO SETUP
4223  5565          JMP I   TEXIT           /GO TO EXIT ROUTINE

                    /PRINT TEST HEADER ROUTINE

4224  0000  PRTHDR, 0000
4225  7200          CLA                     /CLEAR AC
4226  3107          DCA     STAT            /CLEAR SINGLE DC02 FLAG
4227  4554          JMS I   TCRLF           /SEND CR-LF
4230  1111          TAD     TSTNO           /GET TEST NUMBER
4231  7041          CIA                     /NEGATE
4232  1113          TAD     HDRPTR          /ADD PREVIOUS TEST POINTER
4233  7650          SNA CLA                 /THIS HEADER PRINTED BEFORE?
4234  5624          JMP I   PRTHDR          /YES,  EXIT
4235  3131          DCA     PASCNT          /CLEAR PASS COUNT FOR TEST 12
4236  1111          TAD     TSTNO           /NO,  GET TEST NUMBER AGAIN
4237  3113          DCA     HDRPTR          /STORE POINTER
4240  4561          JMS I   TMESG           /PRINT MESSAGE
4241  4340          TSTMES
4242  1111          TAD     TSTNO           /GET TEST NUMBER
4243  7112          CLL RTR                 /GET HIGH DIGIT
4244  7110          CLL RAR
4245  0062          AND     P7
4246  4570          JMS I   TPOCT           /PRINT DIGIT
4247  7300          CLA CLL                 /CLEAR AC AND LINK
4250  1111          TAD     TSTNO           /GET TEST NUMBER AGAIN
4251  4570          JMS I   TPOCT           /PRINT DIGIT
4252  4554          JMS I   TCRLF           /SEND CR-LF
4253  1111          TAD     TSTNO           /GET TEST NUMBER
4254  7450          SNA                     /TEST 0 ?
4255  5264          JMP     PRT0            /YES, PRINT # COLUMNS MESSAGE
4256  1377          TAD     (-5
4257  7450          SNA                     /TEST 5 ?
4260  5264          JMP     PRT0            /YES, PRINT # COLUMNS MESSAGE
```



```
4261  1043          TAD     M12
4262  7440          SZA                     /TEST 17?
4263  5321          JMP     PRT1            /NO, SKIP # COLUMNS MESSAGE
4264  7300  PRT0,   CLA CLL                 /CLEAR AC AND LINK
4265  3134          DCA     HUNDS           /CLEAR CONVERSION COUNTERS
4266  3135          DCA     TENS
4267  3136          DCA     ONES
4270  1124          TAD     COLMN           /GET NUMBER OF COLUMNS
4271  2134          ISZ     HUNDS           /CONVERT NUMBER TO DECIMAL/ASCII
4272  1052          TAD     M144
4273  7500          SMA
4274  5271          JMP     .+3
4275  1077          TAD     P144
4276  2135          ISZ     TENS
4277  1043          TAD     M12
4300  7500          SMA
4301  5276          JMP     .+3
4302  3136          DCA     ONES
4303  7240          CLA CMA
4304  1134          TAD     HUNDS
4305  7450          SNA                     /DELETE LEADING ZEROS
4306  5311          JMP     .+3
4307  1071          TAD     P60
4310  4557          JMS I   TPRINT          /PRINT HUNDRED DIGIT
4311  1070          TAD     P57
4312  1135          TAD     TENS
4313  4557          JMS I   TPRINT          /PRINT TENS DIGIT
4314  1072          TAD     P72
4315  1136          TAD     ONES
4316  4557          JMS I   TPRINT          /PRINT UNITS DIGIT
4317  4561          JMS I   TMESG           /PRINT COLUMNS MESSAGE
4320  4345          COLMES
4321  4556  PRT1,   JMS I   TLF             /SEND BLANK LINE
4322  4546          JMS I   TTCF            /CLEAR FLAGS
4323  7240          CLA CMA
4324  6117          MTON
4325  6112          MKCC
4326  7300          CLA CLL                 /CLEAR AC AND LINK
4327  5624          JMP I   PRTHDR          /RETURN
```

```
4330  2405    EEM1,   TEXT    /TEST TERMINATED/
4331  2324
4332  4024
4333  0522
4334  1511
4335  1601
4336  2405
4337  0400
4340  2405    TSTMES, TEXT    /TEST #  ?/
4341  2324
4342  4043
4343  4040
4344  7700
4345  4040    COLMES, TEXT    /   COLUMNS/
4346  4040
4347  0317
4350  1425
4351  1516
4352  2300
4353  2431    T33M7,  TEXT    /TYPE A SPACE WHEN READY/
4354  2005
4355  4001
4356  4023
4357  2001
4360  0305
4361  4027
4362  1005
4363  1640
4364  2205
4365  0104
4366  3100

4377  7773
      4400            PAGE
```



```
                      /EXIT FROM I-O TEST SEQUENCE

4400  3117    IOEXIT, DCA     IOFLAG          /CLEAR I-O FLAG
4401  4425            LAS                     /GET SWITCH REGISTER
4402  7004            RAL
4403  7006            RTL
4404  7710            SPA CLA                 /LOOP ON TEST SEQUENCE?
4405  5574            JMP I   TSETUP          /NO,  HALT & WAIT FOR TEST SELECTION
4406  5310            JMP     EXIT3A          /GO TO FIRST PRINT TEST


                      /COMMON EXIT FROM ALL TESTS

4407  4554    EXIT,   JMS I   TCRLF           /SEND <CR><LF>
4410  7300    EXITA,  CLA CLL                 /CLEAR AC AND LINK
4411  1117            TAD     IOFLAG          /GET IO FLAG
4412  7640            SZA CLA                 /IO FLAG SET?
4413  5227            JMP     EXITA0          /YES, BYPASS KYBRD CONTROL
4414  1121            TAD     TLOOP           /GET LOOP ON TEST FLAG
4415  7640            SZA CLA                 /LOOP ON TEST?
4416  5512            JMP I   TSTPTR          /YES, GO TO TEST
4417  1122            TAD     TRONE           /GET ONE RUN FLAG
4420  7640            SZA CLA                 /RUN TEST ONCE?
4421  5574            JMP I   TSETUP          /YES, GO TO SETUP
4422  4425            LAS                     /GET SWITCH REGISTER
4423  7106            CLL RTL                 /CHECK SWITCH 4
4424  7106            CLL RTL
4425  7710            SPA CLA                 /KEYBOARD CONTROL?
4426  5250            JMP     EXIT0           /YES, DON'T CHECK OTHER SWITCHES
4427  4425    EXITA0, LAS                     /GET SWITCH REGISTER
4430  7104            CLL RAL
4431  7500            SMA                     /HALT AT END OF TEST?
4432  5236            JMP     .+4             /NO, CONTINUE
4433  4436            CBINOU                  /INTERIGATE FOR WAIT!
4434  7402            HLT                     /YES, HALT
4435  5210            JMP     EXITA           /RECHECK SWITCHES ON CONTINUE
4436  4425            LAS
4437  7106            CLL RTL                 /GET NEXT SWITCH
4440  7510            SPA                     /LOOP ON TEST?
4441  5512            JMP I   TSTPTR          /YES,  GO TO TEST
4442  7104            CLL RAL                 /NO,  GET SW3
4443  7700            SMA CLA                 /LOOP ON TEST SEQUENCE?
4444  5250            JMP     EXIT0           /YES,  CHECK NEXT TEST NUMBER
4445  1117            TAD     IOFLAG          /NO,  GET IO FLAG
4446  7650            SNA CLA                 /IO FLAG SET?
4447  5574            JMP I   TSETUP          /NO,  GO TO SETUP
4450  1111    EXIT0,  TAD     TSTNO           /GET TEST NUMBER
4451  1377            TAD     (-17            /CHECK IT
4452  7650            SNA CLA                 /TEST 17?
4453  5512            JMP I   TSTPTR          /YES, LOOP ON TEST
4454  2111            ISZ     TSTNO           /INCREMENT TEST NUMBER TO NEXT TEST
4455  1376            TAD     (-13            /CHECK TEST NUMBER
4456  1111            TAD     TSTNO
4457  7650            SNA CLA                 /LEGAL NUMBER?
```

```
4460  5310          JMP     EXIT3A          /NO, RESET TEST NUMBER
4461  1046          TAD     M26             /YES, CHECK TEST NUMBER
4462  1111          TAD     TSTNO
4463  7640          SZA CLA                 /LEGAL NUMBER?
4464  5267          JMP     EXIT2           /YES,  CONTINUE CHECK
4465  1065          TAD     P20             /NO, RESET TEST NUMBER
4466  5310          JMP     EXIT3A
4467  1375  EXIT2,  TAD     (-47            /CHECK TEST NUMBER
4470  1111          TAD     TSTNO
4471  7640          SZA CLA                 /LEGAL NUMBER?
4472  5300          JMP     EXIT3           /YES,  CONTINUE CHECK
4473  1117          TAD     IOFLAG          /NO,  CHECK IO FLAG
4474  7640          SZA CLA                 /IO FLAG SET?
4475  5200          JMP     IOEXIT          /YES,  LAST IO TEST
4476  1067          TAD     P40
4477  5310          JMP     EXIT3A
4500  1047  EXIT3,  TAD     M63             /CONTINUE CHECK OF TEST NUMBER
4501  1111          TAD     TSTNO
4502  7640          SZA CLA                 /LEGAL NUMBER?
4503  5311          JMP     EXIT4           /YES,  GO TO TEST
4504  1117          TAD     IOFLAG          /GET I-O FLAG
4505  7640          SZA CLA                 /FLAG SET?
4506  5200          JMP     IOEXIT          /YES,  LAST IO TEST
4507  1071          TAD     P60             /RESET TEST NUMBER
4510  3111  EXIT3A, DCA     TSTNO           /STORE NEW TEST NUMBER
4511  1111  EXIT4,  TAD     TSTNO
4512  1374          TAD     (-40
4513  7700          SMA CLA                 /CONTINUE IF NOT I/O TEST
4514  5321          JMP     EXIT5
4515  1111          TAD     TSTNO           /CHECK IF OPTION TEST
4516  1373          TAD     (-30
4517  7700          SMA CLA
4520  5574          JMP I   TSETUP          /GO TO TEST SELECT IF OPTION TEST
4521  1111  EXIT5,  TAD     TSTNO           /GET TEST NUMBER
4522  1163          TAD     TTP0            /ADD TABLE ADDRESS
4523  3114          DCA     TABPTR          /STORE TEST POINTER
4524  1514          TAD I   TABPTR          /GET TEST ADDRESS
4525  7450          SNA                     /TEST SELECTED IN TABLE?
4526  5210          JMP     EXITA           /NO, CHECK NEXT TEST IN SEQUENCE
4527  3112          DCA     TSTPTR          /STORE ADDRESS
4530  5512          JMP I   TSTPTR          /GO TO SELECTED TEST
```



```
                /ROUTINE TO PRINT DOUBLE REFERENCE LINES

4531  0000  DREFL,  0000
4532  4341          JMS     DREFL0          /SEND REFERENCE LINE
4533  4554          JMS I   TCRLF           /SEND CR-LF
4534  1372          TAD     (-41            /SET DELAY COUNT FOR 1 SECOND
4535  4551          JMS I   TDELAY          /DELAY
4536  4341          JMS     DREFL0          /SEND REFERENCE LINE
4537  4554          JMS I   TCRLF           /SEND CR-LF
4540  5731          JMP I   DREFL           /RETURN

4541  0000  DREFL0, 0000
4542  7300          CLA CLL                 /CLEAR AC AND LINK
4543  1123          TAD     WIDTH           /GET # COLUMNS
4544  3130          DCA     CHRCNT          /STORE COUNT
4545  1371          TAD     (61             /GET FIRST CHAR
4546  3125          DCA     CHAR            /STORE FIRST CHAR
4547  1370          TAD     (-11            /SET NUMBER SET CHAR COUNT
4550  3127          DCA     LPCNT           /STORE COUNT
4551  1125  DREFL1, TAD     CHAR            /GET CHAR
4552  4557          JMS I   TPRINT          /PRINT CHAR
4553  2125          ISZ     CHAR            /GET NEXT CHAR
4554  2130          ISZ     CHRCNT          /DONE LINE?
4555  7410          SKP                     /NO, CHECK CHAR
4556  5741          JMP I   DREFL0          /YES, EXIT
4557  2127          ISZ     LPCNT           /DONE CHAR SET?
4560  5351          JMP     DREFL1          /NO, SEND CHAR
4561  1071          TAD     P60             /YES, RESET CHAR
4562  3125          DCA     CHAR            /STORE NEW CHAR
4563  1043          TAD     M12             /RESET CHAR COUNT FOR CHAR SET
4564  3127          DCA     LPCNT           /STORE NEW COUNT
4565  5351          JMP     DREFL1          /CONTINUE
4570  7767
4571  0061
4572  7737
4573  7750
4574  7740
4575  7731
4576  7765
4577  7761
      4600          PAGE
```

```
                        /OUTPUT A CHARACTER ROUTINE,  EXIT WITH CLEAR AC

4600  0000  PRINT,  0000
4601  3237          DCA     TEMP            /SAVE CHARACTER
4602  1120          TAD     DC02FL          /GET DC02 FLAG
4603  7650          SNA CLA                 /USING DC02?
4604  5230          JMP     CPRINT          /NO,  GO TO CONSOLE PRINT ROUTINE

                        /DC02 PRINT ROUTINE

4605  6117          MTON                    /DESELECT ALL STATIONS
4606  1107          TAD     STAT            /GET SINGLE DC02 FLAG
4607  7440          SZA                     /ONE STATION?
4610  5215          JMP     DC02P           /YES,  XMT TO ONE STATION ONLY
4611  7200          CLA                     /CLEAR AC
4612  1110          TAD     SELECT          /GET SELECTED DC32 CODE
4613  7450          SNA                     /STATIONS SELECTED?
4614  7240          CLA CMA                 /NO,  SELECT ALL STATIONS

4615  6117  DC02P,  MTON                    /SELECT STATIONS
4616  7200          CLA                     /CLEAR AC
4617  1237          TAD     TEMP            /GET CHARACTER
4620  6126          MTLS                    /LOAD CHARACTER
4621  6121          MTSF                    /DONE?
4622  5221          JMP     .-1             /NO,  WAIT FOR FLAG
4623  7200          CLA                     /CLEAR AC
4624  1110          TAD     SELECT          /CHECK SELECTED CHANNELS
4625  7640          SZA CLA                 /SKIP IF NONE SELECTED
4626  4573          JMS I   TFLAG           /CHECK KYBD FLAGS
4627  5600          JMP I   PRINT           /EXIT

                        /CONSOLE PRINT ROUTINE

4630  1237  CPRINT, TAD     TEMP            /GET CHARACTER
4631  4550          JMS I   TTLS            /LOAD CHARACTER
4632  4545          JMS I   TTSF            /DONE?
4633  5232          JMP     .-1             /NO,  WAIT FOR FLAG
4634  4546          JMS I   TTCF            /CLEAR FLAG
4635  4573          JMS I   TFLAG           /CHECK KYBD FLAGS
4636  5600          JMP I   PRINT           /EXIT

4637  0000  TEMP,   0000                    /TEMPORARY STORAGE FOR CHARACTER
```



```
                        /ROUTINE TO CONVERT PACKED DATA TO ASCII AND PRINT

4640  0000  PCHAR,  0
4641  0073          AND     P77             /MASK CHAR
4642  3252          DCA     PCHAR0          /STORE CHAR
4643  1252          TAD     PCHAR0          /GET CHAR AGAIN
4644  0067          AND     P40             /MAKE ASCII
4645  7650          SNA CLA
4646  1074          TAD     P100
4647  1252          TAD     PCHAR0
4650  4557          JMS I   TPRINT          /PRINT CHAR
4651  5640          JMP I   PCHAR           /RETURN

4652  0000  PCHAR0, 0000                    /TEMP STORAGE FOR CHAR

                        /CARRIAGE RETURN + LINE FEED ROUTINES

4653  0000  CRLF,   0
4654  4257          JMS     CR              /SEND CR
4655  4264          JMS     LF              /SEND LF
4656  5653          JMP I   CRLF            /RETURN

4657  0000  CR,     0
4660  7200          CLA
4661  1377          TAD     (15             /GET ASCII FOR CR
4662  4557          JMS I   TPRINT          /PRINT CR
4663  5657          JMP I   CR              /RETURN

4664  0000  LF,     0
4665  7200          CLA
4666  1376          TAD     (12             /GET ASCII FOR LF
4667  4557          JMS I   TPRINT          /SEND LF
4670  5664          JMP I   LF              /RETURN

                        /ROUTINE TO CHECK FLAGS

4671  0000  FLAG,   0000
4672  7300          CLA CLL                 /CLEAR AC AND LINK
4673  1111          TAD     TSTNO           /GET TEST NUMBER
4674  1044          TAD     M20             /CHECK NUMBER
4675  7700          SMA CLA                 /PRINTING TEST?
4676  5310          JMP     FLAGA           /NO,  CHECK FLAGS
4677  1022          TAD     22
4700  0103          AND     P400            /MASK CONSOLE BIT,
4701  7640          SZA CLA                 /ON CONSOLE PACKAGE?
4702  5310          JMP     FLAGA           /YES,  CHECK FOR CHARACTER INPUT!
4703  4425          LAS                     /NO,  GET SWITCH REG,
4704  7106          CLL RTL                 /CHECK SWITCH 4
4705  7106          CLL RTL
4706  7700          SMA CLA                 /KEYBOARD CONTROL?
4707  5334          JMP     FLAG3           /NO,  SKIP FLAG CHECK
```

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4710  1120  FLAGA,  TAD     DC02FL          /GET DC02 FLAG
4711  7640          SZA CLA                 /FLAG SET?
4712  5316          JMP     FLAG1           /YES, CHECK DC02 KYBD FLAG
4713  4541          JMS I   TKSF            /CONSOLE KYBD FLAG SET?
4714  5334          JMP     FLAG3           /NO, EXIT
4715  5325          JMP     FLAG0           /YES, HANDLE FLAG
4716  7240  FLAG1,  CLA CMA                 /SET AC = -1 (7777)
4717  0110          AND     SELECT          /TEST ONLY SELECTED TERMINALS
4720  7450          SNA
4721  7040          CMA                     /TEST ALL TERMINALS IF NONE SELECTED
4722  6117          MTON                    /SELECT CHANNELS
4723  6111          MKSF                    /FLAGS SET?
4724  5334          JMP     FLAG3           /NO, EXIT
4725  4560  FLAG0,  JMS I   TREAD           /READ CHAR
4726  4546          JMS I   TTCF            /CLEAR FLAGS
4727  7240          CLA CMA
4730  6117          MTON                    /SELECT CHANNELS
4731  6112          MKCC
4732  7300          CLA CLL                 /CLEAR AC AND LINK
4733  3107          DCA     STAT            /CLEAR SINGLE DC02 FLAG
4734  7300  FLAG3,  CLA CLL                 /CLEAR AC AND LINK
4735  1375          TAD     (-24            /CHECK IF TEST24
4736  1111          TAD     TSTNO           /TEST24?
4737  7640          SZA CLA
4740  5671          JMP I   FLAG            /NO, RETURN TO TEST
4741  1562          TAD I   TPRHDR          /CHECK IF PRINTING TEST HEADER
4742  7041          CIA
4743  1374          TAD     (TEST24+1
4744  7650          SNA CLA
4745  5671          JMP I   FLAG            /PRINTING HEADER = RETURN
4746  1125          TAD     CHAR            /NOT PRINTING HEADER = CHECK CHAR
4747  1054          TAD     M203
4750  7640          SZA CLA                 /CHAR = CNTL C ?
4751  5671          JMP I   FLAG            /NO, RETURN
4752  3125          DCA     CHAR            /YES, CLEAR OUT CHAR AND RETURN TO TEST
4753  5754          JMP I   FLAG2           /YES, RETURN FOR TEST24

4754  1752  FLAG2,  T24R
4774  1675
4775  7754
4776  0012
4777  0015
      5000          PAGE

                    /ROUTINE TO SELECT TEST

5000  7300  SETUP,  CLA CLL                 /CLEAR AC AND LINK
5001  1041          TAD     M4              /SET DELAY COUNT
5002  4551          JMS I   TDELAY          /DELAY 120 MSEC,
5003  3122          DCA     TRONE           /CLEAR ONE RUN FLAG
5004  3121          DCA     TLOOP           /CLEAR LOOP ON TEST FLAG
5005  3132          DCA     EOT             /ALLOW CHAR CHECK IN READ ROUTINE
5006  4425          LAS                     /GET SWITCH REGISTER
5007  7106          CLL RTL                 /CHECK SWITCH 4
5010  7106          CLL RTL
```



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5011  7710          SPA CLA                 /KEYBOARD CONTROL?
5012  5232          JMP     KYBDST          /YES, GO TO KEYBOARD ROUTINE

                    /ROUTINE TO GET TEST NUMBER FROM CONSOLE SWITCH REGISTER

5013  7402          HLT                     /HALT = WAIT FOR OPERATOR
                                            /TO SELECT DESIRED TEST AND PRESS CONTINUE
5014  4425          LAS                     /GET SWITCH REGISTER
5015  7106          CLL RTL                 /RECHECK SWITCH 4
5016  7106          CLL RTL
5017  7710          SPA CLA                 /KEYBOARD CONTROL?
5020  5232          JMP     KYBDST          /YES, GO TO KEYBOARD ROUTINE
5021  4425          LAS                     /GET SWITCH REGISTER
5022  0073          AND     P77             /MASK BITS
5023  3111          DCA     TSTNO           /STORE TEST NUMBER
5024  1047          TAD     M63             /CHECK IF LEGAL NUMBER
5025  1111          TAD     TSTNO
5026  7700          SMA CLA                 /LEGAL?
5027  5200          JMP     SETUP           /NO,  HALT
5030  3107          DCA     STAT
5031  5327          JMP     SETA            /START TEST

                    /KEYBOARD CONTROL ROUTINE

5032  7300  KYBDST, CLA CLL
5033  3107          DCA     STAT
5034  4554          JMS I   TCRLF           /SEND CR-LF
5035  4556          JMS I   TLF             /SEND BLANK LINE
5036  4561          JMS I   TMESG           /PRINT MESSAGE
5037  5141          SELMES                  /"SELECT TEST NUMBER"
5040  7240          CLA CMA                 /SET AC = -1
5041  3132          DCA     EOT             /STOP CHAR CHECK IN READ ROUTINE
5042  4560          JMS I   TREAD           /READ TENS DIGIT
5043  3135          DCA     TENS            /STORE DIGIT
5044  1135          TAD     TENS            /GET DIGIT AGAIN
5045  0100          AND     P177            /MASK BIT 8
5046  4557          JMS I   TPRINT          /ECHO DIGIT
5047  4560          JMS I   TREAD           /READ ONES DIGIT
5050  3136          DCA     ONES            /STORE DIGIT
5051  1136          TAD     ONES            /GET DIGIT AGAIN
5052  0100          AND     P177            /MASK BIT 8
5053  4557          JMS I   TPRINT          /ECHO DIGIT
5054  4560          JMS I   TREAD           /GET CONTROL CHARACTER
5055  0100          AND     P177            /MASK BIT 8
5056  4557          JMS I   TPRINT          /ECHO CONTROL CHARACTER
5057  4554          JMS I   TCRLF           /SEND CR-LF
5060  3132          DCA     EOT             /ALLOW CHARACTER CHECK IN READ ROUTINE
5061  1135          TAD     TENS            /GET TENS DIGIT
5062  0062          AND     P7              /MASK OCTAL DIGIT
5063  7106          CLL RTL                 /ROTATE TO CORRECT POSITION
5064  7104          CLL RAL
5065  3111          DCA     TSTNO           /STORE IN TEST NUMBER
5066  1136          TAD     ONES            /GET ONES DIGIT
5067  0062          AND     P7              /MASK OCTAL DIGIT
5070  1111          TAD     TSTNO           /ADD TO TEST NUMBER
```

```
5071  3111          DCA     TSTNO           /STORE CONVERTED TEST NUMBER
5072  1111          TAD     TSTNO           /GET TEST NUMBER
5073  1377          TAD     (-40            /CHECK TEST NUMBER
5074  7700          SMA CLA                 /LEGAL TEST NUMBER?
5075  5200          JMP     SETUP           /NO, ASK FOR NUMBER AGAIN
5076  1111          TAD     TSTNO           /GET TEST NUMBER
5077  1044          TAD     M20             /CHECK NUMBER
5100  7500          SMA                     /PRINTING TEST?
5101  5322          JMP     KYBDRT          /NO, RUN ONLY ONCE
5102  7300  KYBD0,  CLA CLL                 /CLEAR AC AND LINK
5103  1125          TAD     CHAR            /GET CONTROL CHARACTER
5104  1376          TAD     (-256           /CHECK CODE
5105  7650          SNA CLA                 /CHAR = ":"  ?
5106  5322          JMP     KYBDRT          /YES, SET UP TO RUN TEST ONCE
5107  1125          TAD     CHAR            /GET CHAR AGAIN
5110  0375          AND     (7737           /ALLOW LOWER CASE
5111  1374          TAD     (-314           /CHECK CODE
5112  7650          SNA CLA                 /CHAR = L ?
5113  5325          JMP     KYBOLT          /YES, SET UP TO LOOP ON TEST
5114  1125          TAD     CHAR            /GET CHAR AGAIN
5115  0375          AND     (7737           /ALLOW LOWER CASE
5116  1373          TAD     (-323           /CHECK CHAR
5117  7640          SZA CLA                 /CHAR = S ?
5120  5200          JMP     SETUP           /NO, ILLEGAL CONTROL CHAR
                                            /GET NEW SELECTION
5121  5327          JMP     SETA            /START TEST

5122  7240  KYBDRT, CLA CMA                 /SET AC = -1
5123  3122          DCA     TRONE           /SET ONE RUN FLAG
5124  5327          JMP     SETA            /START TEST
5125  7240  KYBOLT, CLA CMA                 /SET AC = -1
5126  3121          DCA     TLOOP           /SET LOOP ON TEST FLAG
5127  1111  SETA,   TAD     TSTNO           /GET TEST NUMBER
5130  1163          TAD     TTP0            /ADD TABLE ADDRESS
5131  3114          DCA     TABPTR          /STORE TEST POINTER
5132  1514          TAD I   TABPTR          /GET TEST ADDRESS
5133  7450          SNA                     /TEST SELECTED IN TABLE?
5134  5200          JMP     SETUP           /NO, GET NEW TEST SELECTION
5135  3112          DCA     TSTPTR          /STORE ADDRESS
5136  1041          TAD     M4              /SET DELAY COUNT
5137  4551          JMS I   TDELAY          /DELAY 120 MSEC,
5140  5512          JMP I   TSTPTR          /GO TO SELECTED TEST
```



```
5141  2305  SELMES, TEXT    /SELECT TEST #   ?/
5142  1405
5143  0324
5144  4024
5145  0523
5146  2440
5147  4340
5150  4040
5151  7700
5152  0516  ENDPAS, TEXT    /END OF PASS  ?/
5153  0440
5154  1706
5155  4020
5156  0123
5157  2340
5160  4077
5161  0000
5162  6061  T4SMES, TEXT    /01 START?/
5163  4023
5164  2401
5165  2224
5166  7700
5167  6060  T4EMES, TEXT    /00?/
5170  7700
5173  7455
5174  7464
5175  7737
5176  7522
5177  7740
      5200          PAGE

5200  2410  IMES1,  TEXT    /THIS TERMINAL USING [DT-SI  ?/
5201  1123
5202  4024
5203  0322
5204  1511
5205  1601
5206  1440
5207  2523
5210  1116
5211  0740
5212  1117
5213  2455
5214  2372
5215  4040
5216  7700
5217  4040  IMES2,  TEXT    '  (XMTR/RCVR)'
5220  5030
5221  1524
5222  2257
5223  2203
5224  2622
5225  5100
```

```
                /CONSOL SRC-V1R4-  CONSOL PACKAGE

                /SET UP A LAS TO BE EQUALL TO THE CALL C8CKSW

                /PROGRAM SHOULD CHECK FOR A CONTROL CHARACTER FROM THE CONSOL
                /EVERY FIVE SECONDS OR LESS

                /SETUP CNTVAL FOR A RANGE OF 1 TO 4 MINUTES FOR C8PASS TO PRINT PASS
                /SETUP OF CNTVAL WILL BE FOUND IN C8PASS

                /SET UP XDOSW AS THE VALUE NEEDED FOR A RETURN FOR CONTROL R
                /RETURN TO ASK THE SWITCH REGISTER QUESTION.



        6661            PSKF=   6661
        6662            PCLF=   6662
        6663            PSKE=   6663
        6664            PSTB=   6664
        6665            PSIE=   6665
        6004            GTF=    6004
        7701            ACL=    7701
        6007            CAF=    6007
        7421            MQL=    7421
        7002            SSW=    7002
```



```
                /**********************************************************************
                /C8PASS
                /THIS IS CALLED AT THE END OF EACH PROGRAM COMPLETION
                /THE VALUE OF** CNTVAL** WILL BE DETERMINED BY THE TIME IT TAKES
                /THE PROGRAM TO COMPLEATE THIS MANY C8PASS TO BE IN THE 1 TO 4 MINUTE
                /RANGE
                /       C8PASS=JMS      XC8PAS
                /EX,            C8PASS
                /               HLT                     /HALT IF NON CONSOL PACKAGE
                /               JMP     START1          /CONTINUE RUNNING THIS PROGRAM
                /RETURN TO LOCATION CALL PLUS ONE WITH THE AC=0 IF NON CONSOL PACKAGE AND HLT
                /IF CONTINUE TO RUN THEN RETURN TO CALL PLUS2 AC=0

        5226  0000    XC8PAS, 0
        5227  7200            CLA
        5230  1022            TAD     22              /CHECK IF A CLASSIC
        5231  0103            AND     P400            /MASK FOR CLASSIC BIT
        5232  7640            SZA CLA                 /SKIP IF NOT CLASSIC
        5233  5235            JMP     DOPACK          /IS CLASSIC
        5234  5626            JMP I   XC8PAS          /GO CHECK END HALT
        5235  4254    DOPACK, JMS     CKCOUT          /CLASS CHECK C8PASS COUNT
        5236  5252            JMP     C8BY1           /C8PASS COUNT NOT DONE REDO PROGRAM
        5237  2272            ISZ     PSCNT           /C8PASS COUNT DONE SET C8PASS COUNT
        5240  4432            C8CRLF                  /CRLF
        5241  4427            C8PRNT                  /C8PRNT BUFFER
        5242  5275            MESPAS                  /
        5243  1272            TAD     PSCNT           /GET NUMBER
        5244  4431            C8OCTA                  /CONVERT IT TO ASCII
        5245  4432            C8CRLF                  /DO A CARRIAGE RETURN
        5246  4425            C8CKSW                  /CHECK A HALT AT END OF C8PASS
        5247  0377            AND     (2000           /MASK BIT
        5250  7640            SZA CLA                 /HALT =1 NO SKIP CONTINUE =0
        5251  4436            C8INOU                  /STOP PROGRAM EXECUTION-LOOK FOR INPUT
        5252  2226    C8BY1,  ISZ     XC8PAS          /BUMP RETURN
        5253  5626            JMP I   XC8PAS
        5254  0000    CKCOUT, 0
        5255  1273            TAD     DOSET           /CHECK IF SET UP NEEDED
        5256  7640            SZA CLA                 /0=SET UP C8PASS COUNT VALUE
                                                      /1=C8PASS COUNT VALUE OK
        5257  5263            JMP     NOSET           /C8PASS COUNT VALUE ON
        5260  1274            TAD     CNTVAL          /GET COUNT VALUE FOR THIS PROG
        5261  7040            CMA                     /SET TO NEGATIVE
        5262  3271            DCA     DOCNT           /STORE IN HERE
        5263  2273    NOSET,  ISZ     DOSET           /INDICATE VALUE SET UP
        5264  2271            ISZ     DOCNT           /COUNT THE NUMBER OF PASSES
        5265  5252            JMP     C8BY1           /EXIT FOR ANOTHER PASS
        5266  3273            DCA     DOSET           /SET TO C8PRNT C8PASS
        5267  2254            ISZ     CKCOUT          /BUMP RETURN FOR
        5270  5654            JMP I   CKCOUT          /C8PASS C8TYPE OUT
        5271  0000    DOCNT,  0
        5272  0000    PSCNT,  0                       /
        5273  0000    DOSET,  0
        5274  0000    CNTVAL, 0
```

```
5275  0411    MESPAS, TEXT    "DILABD    PASS "
5276  1401
5277  0204
5300  4040
5301  4040
5302  2001
5303  2323
5304  4040
5305  0000

                /**********************************************************************

                /C8CKSW
                /ROUTINE THAT WILL CHECK WHERE TO READ THE
                /C8 SWITCHES FROM IE, FROM PANEL OR PSEUDO C8SWIT REGISTER
                /       C8CKSW= JMS XC8SW
                /EX     C8CKSW          /READ THE C8SWIT REGISTER
                                        /RETURN WITH THE CONTENTS OF SWITCH REGISTER

                /RETURN TO NEXT LOCATION FOLLOWING CALL WITH THE AC= TO VALUE OF C8SWIT SETTING

5306  0000    XC8SW,  0
5307  7200            CLA                     /CLEAR AC
5310  4437            C8CKPA                  /CHECK FOR CONTROL CHARACTERS!
5311  7000            NOP
5312  1021            TAD     21              /GET WD FOR INDICATOR
5313  7710            SPA CLA                 /CHECK IF FROM PANEL 4000
5314  7614            7614                    /LAS AND SKIP FROM PANEL!
5315  1020            TAD     20              /PSEUDO SW
5316  5706            JMP I   XC8SW           /EXIT WITH STATUS BIT IN AC,

                /**********************************************************************

                /C8TTYI
                /THIS ROUTINE WILL LOOK FOR A INPUT FROM THE CONSOL
                /       C8TTYI= JMS XC8TTY
                /EX,    C8TTYI          /READ CHAR FROM THE CONSOL DEVICE
                /                       /RETURN TO CALL PLUS ONE AC CONTAINS THE CHAR

5317  0000    XC8TTY, 0
5320  6031            KSF                     /LOOK FOR KEYBOARD FLAG
5321  5320            JMP     .-1
5322  6036            KRB                     /GET CHAR
5323  0100            AND     P177            /MASK FOR 7 BITS
5324  1101            TAD     P200            /ADD THE EIGTH BIT
5325  3776'           DCA     C8CHAR          /STORE IT
5326  1776'           TAD     C8CHAR
5327  5717            JMP I   XC8TTY          /EXIT
```



```
                /**********************************************************************

                /C8PRNT

                /THIS ROUTINE WILL TYPE THE CONTENTS OF THE C8 PRINT BUFFER, THE LOCATION
                /OF THE BUFFER WILL BE IN THE ADDRS FOLLOWING THE CALL,  C8 PRINTING OF THE BUFFER
                /WILL STOP WHEN A 00 CHAR IS DETECTED, CHARACTERS ARE PACKED 2 PER WORD,

                /       C8PRNT= JMS XC8PNT


                /EX,    C8PRNT                  /C8PRNT THE CONTENTS OF THE FOLLOWING BUFFER
                /       MESS77                  /LOCATION OF C8PRNT BUFFER
                /C8PRNT WILL USE THE LOCATION FOLLOWING THE CALL AS THE POINTER FOR THE
                /C8PRNT ROUTINE,RETURN TO CALL PLUS TWO WITH AC= 0


5330  0000    XC8PNT, 0
5331  7300            CLA CLL
5332  1730            TAD I   XC8PNT          /GET C8PRNT BUFFERS STARTING LOCATION
5333  3363            DCA     PTSTOR          /STORE IN PTSTOR
5334  2330            ISZ     XC8PNT          /BUMP RETURN
5335  1763    C8D01,  TAD I   PTSTOR          /GET DATA WORD
5336  0106            AND     P7700           /MASK FOR LEFT BYTE
5337  7450            SNA                     /CHECK IF 00 TERMINATE
5340  5730            JMP I   XC8PNT          /EXIT
5341  7500            SMA                     /IS AC MINUS
5342  7020            CML                     /MAKE CHAR A 300 AFTER ROTATE
5343  7001            IAC                     /MAKE CHAR A 200 AFTER ROTATE
5344  7012            RTR
5345  7012            RTR
5346  7012            RTR                     /PUT CHAR IN BITS 4-11 MAKE IT 8 BIT ASCII
5347  4434            C8TYPE                  /C8PRNT IT ON CONSOLE
5350  1763            TAD I   PTSTOR          /GET DATA WORD
5351  0073            AND     P77             /MASK FOR RIGHT BYTE
5352  7450            SNA                     /CHECK IF 00 TERMINATOR
5353  5730            JMP I   XC8PNT          //EXIT
5354  1375            TAD     (3740           /ADD FUDGE FACTOR TO DETERMINE IF 200
5355  7500            SMA                     /OR 300 IS TO BE ADD TO CHAR
5356  1074            TAD     P100            /ADD 100
5357  1374            TAD     (240            /ADD 200
5360  4434            C8TYPE                  /C8TYPE ONLY BITS 4-11
5361  2363            ISZ     PTSTOR          /BUMP POINTER FOR NEXT WORD
5362  5335            JMP     C8D01           /DO AGAIN
5363  0000    PTSTOR, 0                       /STOR FOR C8PRNT BUFFER
5364  0000    STOPNT, 0                       /0000 C8PRNT 7777=DO NOT C8PRNT

5374  0240
5375  3740
5376  5457
5377  2000
```

```
                5400            PAGE
                        /**********************************************************************
                        /C8CNTR
                        /THIS ROUTINE WILL CHECK FOR THE PRESENCE OF CONTROL CHARACTERS
                        /IT WILL CHECK FOR THE FOLLOWING CHAR C-R-Q-O-L-S
                        /       C8CNTR= JMS XC8CNT

                        /EX,    C8CNTR                  /CHECK FOR CONTROL CHARACTER
                        /       JMP     ANYTHING        /LOC FOLLOWING CALL IS FOR CONTINUING THE PROGRAM
                        /       JMP     ANYTHING        /LOC2 IS FOR RETURN IF INMODE SET AND NOT CNTRL CHAR
                        /
                        /RETURN IS TO CALL PLUS ONE IFCONTINUE
                        /RETURN IS TO CALL PLUS TWO IF INMOD SET AND NOT CONTROL CHAR
                        /RETURN IS TO CALL +2 IFF INMODE NOT SET
                        /AND NOT CONTROL CHARACTER, WILL PRINT THE CHARACTER AND A ?,
                        /RETURN WILL 0 IN THE AC!

5400  0000      XC8CNT, 0
5401  3777'             DCA     ACSAVE          /SAVE THE AC
5402  1022              TAD     22
5403  0103              AND     P400            /MASK CONSOLE BIT!
5404  7640              SZA CLA                 /ON CONSOLE PACKAGE?
5405  5210              JMP     .+3             /YES
5406  1777'             TAD     ACSAVE          /NO, REPLACE AC!
5407  5600              JMP I   XC8CNT          /EXIT
5410  6004              GTF
5411  3776'             DCA     FLSAVE
5412  7701              ACL
5413  3775'             DCA     MQSAVE          /SAVE THE MQ
5414  7300              CLA CLL                 /CLEAR
5415  3261              DCA     INDEXA          /SET DISPLACEMENT INTO TABLE B
5416  1263              TAD     XTABLA          /GET ADDRS OF TABLE A
5417  3262              DCA     GETDAT          /CONTAINS POINTER TO CONTROL CHAR
5420  1662      REDOA,  TAD I   GETDAT          /GET CONTROL CHAR FROM TABLE
5421  7450              SNA                     /CHECK FOR A 0 END OF TABLE
5422  5231              JMP     DONEA           /END OF TABLE NO CONTROL CHAR
5423  1257              TAD     C8CHAR          /COMPARE CHAR TO CONTROL CHAR
5424  7650              SNA CLA                 /0 IF MATCH
5425  5246              JMP     GOITA           /MATCH
5426  2261              ISZ     INDEXA          /NO MATCH NOT END OF TABLE REDO
5427  2262              ISZ     GETDAT          /BUMP INDEX FOR EXIT WHEN CONTROL FOUND
5430  5220              JMP     REDOA           /BUMP GETDAT FOR COMPARE OF NEXT CNTRL CHAR,
5431  1774'     DONEA,  TAD     INMODE          /CHECK IF PROGRAM EXPECTS CHAR
5432  7640              SZA CLA                 /1=CHAR EXPECTED  0= NO CHAR EXPECTED
5433  5243              JMP     EXITA1          /CHAR EXPECTED
5434  1257              TAD     C8CHAR          /GET CHAR = NOT CONTROL & NOT EXPECTED
5435  4434              C8TYPE                  /C8PRNT CHAR
5436  1073              TAD     P77             /GET CODE FOR "?"
5437  4434              C8TYPE
5440  4432              C8CRLF
5441  2200              ISZ     XC8CNT          /UPDATE POINTER,
5442  5600              JMP I   XC8CNT          /EXIT AND CONTINUE PROGRAM
5443  2200      EXITA1, ISZ     XC8CNT          /BUMP RETURN FOR MAIN PROGRAM CHECK OF CHAR
5444  1257              TAD     C8CHAR          /PUT CHAR IN AC,
5445  5600              JMP I   XC8CNT          /EXIT
```



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5446  1264      GOITA,  TAD     XTABLB          /GET START OF TABLE B
5447  1261              TAD     INDEXA          /GET NOW FAR INTO TABLE
5450  3260              DCA     GOTOA           /STORE IT
5451  1257              TAD     C8CHAR          /GET CHARACTER!
5452  1274              TAD     P100            /MAKE IT 3XX,
5453  3257              DCA     C8CHAR
5454  1660              TAD I   GOTOA           /GET TABLE B POINTER!
5455  3260              DCA     GOTOA           /SAVE POINTER
5456  5660              JMP I   GOTOA           /GOTO CONTROL CHAR ROUTINE
5457  0000      C8CHAR, 0
5460  0000      GOTOA,  0000                    /ADD OF CNTRL ROUTINE TO EXECUTE
5461  0000      INDEXA, 0000                    /DISPLACEMENT INTO CNTRL TABLE
5462  0000      GETDAT, 0000                    /LOCATION OF ADDRS OF CONTROL CHAR',
5463  5465      XTABLA, TABLA                   /ADDRS OF TABLEA
5464  5476      XTABLB, TABLB                   /ADDRS OF TABLEB
5465  7575      TABLA,  7575                    /CNTRL C BACK TO MONITOR 203
5466  7564              7564                    /CNTRL L SWITCH ERROR PRINTTING DEVICE 214
5467  7561              7561                    /CNTRL O STOP OUTPUTTING DATA 217
5470  7557              7557                    /CNTRL Q START DISPLAYING CHAR', AGAIN 221
5471  7556              7556                    /CNTRL R BACK TO BEGINNING OF PROGRAM 222
5472  7555              7555                    /CNTRL S STOP SENDING CHAR TO DISPLAY WAIT FOR CNTRL Q 223
5473  7573              7573                    /CNTRL E CONTINUE WITH PROGRAM 205
5474  7574              7574                    /CNTRL D CHANGE THE SWITCHES
5475  0000              0000

5476  6070      TABLB,  CNTRLC
5477  5537              CNTRLL
5500  5545              CNTRLO
5501  5506              CNTRLQ
5502  5512              CNTRLR
5503  5521              CNTRLS
5504  5553              CNTRLE
5505  5600              CNTRLD
                        /
                        /START SENDING CHAR, TO THE DISPLAY
                        /
5506  3335      CNTRLQ, DCA     C8SETS          /CLEAR SOFTWARE FLAG!
5507  3774'             DCA     INMODE          /CLEAR SOFTWARE FLAG!
5510  4773'             JMS     C8GET           /REPLACE REGISTERS!
5511  5736              JMP I   C8RETR          /EXIT CONTROL Q

                        /GO TO THE QUESTION C8SWIT
                        /
5512  4772'     CNTRLR, JMS     UPAROW          /C8PRNT A ↑ AND THE CHAR
5513  3335              DCA     C8SETS          /CLEAR SOFTWARE FLAG!
5514  3774'             DCA     INMODE
5515  4432              C8CRLF
5516  3771'     C8BY4,  DCA     C8SWST          /CLEAR REENTRY FLAG
5517  5720              JMP I   XDOSW           /GO TO ADDRS OF C8SWIT
5520  0523      XDOSW,  C8DOR                   /DOSW IS LABEL FOR C8SWIT QUESTION
```

```
                    /STOP SENDING CHAR', TO DISPLAY UNTIL A ^Q IS RECEIVED
                    /REMAIN IN LOOP TILL Q',
                    /
5521  1335  CNTRLS, TAD     C8SETS          /GET SOFTWARE FLAG!
5522  7640        SZA CLA                   /SET?
5523  5330        JMP     C8DD7             /YES, BYPASS!
5524  7001        IAC
5525  1200        TAD     XC8CNT            /GET RETURN POINTER
5526  3336        DCA     C8RETR            /SAVE IT!
5527  2335        ISZ     C8SETS            /SETUP REENTRY FLAG!
5530  4426  C8DD7, C8TTYI                   /CHECK FOR NEXT CHAR,
5531  4773'       JMS     C8GET             /REPLACE AC, MQ, AND LINK',
5532  4423        C8CNTR                    /CHECK FOR CONTROL CHARACTER,
5533  7200        CLA
5534  5321        JMP     CNTRLS            /EXIT
                    /
5535  0000  C8SETS, 0
5536  0000  C8RETR, 0
                    /
                    /SWITCH OUTPUT FROM ONE OUTPUT DEVICE TO ANOTHER - THE TWO OUTPUTS ARE THE
                    /CONSOLE AND THE PRINTER WITH DEVICE CODE 66,
                    /
5537  1770' CNTRLL, TAD     TTYLPT            /GET PRESENT C8SWIT INDICATOR
5540  7040        CMA                       /COMPLEMENT IT
5541  3770'       DCA     TTYLPT            /STOR NEW C8SWIT
5542  4772'       JMS     UPAROW            /C8PRNT ^ AND CHAR ON NEW DEVICE
5543  4773'       JMS     C8GET             /REPLACE AC, MQ, AND LINK',
5544  5600        JMP I   XC8CNT            /EXIT
                    /
                    /STOP C8PRNTING C8ERR MESSAGES - TO CONTONUE C8PRNTING C8TYPE ^O
                    /
5545  4772' CNTRLO, JMS     UPAROW            /C8PRNT UPARROW AND CHARACTER!
5546  1767'       TAD     STOPNT            /GET STOP OR START C8PRNT INDICATOR
5547  7040        CMA
5550  3767'       DCA     STOPNT            /STORE OPPOSITE STATE
5551  4773'       JMS     C8GET             /REPLACE AC, MQ, AND LINK',
5552  5600        JMP I   XC8CNT            /EXIT
                    /
                    /CONTROL E
                    /CONTINUE RUNNING FROM A INQUIRE OR ERROR
                    /
5553  4772' CNTRLE, JMS     UPAROW            /PRINT THE CONTROL CHAR
5554  4773'       JMS     C8GET             /GET THE REGISTERS
5555  5600        JMP I   XC8CNT            /RETURN TO CALL PLUS ONE
5567  5364
5570  6160
5571  5747
5572  5615
5573  5623
5574  6131
5575  6305
5576  6306
5577  6304
      5600  PAGE
```



```
                    /CONTROL D
                    /CHANGE THE SWITCHES ON THE FLY!
                    /
5600  4215  CNTRLD, JMS     UPAROW            /PRINT THE CNTRL CHAR
5601  1214        TAD     C8SETD            /GET FLAG!
5602  7640        SZA CLA                   /SET?
5603  5207        JMP     C8DD11            /YES, BYPASS SAVE RETURN!
5604  1777'       TAD     XC8CNT            /NO, GET POINTER!
5605  3213        DCA     C8RETD            /SAVE POINTER!
5606  2214        ISZ     C8SETD            /SET FLAG!
5607  4430  C8DD11, C8SWIT                 /CHECK FOR SWITCHES!
5610  3214        DCA     C8SETD            /CLEAR FLAG
5611  4223        JMS     C8GET             /REPLACE AC, MQ, AND LINK',
5612  5613        JMP I   C8RETD            /RETURN!
                    /
5613  0000  C8RETD, 0
5614  0000  C8SETD, 0
                    /
5615  0000  UPAROW, 0                        /C8PRNT THE "^" AND THE CHAR C8TYPED IN
5616  1376        TAD     (336              /CODE FOR ^
5617  4434        C8TYPE
5620  1775'       TAD     C8CHAR            /C8TYPE THE CHAR
5621  4434        C8TYPE
5622  5615        JMP I   UPAROW            /EXIT
                    /
5623  0000  C8GET,  0
5624  7200        CLA
5625  1774'       TAD     MQSAVE
5626  7421        MQL                       /RESTORE MQ
5627  1773'       TAD     FLSAVE
5630  7004        RAL                       /RESTORE THE LINK
5631  7200        CLA
5632  1772'       TAD     ACSAVE            /RESTORE THE AC
5633  5623        JMP I   C8GET             /GET THE REGISTERS
```

```
                        /**********************************************************************

                        /C8INQU
                        /C8INQU ROUTINE WILL PRINT A ASTERISK
                        /AND THE PROGRAM IS EXPECTING A CONTROL CHAR INPUT
                        /IF CONTINUE FROM CONTROL CHAR RETURN IS CALL PLUS ONE
                        /IF NO CONTROL CHAR ENTERED THEN ASTERISK IS REPRINTED
                        /AND PROGRAM WAITS FOR A CONTROL CHAR AGAIN
                        //

                        /       C8INQU= JMS XC8INQ

                        /EX     C8INQU                  /C8 WILL PRINT A * AND WAIT FOR INPUT
                        /       DO ANYTHING             /RETURN IS CALL PLUS ONE AC =0 CONTINUE

5634  0000      XC8INQ, 0
5635  7300              CLA CLL
5636  1022              TAD     22              /GET CONTROL WORD1
5637  7650              SNA CLA                 /ON CONSOLE PACKAGE?
5640  5634              JMP I   XC8INQ          /NO, RETURN1
5641  4427              C8PRNT
5642  5651              WATMES                  /INQUIR WAITTING
5643  4432              C8CRLF
5644  4426              C8TTYI                  /GET CHARACTER1
5645  4223              JMS     C8GET           /REPLACE AC, MQ, AND LINK',
5646  4423              C8CNTR                  /CHECK IF CONTROL CHARACTER1
5647  5634              JMP I   XC8INQ          /EXIT AND CONTINUE
5650  5235              JMP     XC8INQ+1        /REASK
5651  2701      WATMES, TEXT    "WAITING "
5652  1124
5653  1116
5654  0740
5655  0000
```



```
                        /C8SWIT
                        /ROUTINE WILL CHECK IF CONSOL IS ACTIVE IF IT IS ACTIVE DISPLAY
                        /SW QUESTION, IN NOT ACTIVE IT WILL NOT PRINT THE SW QUESTIONBUT
                        /RETURN TO CALL PLUS ONE AC=0',
                        /C8SWIT WILL SET UP THE PSEUDO C8SWIT
                        /REGISTER WITH THE NEW DATA ENTERED
                        /THE TAG  C8DOR AT THE START OF THE CALL IS FOR THE RETURN OF CONTROL R
                        /CHAR, THIS MAY BE CHANGED IF THIS IS NOT WHERE A GOOD RESTART
                        /OF PROGRAM IS',
                        /
                        /       C8SWIT= JMS XC8PSW

                        /EX,    C8DOR,  C8SWIT          /SET UP PSEUDO C8SWIT REGISTER IF
                                                        /ON THE CONSOL PACKAGE', RETURN IS CALL PLUS ONE AC = 0

5656  0000      XC8PSW, 0
5657  7200              CLA
5660  1022              TAD     22              /GET THE HARDWARE CONFIG', WORD
5661  0103              AND     P400            /MASK FOR CONSOL BIT
5662  7650              SNA CLA                 /SKIP IF CONSOL PACKAGE IS ACTIVE
5663  5656              JMP I   XC8PSW          /RETURN WITHOUT ASKING PSEUDO SWITCH
5664  1347              TAD     C8SWST
5665  7640              SZA CLA                 /SPECIAL D EXIT?
5666  5771'             JMP     C8BY4           /YES, EXIT1
5667  2347              ISZ     C8SWST          /NO, SET REENTRY FLAG1
5670  4427              C8PRNT                  /C8PRNT SR=XXXX
5671  6024              MESA
5672  1020              TAD     20              /GET CONTENTS OF SW
5673  4431              C8OCTA                  /CONVERT IT TO ASCII
5674  1067              TAD     P40             /GET SPACE
5675  4434              C8TYPE
5676  2770'             ISZ     INMODE          /SET FLAG FOR CHAR EXECTED
5677  4433              C8ECHO                  /LOOK FOR INPUT
5700  4317              JMS     TSTCHA          /NOT CONTROL TEST IT IS LEGAL'
5701  1775'             TAD     C8CHAR          /STORE NEW CHAR IN SW REG
5702  3020              DCA     20

5703  7346              CLA CLL CMA RTL         /GET A MINUS 3
5704  3350              DCA     TMPCNT          /STORE IN TEMP COUNT
5705  4433      GETCH1, C8ECHO                  /GET NEXT CHAR
5706  4317              JMS     TSTCHA          /CHECK IF CR + GOOD CHAR
5707  1020              TAD     20              /GET C8SWIT REGISTER
5710  7106              RTL CLL                 /ROTATE IT LEFT 3 PLACES
5711  7004              RAL
5712  1775'             TAD     C8CHAR          /GET CHAR + ADD IT TO PREVIOUS CONTENTS
5713  3020              DCA     20              /SAVE NEW CONTENTS
5714  2350              ISZ     TMPCNT          /BUMP COUNT
5715  5305              JMP     GETCH1          /JMP BACK + GET NEXT CHAR
5716  5344              JMP     ENDIT           /END 4 CHAR C8TYPED IN
5717  0000      TSTCHA, 0
5720  7041              CIA                     /CMPL CHAR IN AC
5721  1367              TAD     (215            /TEST IF IT IS A CARRIAGE RETURN
5722  7650              SNA CLA                 /SKIP IN NOT CR,
5723  5344              JMP     ENDIT           /WAS CARRIAGE RETURN
5724  1775'             TAD     C8CHAR          /NOT CR, GET CHAR
```

```
5725  1366          TAD     (-860           /CHECK IF IT IS IN RANGE
5726  7710          SPA CLA                 /IF NOT POSITIVE C8ERR CHAR SMALLER THEN 260
5727  5340          JMP     ERR1            /C8ERR = CHAR TOO SMALL!
5730  1775          TAD     C8CHAR          /GET CHAR
5731  1365          TAD     (-270           /GET A -270 & CHECK IF IT IS LARGER THEN 7
5732  7700          SMA CLA                 /SKIP IF LESS THEN 7
5733  5340          JMP     ERR1            /C8ERR ON CHAR NOT IN RANGE
5734  1775          TAD     C8CHAR          /GET CHAR
5735  0062          AND     P7              /MASK FOR RIGHT BYTE
5736  3775          DCA     C8CHAR          /STORE IN CHAR
                                            /GET CHAR IN AC
5737  5717          JMP I   TSTCHA          /EXIT
5740  1073  ERR1,   TAD     P77             /C8PRNT
5741  4434          C8TYPE                  /?
5742  4432          C8CRLF                  /
5743  5257          JMP     XC8PSW+1        /EXIT & ASK AGAIN
5744  4432  ENDIT,  C8CRLF                  /DO A CR LF
5745  3347          DCA     C8SWST          /CLEAR REENTRY FLAG!
5746  5656          JMP I   XC8PSW          /EXIT ROUTINE
                    /
5747  0000  C8SWST, 0
5750  0000  TMPCNT, 0
                    /
5751  2205  T35M4,  TEXT    /REMOVE / RESET REF?/
5752  1517
5753  2605
5754  4057
5755  4022
5756  0523
5757  0524
5760  4022
5761  0506
5762  7700
5765  7510
5766  7520
5767  0215
5770  6131
5771  5516
5772  6304
5773  6306
5774  6305
5775  5457
5776  0336
5777  5400
      6000          PAGE
```



```
6000  2431  T32M3,  TEXT    /TYPE A KEY ON KYBD OF TERMINAL TO TEST/
6001  2005
6002  4001
6003  4013
6004  0531
6005  4017
6006  1640
6007  1331
6010  0204
6011  4017
6012  0640
6013  2405
6014  2215
6015  1116
6016  0114
6017  4024
6020  1740
6021  2405
6022  2324
6023  0000
6024  2322  MESA,   TEXT    "SR= "
6025  7540
6026  0000

                    /**********************************************************************
                    /C8OCTA
                    /OCTAL TO ASCII CONVERSION
                    /THIS ROUTINE WILL TAKE THE OCTAL NUMBER IN THE AC AND CONVERT IT TO ASCII
                    /THE RESULT WILL BE PRINTED ON THE CONSOL DISPLAY
                    /       C8OCTA= JMS XC8OCT
                    /
                    /EX,    C8OCTA          /AC CONTAINS NUMBER TO BE CHANGE

6027  0000  XC8OCT, 0
6030  7106          CLL RTL
6031  7006          RTL                     /POSITION THE FIRST CHAR FOR PRINTING
6032  3250          DCA     C8TMP1          /SAVE CORRECT POSITIONED WORD HERE
6033  1041          TAD     M4
6034  3251          DCA     C8CKP           /STORE COUNTER IN HERE
6035  1250  C8D04,  TAD     C8TMP1          /GET FIRST NUMBER
6036  0062          AND     P7              /MASK
6037  1071          TAD     P60             /ADD THE PRINT CONSTANT
6040  4434          C8TYPE                  /TYPE THE NUMBER
6041  1250          TAD     C8TMP1          /
6042  7006          RTL
6043  7004          RAL                     /PUT NEXT NUMBER IN POSITION
6044  3250          DCA     C8TMP1          /STORE IT
6045  2251          ISZ     C8CKP           /DONE YET WITH FOUR NUMBERS
6046  5235          JMP     C8D04           /NOT YET DO MORE
6047  5627          JMP I   XC8OCT          /DONE WITH FOUR
6050  0000  C8TMP1, 0
6051  0000  C8CKP,  0
```

```
                    /**************************************************************
                    /C8CRLF
                    /C8TYPE CR AND LF WITH FILLERS FOLLOWING EACH LF AND CR
                    /
                    /       C8CRLF= JMS XC8CRL
                    /
                    /EX,    C8CRLF          /C8PRNT A CR AND LF WITH FILL
                    /                       /RETURN TO CALL PLUS ONE AC 00

6052  0000  XC8CRL, 0
6053  7300          CLA CLL
6054  1377          TAD     (215            /GET CODE FOR CR
6055  4434          C8TYPE
6056  1266          TAD     FILLER
6057  7040          CMA
6060  3267          DCA     FILCNT          /STORE FILLER IN HERE
6061  1376          TAD     (212            /GET CODE FOR LF
6062  4434  C8D02,  C8TYPE
6063  2267          ISZ     FILCNT          /CHECK ON FILLER CHAR
6064  5262          JMP     C8D02           /TYPE A NON PRINTING CHAR
6065  5652          JMP I   XC8CRL          /EXIT
6066  0004  FILLER, 0004            /FILLER SET FOR 4 CHAR
6067  0000  FILCNT, 0               /COUNTER FOR FILL
                    /
                    /RETURN TO MONITOR

6070  3360  CNTRLC, DCA     TTYLPT          /CLEAR LINE PRINTER FLAG,
6071  4775'         JMS     UPAROW          /C8PRNT AT AND LETTER IN CHAR
6072  6203          CDF CIF                 /GO TO 0 FLD
6073  6007          CAF                     /CLEAR THE WORLD
6074  5774          JMP I   (7600           /GO TO DIAGNOSTIC MONITOR
```



```
                    /**************************************************************
                    /C8CKPA
                    /THIS ROUTINE WILL CHECK IF A CHARACTER WAS INPUTED
                    /FROM THE CONSOLE TERMINAL, IF THE FLAG IS SET AND THE CONSOLE
                    /PACKAGE ACTIVE A CHECK IS MADE TO DETERMINE IF IT IS A CONTROL
                    /CHARACTER, IF IT WAS A CONTROL CHARACTER THEN ITS CONTROL
                    /FUNCTION WILL BE PERFORMED, IF NOT A CONTROL CHARACTER OR
                    /A CONTROL E, D, L, O IT WILL DO IT WILL DO ITS FUNCTION AND RETURN
                    /TO THE CALL +2, A NON-CONTROL CHARACTER WILL BE PRINTED WITH
                    /A ? AND RETURN TO CALL + 2, IF NO FLAG IS SET OR THE CONSOLE
                    /PACKAGE IS NOT ACTIVE THE RETURN WILL BE TO THE CALL +1.
                    /       C8CKPA= JMS XC8CKP
                    /
                    /EX,    C8CKPA          /CHECK IF CONSOL DEVICE KEYBOARD SET
                    /       NOP             /RETURN IF NOT FLAG, NOT CONSOLE!
                    /       NOP             /RETURN IF NON-CONTROL OR CONTINUE FUNCTION,

6075  0000  XC8CKP, 0
6076  3773'         DCA     ACSAVE          /SAVE AC,
6077  6004          GTF                     /GET FLAGS,
6100  3772'         DCA     FLSAVE          /SAVE FLAGS,
6101  7701          ACL                     /GET MQ,
6102  3771'         DCA     MQSAVE          /SAVE IT,
6103  6031          KSF                     /CHECK THE CONSOL FLAG
6104  5316          JMP     C8BY3           /NO EXIT CALL +1
6105  1022          TAD     22
6106  0103          AND     P400            /MASK CONSOLE BIT,
6107  7650          SNA CLA                 /CONSOLE PACKAGE?
6110  5316          JMP     C8BY3           /NO,
6111  4426          C8TTYI                  /GET CHARACTER!
6112  4770'         JMS     C8GET           /RESTORE AC, MQ, AND LINK!
6113  4423          C8CNTR                  /YES, CHECK FOR CONTROL!
6114  7000          NOP                     /SAFTEY!
6115  2275          ISZ     XC8CKP          /UPDATE POINTER FOR CALL +2 RETURN,
6116  4770'  C8BY3, JMS     C8GET           /REPLACE AC, LINK, AND MQ,
6117  5675          JMP I   XC8CKP          /EXIT

                    //**************************************************************
                    /C8ECHO
                    /THIS ROUTINE WILL LOOK FOR A CHAR FROM THE KEYBOARD,  STORE IT IN LOCATION CHAR
                    /CHECK IF IT WAS A C8CNTR CHARACTER - SET INMODE - C8PRNT CHARACTER
                    /       C8ECHO= JMS XC8ECH
                    /EX,    C8ECHO          /LOOK FOR CONSOL CHAR C8PRNT IT
                    /                       /RETURN CALL PLUS ONE AC = CHAR C8TYPED IN
                    /
6120  0000  XC8ECH, 0
6121  4426          C8TTYI                  /WAIT FOR CHAR FROM KEYBOARD
6122  2331          ISZ     INMODE          /SET INMODE IDENTIFING THIS AS A EXPECTED CHAR
6123  4423          C8CNTR                  /GO CHECK IF IT IS A CONTROL CHAR
6124  5720          JMP I   XC8ECH          /WAS A CONTROL CHAR - CONTINUE RUNNING
6125  4434          C8TYPE                  /NOT A CONTROL CHAR C8PRNT IT
6126  3331          DCA     INMODE          /CLEAR FLAG THAT CHAR EXPECTED
6127  1767'         TAD     C8CHAR          /GET CHAR IN AC
6130  5720          JMP I   XC8ECH          /EXIT
6131  0000  INMODE, 0
```

```
                        /**********************************************************************
                        /C8TYPE
                        /THIS ROUTINE WILL C8PRNT ON THE CONSOLE OR THE LPT WITH DEVICE CODE 66.
                        /
                        /       C8TYPE= JMS XC8TYP
                        /EX,    C8TYPE          /C8PRNT THE CHAR IN THE AC.
                        /                       /RETURN CALL PLUS ONE AC =0000

6132  0000  XC8TYP, 0
6133  0100          AND     P177            /MASK BIT 8
6134  3357          DCA     PNTBUF          /STORE CHAR
6135  1360  C8D05,  TAD     TTYLPT          /CHECK 0=TTY 7777=LPT
6136  7640          SZA CLA
6137  5346          JMP     XDOLPT          /DO OUT PUT ON LPT
6140  1357          TAD     PNTBUF
6141  6046          TLS
6142  6041          TSF
6143  5342          JMP     .-1
6144  6042          TCF
6145  5355          JMP     C8BY5           /EXIT
6146  1357  XDOLPT, TAD     PNTBUF          /GET CHAR
6147  6666          PSTB    PCLF            /C8PRNT IT
6150  4437          C8CKPA                  /CHECK FOR CONTROL C.
6151  7000          NOP
6152  6661          PSKF
6153  5350          JMP     .-3             /WAIT UNTIL DONE
6154  6662          PCLF                    /CLEAR FLAG
6155  7200  C8BY5,  CLA
6156  5732          JMP I   XC8TYP          /EXIT
6157  0000  PNTBUF, 0
6160  0000  TTYLPT, 0
6167  5457
6170  5623
6171  6305
6172  6306
6173  6304
6174  7600
6175  5615
6176  0212
6177  0215
      6200          PAGE
```



```
                        /**********************************************************************
                        /C8ERR
                        /THIS ROUTINE WILL DETERMINE WHAT TO DO WHEN A C8ERR IS ENCOUNTERED
                        /WILL CHECK IF CLASSIC SYSTEM, WILL CHECK C8SWIT REGISTERS.
                        /       C8ERR=  JMS XC8ERR
                        /EX,    C8ERR           /GO TO C8ERR CALL IF NOT CONSOL /0/
                        /                       /RETURN IS CALL PLUS ONE AC =0000

6200  0000  XC8ERR, 0
6201  3304          DCA     ACSAVE          /SAVE AC
6202  6004          GTF
6203  3306          DCA     FLSAVE          /SAVE THE FLAGS
6204  7701          ACL
6205  3305          DCA     MQSAVE          /SAVE THE MQ
6206  7340          CLA CLL CMA             /SUBTRACT A 1 FOR TRUE LOCATION
6207  1200          TAD     XC8ERR          /GET RETTURN LOCATION
6210  3303          DCA     PCSAVE          /SAVE ADD OF C8ERR CALL
6211  1022          TAD     22              /GET LOCATION 22
6212  0103          AND     P400            /MASK FOR CLASSIC SYSTEM
6213  7650          SNA CLA                 /SKIP IF CLASSIC BIT IN LOC 22 SET
6214  5251          JMP     NTCLAS          /NOT CLASSIC SYSTEM
6215  1710          TAD I   TSTOPN
6216  7640          SZA CLA                 /CHECK FOR STOP PRINT!
6217  5244          JMP     C8D010          /YES, STOP!
6220  4432          C8CRLF                  /CRLF
6221  4427          C8PRNT
6222  6260          ERRMES                  /PRINT THE ERROR MESSAGE
6223  4427          C8PRNT
6224  6270          MESPC                   /PRINT THE PC STSTEMENT
6225  1303          TAD     PCSAVE
6226  4431          C8OCTA                  /CONVERT 4 DIGIT PC TO ASCII
6227  4427          C8PRNT
6230  6272          MESAC                   /PRINT THE AC MESS
6231  1304          TAD     ACSAVE
6232  4431          C8OCTA
6233  4427          C8PRNT
6234  6275          MESMQ                   /PRINT MQ
6235  1305          TAD     MQSAVE
6236  4431          C8OCTA
6237  4427          C8PRNT
6240  6300          MESFL                   /PRINT FL
6241  1306          TAD     FLSAVE
6242  4431          C8OCTA
6243  4432          C8CRLF
6244  4425  C8D010, C8CKSW                  /CHECK SWITCH REGISTER
6245  7710          SPA CLA                 /SKIP IF BIT 0 CLEAR
6246  5600          JMP I   XC8ERR          /GO
6247  4436          C8INQU                  /GO TO THE INQUIRE ROUTINE
6250  5600          JMP I   XC8ERR          /INQUIRE CONTINUE
```

```
6251  4425  NTCLA9, C8CKSW                  /CHECK PSEUDO SWITCH REGISTER
                                            /CHECK THE C8SWIT REGISTER
6252  7710          SPA CLA                 /SKIP IF HALT
6253  5600          JMP I   XC8ERR          /NO HALT CONTINUE
6254  1105          TAD     P7402           /CODE FOR HLT
6255  3703          DCA I   PCSAVE          /PUT IT IN CALL LOC,
6256  4707          JMS I   TC8GET          /REPLACE AC, MQ, AND LINK',
6257  5703          JMP I   PCSAVE          /EXIT  TO CALL AND HALT
                ERRMES,
6260  0411          TEXT    "DILAB  FAILED "
6261  1401
6262  0204
6263  4040
6264  0601
6265  1114
6266  0504
6267  4000
6270  2003  MESPC,  TEXT    "PC="
6271  7200
6272  4001  MESAC,  TEXT    " AC="
6273  0372
6274  0000
6275  4015  MESMQ,  TEXT    " MQ="
6276  2172
6277  0000
6300  4006  MESFL,  TEXT    " FL="
6301  1472
6302  0000
6303  7777  PCSAVE, 7777
6304  7777  ACSAVE, 7777
6305  7777  MQSAVE, 7777
6306  7777  FLSAVE, 7777
6307  5623  TC8GET, C8GET
6310  5364  TSTOPN, STOPNT
```



```
                /C8PAUS
                /THIS ROUTINE WILL CHECK IF THE CONSOL PACKAGE IS ACTIVE,IF ACTIVE
                /IT WILL RETURN TO CALL PLUS ONE AC= 0', AND DO THAT INSTRUCTION,
                /IF THE CONSOL PACKAGE IS NOT ACTIVE THE CALL WILL BE REPLACED
                /WITH A 7402 HALT AND THEN RETURN TO THE HALT',

                /       C8PAUS= JMS XC8PAU
                /
                /
                /EX,            C8PAUS          /CHECK IF ON ACTIVE CONSOL IF NOT HALT HERE
                /               ANYTHING        /RETURN HERE IF ON ACTIVE CONSOL

6311  0000  XC8PAU, 0
6312  7300          CLA CLL
6313  1022          TAD     22              /GET SYS, CONFIG,
6314  0103          AND     P400            /CHECK IF ACTIVE CONSOL PACKAGE
6315  7640          SZA CLA                 /NOT CONSOL SKIP
6316  5324          JMP     C8DO3           /GO DO CONSOL PART RETURN CALL +1
6317  7040          CMA                     /PUT HLT IN CALL
6320  1311          TAD     XC8PAU          /GET CORRECT RETURN ADDRS
6321  3311          DCA     XC8PAU          /SET UP RETURN
6322  1105          TAD     P7402           /GET CODE FOR HLT
6323  3711          DCA I   XC8PAU          /PUT HALT IN CALL LOCATION
6324  5711  C8DO3,  JMP I   XC8PAU          /GO TO HALT OR RETURN TO NEXT LOCATION
```

/NON-PRINTABLE CHARACTER TABLE

```
6325  1600  CHART:  1600    /NUL
6326  1425          1425
6327  2301          2301    /SOH
6330  1017          1017
6331  2302          2302    /STX
6332  3024          3024
6333  0106          0106    /ACK
6334  1303          1303
6335  0420          0420    /DLE
6336  0514          0514
6337  0421          0421    /DC1
6340  6103          6103
6341  0422          0422    /DC2
6342  6203          6203
6343  0423          0423    /DC3
6344  6303          6303
6345  0424          0424    /DC4
6346  6403          6403
6347  1625          1625    /NAK
6350  1301          1301
6351  2326          2326    /SYN
6352  1631          1631
6353  0527          0527    /ETB
6354  0224          0224
6355  0330          0330    /CAN
6356  1601          1601
6357  0531          0531    /EM
6360  4015          4015
6361  2332          2332    /SUB
6362  0225          0225
6363  0634          0634    /FS
6364  4023          4023
6365  0735          0735    /GS
6366  4023          4023
6367  2236          2236    /RS
6370  4023          4023
6371  2537          2537    /US
6372  4023          4023
6373  0477          0477    /DEL
6374  1405          1405
6375  0207          0207    /BEL
6376  1405          1405
6377  0210          0210    /BS
6400  4023          4023
6401  1011          1011    /HT
6402  4024          4024
6403  1412          1412    /LF
6404  4006          4006
6405  2613          2613    /VT
6406  4024          4024
6407  0614          0614    /FF
6410  4006          4006
6411  0315          0315    /CR
```



```
6412  4022          4022
6413  2316          2316    /SO
6414  4017          4017
6415  2317          2317    /SI
6416  4011          4011
6417  0533          0533    /ESC
6420  0323          0323
6421  2340          2340    /SPACE = SP
6422  4020          4020
6423  0503          0503    /ETX
6424  3024          3024
6425  0504          0504    /EOT
6426  2417          2417
6427  0505          0505    /ENQ
6430  2116          2116
6431  0000          0000                    /END OF TABLE


6432  4040  T33T2:  TEXT    / 3/            /FORM FEED SETTINGS
6433  6300
6434  6356          TEXT    /3',5/
6435  6500
6436  4040          TEXT    / 4/
6437  6400
6440  6556          TEXT    /5',5/
6441  6500
6442  4040          TEXT    / 6/
6443  6600
6444  4040          TEXT    / 7/
6445  6700
6446  4040          TEXT    / 8/
6447  7000
6450  7056          TEXT    /8',5/
6451  6500
6452  4061          TEXT    / 11/
6453  6100
6454  4061          TEXT    / 12/
6455  6200
6456  4061          TEXT    / 14/
6457  6400
6460  4040          TEXT    /  /
6461  4000
6462  0000          0                       /END OF TABLE
```

```
                /TEST ADDRESS TABLE - DEPOSIT ZERO (0000) FOR TEST ADDRESS TO DELETE TEST FROM SEQUENCE

6463  0600      TP0,    TEST0
6464  0626              TEST1
6465  0672              TEST2
6466  1000              TEST3
6467  1035              TEST4
6470  1126              TEST5
6471  1200              TEST6
6472  1233              TEST7
6473  1275              TEST10
6474  1400              TEST11
6475  1411              TEST12
6476  5000              SETUP           /RESERVED FOR FUTURE TESTS
6477  5000              SETUP
6500  5000              SETUP
6501  5000              SETUP
6502  1425              TEST17
6503  1534              TEST20
6504  1541              T21T22          /TEST 21
6505  1541              T21T22          /TEST 22
6506  1600              TEST23
6507  1674              TEST24
6510  2000              TEST25
6511  5000              SETUP
6512  5000              SETUP
6513  2037              TEST30
6514  2200              TEST31
6515  2400              TEST32
6516  2600              TEST33
6517  3025              TEST34
6520  3200              TEST35
6521  5000              SETUP
6522  5000              SETUP           /RESERVED FOR FUTURE TESTS
6523  3400              TEST40
6524  3412              TEST41
6525  3424              TEST42
6526  3436              TEST43
6527  3463              TEST44
6530  3475              TEST45
6531  3512              TEST46
6532  5000              SETUP
6533  5000              SETUP
6534  5000              SETUP
6535  5000              SETUP
6536  5000              SETUP
6537  5000              SETUP
6540  5000              SETUP
6541  5000              SETUP
6542  5000              SETUP           /RESERVED FOR FUTURE TESTS
6543  3547              TEST60
6544  3600              TEST61
6545  3625              TEST62
```



```
6546  1501      HDRMSG, TEXT    'MAINDEC-08-DILAB-D;    LA36 TERMINAL DIAGNOSTIC'
6547  1116
6550  0405
6551  0355
6552  6070
6553  5504
6554  1114
6555  0102
6556  5504
6557  7340
6560  4040
6561  4040
6562  1401
6563  6366
6564  4024
6565  0522
6566  1511
6567  1601
6570  1440
6571  0411
6572  0107
6573  1617
6574  2324
6575  1103
6576  0000
6577  2405      IMES3,  TEXT    /TESTING THIS TERMINAL ONLY/
6600  2324
6601  1116
6602  0740
6603  2410
6604  1123
6605  4024
6606  0522
6607  1511
6610  1601
6611  1440
6612  1716
6613  1431
6614  0000
6615  2431      T25M,   TEXT    'TYPE ANY PRINTABLE CHARACTER AND LISTEN FOR BELL  ..............?'
6616  2005
6617  4001
6620  1631
6621  4020
6622  2211
6623  1624
6624  0102
6625  1405
6626  4003
6627  1001
6630  2201
6631  0324
6632  0522
6633  4001
6634  1604
```

```
6635  4014
6636  1123
6637  2405
6640  1640
6641  0617
6642  2240
6643  0205
6644  1414
6645  4040
6646  5656
6647  5656
6650  5656
6651  5656
6652  5656
6653  5656
6654  5677
6655  0000
6656  2431    T31H3:  TEXT    /TYPE ANY PRINTABLE CHAR ;:.?/
6657  2005
6660  4001
6661  1631
6662  4020
6663  2211
6664  1624
6665  0102
6666  1405
6667  4003
6670  1001
6671  2240
6672  5656
6673  5677
6674  0000
6675  4240    T33H2:  TEXT    /" FF / ?/
6676  0606
6677  4057
6700  4077
6701  0000
6702  0405    T33H4:  TEXT    /DEPRESS FORMFEED RESET SWITCH/
6703  2022
6704  0523
6705  2340
6706  0617
6707  2215
6710  0605
6711  0504
6712  4022
6713  0523
6714  0524
6715  4023
6716  2711
6717  2403
6720  1000
6721  0106    T33H5:  TEXT    /AFTER EACH SWITCH SETTING/
6722  2405
6723  2240
```



```
6724  0501
6725  0310
6726  4023
6727  2711
6730  2403
6731  1040
6732  2305
6733  2424
6734  1116
6735  0700
6736  5555    T35H3:  TEXT    /=-------<<<<<<<<<7/
6737  5555
6740  5555
6741  5555
6742  7474
6743  7474
6744  7474
6745  7474
6746  7700
6747  0003    T24TAB: 0003                    /SELECTIVE PATTERN STORAGE
6750  0000            ZBLOCK  400             /FOR 256 CHARACTERS
```

```
0000  11000000  10000000  11111111  11111111  11111111  11111111  11111111  11111111
0100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0200  11111110  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11111111  11111111  11111111  11111111  11111111  11111100  11111111

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111110  00000001  11111111  11111111  11111111  00000000  00000000  00000111

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  11110000  00000111

1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  10000111

1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  11111111  11000000  00000011

1400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  10001111

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  11111111  11111111  11111111  11111110  00000000  00001111

2000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00001111

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100111

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11000111

2600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2700  11111111  11111111  11111111  11111111  11111110  00000000  00000000  00000011

3000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3100  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00111111

3200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11113011

3400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11113011

3600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  10000011
```



```
4000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4100  11111111  11111111  11111111  11111111  11111111  11111111  11110700  00000000

4200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4300  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00000001

4400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4500  11111111  11111111  11111111  11111111  11111111  11111111  11111100  11111111

4600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4700  11111111  11111111  11111111  11111111  11111111  11111000  00000000  00001111

5000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  10011111

5200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5300  11111111  11111111  11111111  11111111  11111111  11111111  11111000  00001111

5400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5500  11111111  11111111  11111111  11111111  11111111  11111100  00000001  11111111

5600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5700  11111111  11111111  11111111  11111111  11111111  11111111  11100111  11111111

6000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6100  11111111  11111111  11111111  11111111  11111111  11111111  10000001  11111111

6200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

6400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

6600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

7000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

7200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7300  11111111  11111111  11111111  11111111  11111111  00000000  00000000  00000000

7400
7500

7600
7700
```

```
ACL     7701
ACSAVE  6304
APTCON  0521
AUTPTR  0010
BSW     7002
C8BY1   5252
C8BY3   6116
C8BY4   5516
C8BY5   6155
C8CHAR  5457
C8CKP   6051
C8CKPA  4437
C8CKSW  4425
C8CNTR  4423
C8CRLF  4432
C8DO1   5335
C8DO10  6244
C8DO11  5607
C8DO2   6062
C8DO3   6324
C8DO4   6035
C8DO5   6135
C8DO7   5530
C8DOR   0523
C8ECHO  4433
C8ERR   4435
C8GET   5623
C8INQU  4436
C8OCTA  4431
C8PASS  4424
C8PAUS  4440
C8PRNT  4427
C8RETD  5613
C8RETR  5536
C8SETD  5614
C8SETS  5535
C8SWIT  4430
C8SWST  5747
C8TMP1  6050
C8TTYI  4426
C8TYPE  4434
CAF     6007
CHAR    0125
CHAR1   0126
CHART   6325
CHART1  0177
CHRCNT  0130
CK0     3746
CKCHAR  3726
CKCOUT  5254
CNT1    3750
CNT2    3751
CNTRLC  6070
CNTRLD  5600
CNTRLE  5553
CNTRLL  5537
CNTRLO  5545
CNTRLQ  5506
CNTRLR  5512
CNTRLS  5521
CNTVAL  5274
COLMES  4345
COLMN   0124
CPRINT  4630
CR      4657
CREAD   3721
CRLF    4653
CSAVE   4164
DC021   3713
DC02FL  0120
DC02P   4615
DC02R   3690
DELAY   0325
DELAY0  0137
DELAY1  0140
DELAYA  0327
DOCNT   5271
DONEA   5431
DOPACK  5235
DOSET   5273
DREFL   4531
DREFL0  4541
DREFL1  4551
EEM     4200
EEM1    4330
ENDIT   5744
ENDPAS  5152
EOT     0132
ERR1    5740
ERRMES  6260
ERROR   0314
EXIT    4407
EXIT0   4450
EXIT2   4467
EXIT3   4500
EXIT3A  4510
EXIT4   4511
EXIT5   4521
EXITA   4410
EXITA0  4427
EXITA1  5443
FILCNT  6067
FILLER  6066
FLAG    4671
FLAG0   4725
FLAG1   4716
FLAG2   4734
FLAG3   4734
FLAGA   4710
FLSAVE  6306
GETCH1  5705
GETDAT  5462
GOITA   5446
GOTOA   5460
GTF     6004
HORMSG  6546
HORPTR  0113
HUNDS   0134
IMES1   5200
IMES2   5217
IMES3   6577
INDEXA  5461
INMODE  6131
INTSRV  0116
IO1     4001
IO2     4006
IO3     4011
IO4     4014
IO5     4017
IO6     4024
IO7     4027
IO8     4032
IOCODE  4106
IOEXIT  4400
IOFLAG  0117
IOT1    4101
IOT2    4102
IOT3    4103
IOT4    4104
IOTA    0407
IOTE    0425
IOTF    0432
IOTF1   0433
IOTG    0445
IOTH    0517
IOTSEL  4105
IOTSET  4034
IOTTAB  4107
K300    0545
KYBD0   5102
KYBDLT  5125
KYBDRT  5122
KYBDST  5032
LAS     4425
LF      4664
LPCNT   0127
M10     0042
M12     0043
M144    0052
M1750   0060
M177    0053
M20     0044
M203    0054
M204    0055
M22     0045
M240    0056
M26     0046
M377    0057
M4      0041
M63     0047
M74     0050
M77     0051
MESA    6024
MESAC   6272
MESFL   6300
MESG    4117
MESGA   4125
MESGB   4161
MESMG   6275
MESPAS  5275
MESPC   6270
MINS    6125
MINT    6115
MKCC    6112
MKRB    6116
MKRS    6114
MKSF    6111
MQA     7501
MQL     7421
MQSAVE  6305
MSAVE   4163
MTCF    6122
MTKF    6123
MTLS    6126
MTON    6117
MTPC    6124
MTPF    6113
MTRS    6127
MTSF    6121
NOSET   5263
NRMALL  0534
NTCLAS  6251
NXTC    3654
NXTS    3664
ONES    0136
P10     0063
P100    0074
P130    0075
```



```
P134    0076
P14     0064
P144    0077
P177    0100
P20     0065
P200    0101
P204    0102
P33     0066
P4      0061
P40     0067
P400    0103
P444    0104
P57     0070
P60     0071
P7      0062
P72     0072
P7402   0105
P77     0073
P7700   0106
PASCNT  0131
PCHAR   4640
PCHAR0  4652
PCLF    6662
PCSAVE  6303
PNTBUF  6157
POCT    3754
PRINT   4600
PRT0    4264
PRT1    4321
PRTHDR  4224
PSCNT   5272
PSIE    6665
PSKE    6663
PSKF    6661
PSTB    6664
PTSTOR  5363
RD1     3703
READ    3643
REDOA   5420
RKCC    4005
RKRB    4013
RKRS    4010
RKSF    4000
RTCF    4023
RTLS    4031
RTPC    4026
RTSF    4016
SDLAY   0340
SDLAYA  0342
SELECT  0110
SELMES  5141
SETA    5127
SETUP   5000
SP      3761
SP0     3770
SP1     3763
START   0216
START0  0247
START1  0236
START2  0231
START3  0260
START4  0253
STAT    0107
STOPNT  5364
STORE   2545
STRG    3752
STRS    3753
T0A     0603
T0B     0611
T0C     0616
T0D     0622
T10A    1302
T10B    1305
T10C    1312
T10D    1323
T10E    1326
T10F    1334
T10W    1344
T11A    1403
T17A    1430
T17B    1432
T17C    1442
T17D    1444
T1A     0633
T1B     0643
T1C     0660
T1S     0631
T1Z     0670
T20A    1535
T21A    1544
T21B    1546
T21T22  1541
T23A    1601
T23B    1635
T23C    1693
T23M    1695
T24A    1704
T24AA   1702
T24B    1723
T24C    1733
T24E    1741
T24R    1752
T24S    1676
T24TAB  6747
T25A    2006
T25AA   2010
T25B    2021
T25M    6615
T25M1   2025
T2A     0675
T2B     0700
T2BA    0715
T2C     0745
T2D     0756
T2X     0762
T30A    2042
T30B    2062
T30L    2130
T30M1   2122
T30M2   2125
T30S    2072
T30SA   2102
T30SB   2120
T31A    2224
T31B    2246
T31C    2250
T31D    2340
T31DES  2347
T31DS   2330
T31EM   2131
T31GS   2351
T31M1   2153
T31M2   2157
T31M3   6656
T31US   2362
T32A    2425
T32B    2447
T32C    2451
T32CA   2455
T32D    2456
T32F    2472
T32G    2500
T32H    2507
T32I    2517
T32J    2524
T32K    2470
T32M0   6000
T32M1   2531
T32M2   0331
T32S    2437
T32X    2526
T33A    2632
T33B    2641
T33BA   2646
T33C    2662
T33D    2667
T33E    2703
T33F    2705
T33G    2721
T33M1   0362
T33M2   6675
T33M3   3000
T33M4   6702
T33M5   6721
T33M6   3005
T33M7   4353
T33T1   2734
T33T2   6432
T33X    2731
T34AB   3117
T34AC   3120
T34AD   3132
T34AE   3143
T34B    3034
T34C    3043
T34D    3046
T34E    3053
T34F    3067
T34G    3072
T34H    3100
T34I    3111
T34T1   3144
T34T2   3156
T35A    3226
T35B    3242
T35C    3252
T35D    3266
T35E    3312
T35F    3315
T35G    3334
T35H    3331
T35M1   3340
T35M2   3353
T35M3   6736
T35M4   5751
T35X    3326
T3D     1003
T3E     1013
T3F     1016
T40A    3403
T41A    3415
T42A    3427
T43A    3441
T43B    3444
T43C    3453
T43D    3461
T43E    3462
T44A    3466
```

```
T45A    3500        TEST30  2037        TTP0    0163
T46A    3530        TEST31  2200        TTPC    0147
T46B    3542        TEST32  2400        TTSF    0145
T46C    3531        TEST33  2600        TTYLPT  6160
T4A     1052        TEST34  3025        UPAROW  5615
T4EMES  5167        TEST35  3200        WATMES  5651
T4SMES  5162        TEST4   1035        WIDTH   0123
T4TAB   1117        TEST40  3400        XC8CKP  6075
T4X     1104        TEST41  3412        XC8CNT  5400
T5A     1161        TEST42  3424        XC8CRL  6052
T5B     1154        TEST43  3436        XC8ECH  6120
T60A    3555        TEST44  3463        XC8ERR  6200
T60B    3570        TEST45  3475        XC8INQ  5634
T60C    3573        TEST46  3512        XC8OCT  6027
T60D    3565        TEST5   1126        XC8PAS  5226
T61A    3606        TEST6   1200        XC8PAU  6311
T61B    3621        TEST60  3547        XC8PNT  5330
T61C    3624        TEST61  3600        XC8PSW  5656
T61D    3616        TEST62  3625        XC8SW   5306
T62A    3630        TEST7   1233        XC8TTY  5317
T6A     1220        TEXIT   0165        XC8TYP  6132
T7A     1251        TEXITA  0164        XDOLPT  6146
T7AA    1236        TFLAG   0173        XDOSW   5520
T7B     1253        THOUS   0133        XTABLA  5463
T7C     1264        TKCC    0142        XTABLB  5464
T7TAB   1271        TKRB    0144        XXC8CK  0037
TABLA   5465        TKRS    0143        XXC8CN  0023
TABLB   5476        TKSF    0141        XXC8CR  0032
TABPT2  0115        TLF     0136        XXC8EC  0033
TABPTR  0114        TLOOP   0121        XXC8ER  0035
TC8GET  6307        TMESG   0161        XXC8IQ  0036
TCHART  0171        TMPCNT  5750        XXC8OC  0031
TCR     0155        TP0     6463        XXC8PC  0024
TCRLF   0154        TPCHAR  0166        XXC8PN  0027
TDELAY  0151        TPOCT   0170        XXC8PS  0030
TDREFL  0172        TPRHDR  0162        XXC8PU  0040
TEEM    0176        TPRINT  0157        XXC8SW  0025
TEMP    4637        TREAD   0160        XXC8TT  0026
TENS    0135        TRONE   0122        XXC8TY  0034
TERR    0152        TSDLY   0175
TEST0   0600        TSET    0153
TEST1   0626        TSETUP  0174
TEST10  1275        TSP     0167
TEST11  1400        TSTART  0547
TEST12  1411        TSTCHA  5717
TEST17  1425        TSTMES  4340
TEST2   0672        TSTNO   0111
TEST20  1534        TSTOPN  6310
TEST23  1600        TSTPTR  0112
TEST24  1674        TSTRT1  0546
TEST25  2000        TTCF    0146
TEST3   1000        TTLS    0150
```



```
ERRORS DETECTED: 0

LINKS GENERATED: 46

RUN-TIME:  23 SECONDS

3K CORE USED
```