

IDENTIFICATION

SEQ 0001

PRODUCT CODE: MAINDEC-08-DILAB-D-D
PRODUCT NAME: LA36 TERMINAL DIAGNOSTIC
DATE CREATED: OCTOBER 1975
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: ROBERT W. BAKER

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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=0 TESTS ONLY, WITH SWITCH 0 DOWN, THE PROGRAM WILL HALT (AT LOCATION 3357) ON ANY ERRORS DURING THE I=0 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=0 TESTS, THE TERMINAL IS CONNECTED TO A SERIAL LINE AND THERE IS NO INFORMATION RETURNING TO THE CPU FROM THE TERMINAL; THE PROGRAM CANNOT 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.

EXAMPLE 1

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

0X0X0X0X0X0X0X0X0X0X0X0X0X0X

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

EXAMPLE:

```

0 0 0 0 0 0 0 0 0
X
 X
  X
   X
    X
     X
      X
       X
        X

```


6.1.5 TEST 4 - MULTIPLE LINE FEED TEST

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

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

EXAMPLE I

```

01-----
02
04

08

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

6.1.6 TEST 5 - SINGLE LINE FEED TEST

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

THE FIRST REFERENCE LINE CONTAINS 130(10) ZEROS 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:

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:

```
000000000000000000000000000022
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
123456789012345678901234567890
123456789012345678901234567890
```


6.1.8 TEST 7 - OVERPRINT TEST

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

ROW 1	M-SP
ROW 2	SP=@
ROW 3	&-SP

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

EXAMPLE 1

```

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 1

```

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:

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

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

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

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

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

EXAMPLE:

```

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
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:

AAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAA
BBBBBBBBBBBBBBBBBBBBBBBBBB
BBBBBBBBBBBBBBBBBBBBBBBBBB

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

EXAMPLE:

AAAAAAAAAAAAAAAA

AAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAA

BBBBBBBBBBBBBBBB

BBBBBBBBBBBBBBBB
BBBBBBBBBBBBBBBB
BBBBBBBBBBBBBBBB
BBBBBBBBBBBBBBBB
BBBBBBBBBBBBBBBB

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 CONTROL OR NOT, WILL EXIT THE CURRENT OPTION TEST. A DETAILED DESCRIPTION OF EACH TEST FOLLOWS:

6.3.1 TEST 30 = SECONDARY CHARACTER SET OPTION

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

A NUMBER IS PRINTED AT THE LEFT MARGIN INDICATING WHICH CHARACTER SET IS BEING PRINTED. #1 INDICATES THE PRIMARY SET AND #2 INDICATES THE SECONDARY SET (APL). AFTER THE NUMBER, THE APPROPRIATE SHIFT IN (SI) 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= !"#%&'()*+,-./:;@A-Z[^\_`a-bcdefghijklmnopqrstuvwxyz{|}~.
#2= !"#%&'()*+,-./:;@A-Z[^\_`a-bcdefghijklmnopqrstuvwxyz{|}~.

#1= !"#%&'()*+,-./:;@A-Z[^\_`a-bcdefghijklmnopqrstuvwxyz{|}~.
#2= !"#%&'()*+,-./:;@A-Z[^\_`a-bcdefghijklmnopqrstuvwxyz{|}~.
```


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 CHARACTER; 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 LISTING IS USED TO TEST VARIOUS UNIQUE SELECT CHARACTERS, THE FIRST ZERO ENCOUNTERED IN THE TABLE WILL INDICATE THE END OF THE TABLE, THE PROGRAM WILL SELECT ALL TERMINALS USING THE BEL CODE BEFORE EXITING THE TEST, THE TABLE IS PRESET WITH A SINGLE UNIQUE SELECT CHARACTER, THE LETTER "U", BUT ALLOWS ROOM TO TEST UP TO 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 UNIQUE 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 CAPABILITY OF THE TOP OF FORM OPTION. A SET OF INSTRUCTIONS IS PRINTED FOR THE OPERATOR TO REMIND HIM TO DEPRESS THE TOP OF FORM RESET SWITCH AFTER MAKING EACH SWITCH SETTING; UPON COMPLETION OF EACH SETTING, AFTER DEPRESSING THE RESET SWITCH, TYPE ANY CHARACTER (EXCEPT RUBOUT) ON THE KEYBOARD TO TEST THAT SWITCH SETTING; THE REFERENCE LINES PRINTED WILL INDICATE THE LENGTH FORM FEED JUST EXECUTED AND THE NEXT SWITCH SETTING TO MAKE. THE 3 INCH FORM FEED IS TESTED TWICE BEFORE TESTING THE REMAINING POSITIONS. THE FIRST TIME, 16 OR 17 LINE FEEDS ARE EXECUTED BEFORE DOING THE FORM FEED, DEPENDING ON HOW THE AUTO LINE FEED OPTION IS SET UP; THE DIAGNOSTIC WILL THEN TEST EACH POSITION IN SEQUENCE FROM 3 TO 14 INCHES. THE SINGLE STEP POSITION IS NOT CHECKED.

6.3.5 TEST 34 - HORIZONTAL TAB OPTION

THIS TEST CHECKS THE ABILITY TO SET A TAB IN EVERY COLUMN AND AT PREDETERMINED INTERVALS, AS WELL AS THE ABILITY TO CLEAR ALL TABS. THE PROGRAM SETS A TAB IN THE PREDETERMINED COLUMN, DOES A BACKSPACE, AND PRINTS AN "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 WILL BE PRINTED ON THE NEXT LINE UNDER THE O'S. THE FIRST LINE OF O'S WILL HAVE 2 LINES OF X'S UNDER IT, THE FIRST HAVING X'S IN ALL EVEN NUMBERED COLUMNS AND THE SECOND HAVING X'S IN ALL ODD NUMBERED COLUMNS;

EXAMPLE I

```
000000000000
X X X X X X
X X X X X X
```

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

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

```
0
X
```

6.3.6 TEST 35 - VERTICAL TAB OPTION

THIS TEST CHECKS THE VERTICAL TAB OPTION BY TESTING THE ABILITY TO SET TABS IN VARIOUS POSITIONS OF A 14 INCH FORM. AN INSTRUCTION IS PRINTED TELLING THE OPERATOR TO SET A 14 INCH FORM LENGTH AND DEPRESS THE TOP OF FORM RESET SWITCH. WHEN READY, TYPE ANY CHARACTER (EXCEPT RUBOUT) ON THE KEYBOARD TO CONTINUE. THE TEST WILL SEND LINE FEEDS, SET TABS, AND PRINT REFERENCE LINES WHEREVER A TAB IS SET. AT THE END OF THE FORM, A MESSAGE WILL INDICATE TO EITHER REMOVE THE REFERENCE PAGE (WITHOUT TOUCHING THE KEYBOARD) OR RESET THE FIRST REFERENCE LINE. TO RESET THE REFERENCE PAGE IN THE PRINTER, OPEN THE PAPER TRACTORS AND PLACE THE FIRST REFERENCE LINE IN FRONT 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.

6.4 STANDARD I=0 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=0 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 7000.
- 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 AND 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 MAY 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 THAN 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 THE 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 PCIAAAA ACIBBBB MQICCCC FLIDDDD
*****
```

```
MAINDEC NAME= THE DIAGNOSTIC NAME
PCIAAAA      THE ADDRESS AT WHICH THE FAILURE OCCURRED
ACIBBBB      THE CONTENTS OF THE AC WHEN THE ERROR WAS DETECTED
MQICCCC      CONTENTS OF MQ WHEN ERROR WAS DETECTED
FLIDDDD      CPU FLAGS AT THE TIME OF THE 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=88-DILAB=DJ LA36/LA35 TERMINAL DIAGNOSTIC
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 /AUTHOR: ROBERT BAKER

////
 /CONSOLE PACKAGE EQUATES,

5661	PSKF=	5661	
5662	PCLF=	5662	
5663	PSKE=	5663	
5664	PSWB=	5664	
5665	PSIE=	5665	
5804	GTF=	5804	
7501	HQA=	7501	
6807	CAF=	6807	
7421	HQL=	7421	

4424	CBPASS=	JMS I	XXCBPCS	/CB PASS COMPLETION ROUTINE
4425	CBCKSW=	JMS I	XXCBSSW	/CHECK SW REG SETTING
4426	CBTTY=	JMS I	XXCBTTY	/FETCH CONSOL CHAR
4423	CBCTR=	JMS I	XXCBCNT	/CHECK FOR CONTROL CHAR
4427	CBPRNT=	JMS I	XXCBPNT	/CB PRINT A BUFFER
4430	CBSHIT=	JMS I	XXCBPSW	/SET UP PSEUDO SW, REG
4431	CBCTA=	JMS I	XXCBCTA	/CONVERT ASCII
4432	CBCLF=	JMS I	XXCBCLF	/DO A CARRIAGE RETURN & LINE FEED
4433	CBECHD=	JMS I	XXCBECH	/CHECK INPUT CHAR
4434	CBTYPE=	JMS I	XXCBTYP	/CB PRINT ONE CHAR
4435	CBERR=	JMS I	XXCBERR	/CB ERROR HANDLER
4436	CBINDU=	JMS I	XXCBIQ	/LOOK FOR OPERATOR INTERVENTION
4437	CBCKPA=	JMS I	XXCBCKP	/CHECK IF CONTROL CHAR
4448	CBPAUS=	JMS I	XXCBPU	/IF CONSOL PACKAGE RETURN CALL PLUS ONE
				/IF NOT USING CONSOL REPLACE CALL WITH
				/A HLT AND THEN GO TO THE HALT
				/GET SWITCH REGISTER

4425	LAS=	CBCKSW	
------	------	--------	--

/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      /
0001 5510      /
                JMP I  INTSRV      /INTERRUPT SERVICE
0010      *10
0010 0000      AUTFTR, 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      XXCB0NT,      XCB0NT
0024 5226      XXCBPCS,      XCBPAS
0025 5306      XXCBSW,      XCBSW
0026 5317      XXCBTTY,      XCBTTY
0027 5330      XXCBPNT,      XCBPNT
0030 5656      XXCBPSW,      XCBPSW
0031 6027      XXCB0CT,      XCB0CT
0032 6052      XXCB0CRL,      XCB0CRL
0033 6120      XXCB0ECH,      XCB0ECH
0034 6132      XXCB0TYP,      XCB0TYP
0035 6200      XXCB0ERR,      XCB0ERR
0036 5634      XXCB0IQ,      XCB0IQ
0037 6075      XXCB0CKP,      XCB0CKP
0040 6311      XXCB0PU,      XCB0PAU

```

```

/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

```


0107	0000	STAT, 0000	
0110	0000	SELECT, 0000	/UNIQUE DCB2 STATION
0111	0000	TSTND, 0000	/SELECTED DCB2 STATIONS, GROUPS
0112	0000	TSTPTR, 0000	/TEST NUMBER STORAGE
0113	0000	HDRPTR, 0000	/TEST POINTER
0114	0000	TABPTR, 0000	/TEST HEADER POINTER
0115	0000	TABPT2, 0000	/TABLE POINTER
0116	0000	INTSRV, 0000	/INTERRUPT SERVICE LOCATION
0117	0000	IOPLAG, 0000	/I/O TEST SEQUENCE FLAG
0120	0000	DCB2FL, 0000	/DCB2 FLAG, 7777 = DCB2 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	
0124	0000	COLMN, 0000	/NEGATIVE NUMBER OF COLUMNS /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	ECT, 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	

/DCB2 INSTRUCTION DEFINITIONS

6113	MTPF=6113
6115	MINT=6115
6116	MKR8=6116
6117	MTON=6117
6123	MTXF=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

0141	4800	TKSF, RKSF	
0142	4805	TKCC, RKCC	
0143	4810	TKRS, RKRS	
0144	4813	TKRB, RKRB	
0145	4816	TTSF, RTSF	
0146	4823	TTCF, RTCF	
0147	4826	TTPC, RTPC	
0150	4831	TTLS, RTLS	
0151	8325	TDELAY, DELAY	
0152	8314	TERR, ERROR	
0153	4834	TSET, IOTSET	
0154	4653	TCRLF, CRLF	
0155	4657	TCR, CR	
0156	4664	TLF, LF	
0157	4600	TPRINT, PRINT	
0160	3643	TREAD, READ	
0161	4117	TMSG, MMSG	
0162	4224	TPRHOR, PRTHOR	
0163	6463	TPB, TPB	
0164	4410	TEXITA, EXITA	
0165	4407	TEXTI, EXIT	
0166	4640	TPCHAR, PCHAR	
0167	3761	TSP, SP	
0170	3754	TPOCT, POCT	
0171	6325	TCHART, CHART	
0172	4531	TDREPL, DREFL	
0173	4671	TFLAG, FLAG	
0174	5800	TSETUP, SETUP	
0175	6340	TSOLY, SOLY	
0176	4200	TEEM, EEM	
0177	8000	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	APTC0N	/CHECK FOR CONSOLE + SR=
0201	3120	DCA	DCB2FL	/CLEAR DCB2 FLAG
0202	1376	TAD	INOP	/CLEAR RESTART INSTRUCTION
0203	3236	DCA	START1	
0204	1375	TAD	0304	/GET STANDARD IOT/B
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          /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      JHP          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      JHP          ,+3     /NO, CONTINUE
0231 1102      START2, TAD     P204   /YES, SET TO 132 (12)
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      JHP          ,+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          EQT      /ALLOW CHAR CHECK IN READ
0253 7000      START4, NOP
0254 4561      JMS I        THMSG    /PRINT TEST TITLE FIRST TIME THROUGH
0255 6546      WDRMSG
0256 1371      TAD          (JMP START3)
0257 3253      DCA          START4
0260 1111      START3, TAD     TSTNO  /GET TEST NUMBER AGAIN
0261 1163      TAD          /ADD TABLE ADDRESS
0262 3114      DCA          TABPTR   /STORE TEST POINTER
0263 1514      TAD I        /GET TEST ADDRESS
0264 7450      SNA          /THIS TEST SELECTED IN TABLE?
0265 5565      JHP I        TEXTIT  /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      SHA CLA      /WANT TEST SELECTION HALT ?

```

```

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

```

7300

*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      JHP          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      JHP 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      CBERR       /GO TO ERROR HANDLER
0323 7300      CLA CLL      /CLEAR AC AND LINK
0324 5512      JHP I        TSTPTR   /RETURN TO TEST

```

/LONG DELAY ROUTINE, ENTER WITH DELAY LOOP COUNT IN AC
/ROUTINE DELAYS APPROXIMATELY 30.2 TO 39.5 MSEC, PER LOOP

```

0325 0800 DELAY, B
0326 3137 DCA DELAY0 /STORE DELAY LOOP COUNT
0327 1104 DELAY, 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 DELAY /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 2.18 MSEC, PER LOOP

```

0340 0800 SDLAY, B
0341 3137 DCA DELAY0 /STORE DELAY COUNT
0342 1370 SDLAY, 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 SDLAY /NO, CONTINUE DELAY
0350 5740 JMP I SDLAY /YES, EXIT

```

```

0351 2405 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 /=0---?/
0363 5555
0364 5577
0365 0800
0370 7471
0371 5260
0372 7742
0373 0377
0374 5247
0375 0304
0376 7000
0377 0521

```

/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 TSTR1
0404 3117 DCA IOFLAG /CLEAR ACTIVE IOT POINTERS
0405 1376 TAD (IOTTAB=1 /GET TABLE ADDRESS
0406 3010 DCA APTPTR /STORE TABLE ADDRESS
0407 1410 IOTA, TAD I APTPTR /GET IOT PAIR
0410 7450 SNA /DONE CHECKING IOT'S?
0411 5225 JMP IOTE /YES
0412 4553 JMS I TSET /SET IOT INSTRUCTIONS
0413 4550 JMS I TTLS /CLEAR FLAG
0414 1041 TAD M4 /SET DELAY COUNT
0415 4551 JMS I TDELAY /WAIT 120 MILLISECOND
0416 4545 JMS I TTSP /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 APTPTR /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 SEA CLA /DONE CHECKING TABLE?
0443 5233 JMP IOTF1 /NO, CONTINUE
0444 5317 JMP IOTF /YES, WAIT FOR IOT SELECTION
0445 7200 IOTG, CLA /CLEAR AC
0446 1514 TAD I TABPTR /GET IOT'S
0447 4593 JMS I TSET /SET INSTRUCTIONS WITH THIS IOT
0450 4561 JMS I THMSG /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
0457 3125 DCA CHAR /GET XMTX IOT
0460 1125 TAD CHAR /STORE XMTX IOT
0461 7012 RTR /GET IOT AGAIN
0462 7010 RAR /GET HIGH DIGIT

```



```

0463 4570 JMS I TPOCT /PRINT DIGIT
0464 1125 TAD CHAR /GET XMTX TOT AGAIN
0465 4570 JMS I TPOCT /PRINT DIGIT
0466 1070 TAD P57 /SET W/H CHAR
0467 4537 JMS I TPRINT /PRINT CHAR
0470 1514 TAD I TABPTR /GET TOT'S AGAIN
0471 7012 RTR /GET RCVR TOT HIGH DIGIT
0472 7010 RAR
0473 4570 JMS I TPOCT /PRINT DIGIT
0474 1514 TAD I TABPTR /GET TOT
0475 4570 JMS I TPOCT /PRINT DIGIT
0476 4561 JMS I THESG /PRINT MESSAGE
0477 5217 IMES2
0500 2114 ISE TABPTR /INCREMENT TABLE POINTER
0501 1514 TAD I TABPTR /GET NEXT TOT'S
0502 7650 SNA CLA /DONE?
0503 5317 JMP 10TH /YES
0504 1117 TAD 10FLAG /NO, CONTINUE PRINTING
0505 7104 CLL RAL /INCREMENT FLAG POINTER
0506 5232 JMP 10TF /CONTINUE

```

<517 *517

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

```

0517 7402 10TH, HLT /WAIT FOR OPERATOR TO SELECT TOT'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 0800 APTCON, 0
0522 7300 CLA CLL /CLEAR AC + LINK,
0523 4430 CBDOR, CBSWIT /CHECK FOR SETUP PSEUDO SWITCHES,
0524 1022 TAD 22 /GET CONTROL WORD 2,
0525 1103 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 THESG /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 TSTR1, START1
0547 0216 TSTART, START
0575 4107
0576 4106
0577 7000

```

/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	7840		SEA	CLA	/START CHAR = 1
0610	5216		JMP	T0C	/START WITH "U"
0611	1377	T0B,	TAD	(58	/GET "0" CHAR CODE
0612	4557		JMS I	TPRINT	/PRINT CHAR
0613	2130		ISE	CHRCNT	/INCREMENT CHAR COUNT
0614	7410		SKP		/CONTINUE
0615	5222		JMP	T0D	/SEND CR-LF
0616	1376	T0C,	TAD	(185	/GET "U" CHAR CODE
0617	4557		JMS I	TPRINT	/PRINT CHAR
0620	2130		ISE	CHRCNT	/DONE LINE?
0621	5211		JMP	T0B	/NO, CONTINUE
0622	4554	T0D,	JMS I	TCRLF	/SEND CR-LF
0623	2127		ISE	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		ISE	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		ISE	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	T1E	/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		ISE	CHRCNT	/DONE THIS CHAR?
0664	5260		JMP	T1C	/NO, CONTINUE
0665	4554		JMS I	TCRLF	/YES, SEND CR-LF
0666	2177		ISE	CHART1	/GET NEXT CHAR
0667	5231		JMP	T1S	/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	1073		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	T20	/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		ISE	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		ISE	CHRCNT	/DONE SENDING DATA?
0750	5345		JMP	T2C	/NO, CONTINUE
0751	2114		ISE	TABPTR	/INCREMENT TABLE POINTER
0752	2127		ISE	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	TEXT	/EXIT TEST

0775 7771
0776 125
0777 852
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		ISE	CHRCNT	/DONE LINE?
1005	7410		SKP		/NO, SEND SPACE
1006	9213		JMP	T3E	/YES, SEND CR
1007	1067		TAD	P40	/GET SPACE CODE
1010	4557		JMS I	TPRINT	/PRINT SPACE
1011	2130		ISE	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	TEXT	/EXIT TEST

/TEST4 = MULTIPLE LINE FEED TEST

```

1035 4562 TEST4, JMS I TPRHOR /PRINT TEST HEADER
1036 1377 TAD (T4TAB /GET TABLE ADDRESS
1037 3114 DCA TABPTR /STORE POINTER
1040 4561 JMS I THMSG /PRINT START OF TEST MESSAGE
1041 5162 T4MES
1042 1063 TAD P18 /SUBTRACT 10 FROM # COLUMNS
1043 1123 TAD WIDTH
1044 3130 DCA CHRCNT /STORE COUNT
1045 1376 TAD (55 /GET ASCII FOR DASH
1046 4597 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 1876 DCA ONES
1054 4514 TAD I TABPTR /GET TABLE DATA
1055 7841 CIA /NEGATE I
1056 3127 DCA LPCNT /STORE LF COUNT
1057 4556 JMS I TLF /SEND LF
1060 2127 ISZ LPCNT /DONT LFs ?
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 1843 TAD M12
1070 7500 SMA
1071 5266 JMP ,=3
1072 3136 DCA ONES
1073 7240 CLA CHA
1074 1135 TAD TENS
1075 1071 TAD P68
1076 4597 JMS I TPRINT /PRINT TENS DIGIT
1077 1136 TAD ONES
1080 1072 TAD P72
1081 4597 JMS I TPRINT /PRINT ONES DIGIT
1082 4555 JMS I TCR /SEND CR
1083 5252 JMP T4A /CONTINUE TEST

1104 4561 T4X, JMS I THMSG /PRINT END OF TEST MESSAGE
1105 5167 T4MES
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 4597 JMS I TPRINT /PRINT DASH
1113 2130 ISZ CHRCNT /DONE DASHES?
1114 5311 JMP ,=3 /NO, CONTINUE
1115 4594 JMS I TCRLF /SEND CR=LF
1116 5565 JMP I TEXT /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 TPRHOR /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 SEA 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 TDREPL /SEND DOUBLE REFERENCE LINE
1170 5565 JMP I TEXT /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	CHL RTL	/SUBTRACT 2 FROM # COLUMNS
1202	1123		TAD	WIDTH	/GET # COLUMNS
1203	3130		DCA	CHRCNT	/STORE COUNT
1204	4578		JMS I	TPOCT	/PRINT ZERO
1205	2130		ISE	CHRCNT	/DONE ZEROS?
1206	5204		JMP	CHRCNT	/NO, SEND ANOTHER ZERO
1207	7326		CLA CLL	CHL RTL	/YES, GET 2
1210	4578		JMS I	TPOCT	/PRINT 2
1211	7326		CLA CLL	CHL RTL	/GET 2
1212	4578		JMS I	TPOCT	/PRINT 2
1213	1050		TAD	M74	/SET DELAY COUNT
1214	4554		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 "X" CODE
1225	4557		JMS I	TPRINT	/PRINT CHAR
1226	2130		ISE	CHRCNT	/DONE?
1227	5220		JMP	T6A	/NO, CONTINUE
1230	4554		JMS I	TCRLF	/YES, SEND CR-LF
1231	4372		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	CHA 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		ISE	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		ISE	CHRCNT	/DONE LINE?
1263	5253		JMP	T7B	/NO, SEND ANOTHER CHAR
1264	4555	T7C,	JMS I	TCR	/YES, SEND CR
1265	2127		ISE	LPCNT	/DONE OVERPRINT
1266	5251		JMP	T7A	/NO, PRINT ANOTHER LINE
1267	4596		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=6
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 I 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 I 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 TEXT /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 /CLEAN 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

```

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1376 7742
1377 1270
1400 1400

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PAGE

/TEST 11 = RIBBON FEED TEST

```

1400 4562 TEST11, JMS I TPRHDR /PRINT TEST HEADER
1401 1377 TAD (=36 /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 TEXT /YES, EXIT

```

/TEST 12 = BELL TEST (8 BELLS)

```

1411 4562 TEST12, JMS I TPRHDR /PRINT TEST HEADER
1412 1042 TAD H10 /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 P7700 /NO, CONTINUE
1420 1186 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 / CBPASS /CHECK FOR PRINTOUT,
1423 7000 / NOP
1424 5565 / JMP I TEXT /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		ISE	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		ISE	CHRCNT	/DONE LINE?
1450	5244		JMP	T17D	/NO, PRINT ANOTHER CHAR
1451	4555		JMS I	TCR	/YES, SEND CR
1452	2127		ISE	LPCNT	/DONE OVERPRINTS?
1453	5242		JMP	T17C	/NO, CONTINUE
1454	4556		JMS I	TLF	/YES, SEND LF
1455	2125		ISE	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		ISE	PASCNT	/INCREMENT PASS COUNT
1464	7000		NOP		
1465	4554		JMS I	TCRLF	/SEND CR=LF
1466	4561		JMS I	THMSG	/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		ISE	THOUS	/INCREMENT THOUS COUNT
1477	1040		TAD	M1750	/SUBTRACT 1000(17)
1500	7500		SMA		
1501	5276		JMP	,=3	
1502	1375		TAD	(1750	
1503	2134		ISE	HUNDS	/INCREMENT HUNDS COUNT
1504	1052		TAD	M144	/SUBTRACT 100(10)
1505	7500		SMA		
1506	5303		JMP	,=3	
1507	1077		TAD	P144	
1510	2135		ISE	TENS	/INCREMENT TENS COUNT
1511	1043		TAD	M12	/SUBTRACT 10(10)

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	TEXT	/YES, EXIT

/TEST20 = CHARACTER ECHO TEST

1534	4562	TEST20,	JMS I	TPRHDR	/PRINT TEST HEADER
1535	4560	T20A,	TAD	TREAD	/READ CHARACTER
1536	0100		AND	P177	/MASK BIT 8
1537	4557		JMS I	TPRINT	/ECHO CHAR
1548	5335		JMP	T28A	/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	1856		TAD	M248	/CHECK CHARACTER
1556	7700	SMA	CLA		/PRINTABLE CHARACTER?
1557	2130	ISE	CHRCNT		/YES, INCREMENT CHARACTER COUNT
1560	7410		SKP		/CONTINUE
1561	4554	JMS I	TCRLF		/SEND CR=LF AT END OF LINE
1562	1845		TAD	M22	/CHECK TEST NUMBER
1563	1111		TAD	TSTNO	
1564	7640	SEA	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	0260				
1575	1750				
1576	0041				
1577	7750				

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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		/INCREASE ON HALF DUPLEX	
1606	1125		TAD	CHAR		/GET CHAR AGAIN	
1607	7812		RTR			/GET HIGHEST DIGIT OF CODE	
1610	7812		RTR				
1611	7812		RTR				
1612	4570	JMS I	TPOCT		/PRINT HIGHEST DIGIT		
1613	1125		TAD	CHAR	/GET CODE AGAIN		
1614	7812		RTR		/GET MIDDLE DIGIT OF CODE		
1615	7810		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	0873		AND	P77	/MASK CODE		
1637	3126		DCA	CHAR1	/SAVE CODE		
1640	1126		TAD	CHAR1	/GET CODE AGAIN		
1641	1101		TAD	P200	/MAKE ASCII		
1642	7841		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	ISE	TABPTR		/SET TABLE POINTER FOR NEXT CODE		
1647	2114	ISE	TABPTR				
1650	1514		TAD I	TABPTR			
1651	7640	SEA	CLA		/DONE TABLE?		
1652	5235	JMP	T23B		/NO, CHECK THIS CODE		
1653	4554	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 7812 RTR /GET FIRST CHAR AND MAKE ASCII
1657 7812 RTR
1660 7812 RTR
1661 4566 JMS I TPCCHAR /PRINT CHAR
1662 2114 ISZ TABPTR /INCREMENT TABLE POINTER
1663 1514 TAD I TABPTR /GET TABLE DATA
1664 4566 JMS I TPCCHAR /PRINT SECOND CHAR
1665 1514 TAD I TABPTR /GET LAST CHAR
1666 7812 RTR
1667 7812 RTR
1670 7812 RTR
1671 4566 JMS I TPCCHAR /PRINT LAST CHAR
1672 4594 JMS I TCRLF /SEND CR-LF
1673 5201 JHP 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
1678 1375 TAD (=400 /SET TABLE LENGTH COUNT
1679 7410 SKP /CONTINUE
1679 7240 T24AA, CLA CMA /STOP STORING CHARACTERS
1680 3127 DCA LPCNT /STORE COUNT
1681 4562 T24A, JMS I TREAD /READ CHAR
1682 1854 TAD M203
1683 7650 SNA CLA /CHAR = *C (CNTRL C) ?
1684 5323 JHP T24B /YES, END OF CHAR STRING
1685 2127 ISZ LPCNT /END OF TABLE?
1686 7410 SKP /NO, ECHO & STORE CHAR
1687 5302 JHP T24AA /YES, IGNORE CHAR
1688 1125 TAD CHAR /GET CHAR
1689 7100 AND P177 /MASK BIT 8
1690 4557 JMS I TPRINT /ECHO CHAR
1691 1125 TAD CHAR /GET CHAR
1692 3514 DCA I TABPTR /STORE CHAR IN TABLE
1693 3125 DCA CHAR /CLEAR OUT CHARACTER
1694 2114 ISZ TABPTR /INCREMENT TABLE POINTER
1695 5304 JHP T24A /READ ANOTHER CHAR

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1723 3125 T24B, DCA CHAR /CLEAR OUT CHARACTER
1724 1376 TAD (T24TAB /GET TABLE ADDRESS
1725 7841 CIA /NEGATE
1726 1114 TAD TABPTR /ADD TABLE POINTER
1727 7650 SNA CLA /POINTER AT BEGINNING OF TABLE?
1728 5333 JHP T24C /YES, DON'T STORE CNT=C IN TABLE
1729 1374 TAD (3 /GET *C CODE = SET AC = 3
1730 3514 DCA I TABPTR /STORE IN TABLE
1731 1376 T24C, TAD (T24TAB /GET TABLE START ADDRESS
1732 3114 DCA TABPTR /RESET TABLE POINTER
1733 7346 CLA CLL CMA RTL
1734 1514 TAD I TABPTR /CHECK FIRST CHARACTER IN TABLE
1735 7650 SNA CLA /FIRST CHAR = CNTRL C ?
1736 5276 JHP T24S /YES, ABORT ECHO
1737 7346 T24E, CLA CLL CMA RTL
1738 1514 TAD I TABPTR /NO, GET CHAR FROM TABLE
1739 7650 SNA CLA /END OF TABLE
1740 5333 JHP T24C /YES, RESTART TABLE
1741 1514 TAD I TABPTR /NO, GET CHAR AGAIN
1742 7100 AND P177 /MASK BIT 8
1743 4557 JMS I TPRINT /PRINT CHAR
1744 2114 ISZ TABPTR /INCREMENT TABLE POINTER
1745 5341 JHP T24E /CONTINUE

1752 1841 T24R, TAD H4 /SET TIME DELAY COUNT
1753 4591 JMS I TDELAY /DELAY 128 MSEC
1754 4594 JMS I TCRLF /YES, SEND CR-LF
1755 4556 JMS I TLF /SEND BLANK LINE
1756 5276 JHP T24S /RESTART TEST
1774 8803
1775 7400
1776 6747
1777 7537

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2800          PAGE
          /TEST25 = BELL TEST (COLUMN 64)
2000 7300    TEST25, CLA CLL          /CLEAR AC AND LINK
2001 1100    TAD P7700                /CHECK WIDTH
2002 1124    TAD COLMN
2003 7710    SPA CLA                  /WIDTH > 64 (10) COLUMNS 1
2004 5221    JMP T25B                 /NO, PRINT ERROR MESSAGE
2005 4562    JMS I TPRHDR              /YES, PRINT TEST HEADER
2006 4561    T25A, JMS I TMSG          /PRINT TEST MESSAGE
2007 6615    T25M
2010 4560    T25AA, JMS I TREAD        /READ CHAR
2011 1856    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 5200    JMP T25A                 /CONTINUE TEST

2021 3107    T25B, DCA STAT           /CLEAR SINGLE DC02 FLAG
2022 4561    JMS I TMSG               /PRINT ERROR MESSAGE
2023 2025    T25M1
2024 5565    JMP I TEXT               /EXIT TEST

2025 1617    T25M1, TEXT /NOT ENOUGH COLUMNS/
2026 2440
2027 0516
2030 1725
2031 0710
2032 4003
2033 1714
2034 2515
2035 1623
2036 0000

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/*****
/
/ 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 I17            /SET ASCII SET
2043 4557    JMS I TPRINT
2044 4561    JMS I TMSG              /INDICATE PRIMARY SET
2045 2122    T30M1
2046 1100    TAD P177                 /GET END CHAR
2047 4272    JMS T30S                 /PRINT CHAR SET
2050 1377    TAD I17                 /SET ASCII SET
2051 4557    JMS I TPRINT
2052 4561    JMS I TMSG              /INDICATE SECONDARY SET
2053 2125    T30M2
2054 1330    TAD T30L                 /CHECK CHAR SET LIMIT
2055 1037    TAD M377
2056 7650    SNA CLA                  /USING 8 BIT ADDRESSING INSTEAD OF SI1
2057 5262    JMP T30B                 /YES, CONTINUE & DON'T SEND SI
2060 1376    TAD I16                 /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    ISE LPCNT                /DONE TEST
2066 5242    JMP T30A                 /NO, CONTINUE TEST
2067 1377    TAD I17                 /YES, RESET ASCII SET BEFORE EXITING TEST
2070 4557    JMS I TPRINT
2071 5565    JMP I TEXT              /EXIT TEST

2072 0000    T30S, 0
2073 3126    DCA CHAR1                /SAVE END CHAR
2074 1126    TAD CHAR1                /GET IT AGAIN
2075 0375    AND I240                 /SET START CHAR
2076 3125    DCA CHAR                 /SAVE START CHAR
2077 1374    TAD I3
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    ISE 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    ISE 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 4177 T30L, 177 /CHAR SET LIMIT
/CHANGE TO 377 IF USING 8 BIT CHAR SELECTION

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 2440
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 4324
2162 4003
2163 1001
2164 2240
2165 7540
2166 7700
2174 0003
2175 240
2176 0016
2177 0017
2200

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/TEST31 - SELECTIVE ADDRESSING OPTION
2200 7300 TEST31, CLA CLL /CLEAN
2201 3107 DCA STAT
2202 1347 TAD T31DES
2203 4557 JMS I TPRINT /SEND EOT
2204 4561 JMS I TMSG /TRY PRINTING ERROR MSG
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 TPRHOR /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 TMSG /TRY PRINTING ERROR MSG
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 TMSG /TYPE MSG ON SELECTED TERMINALS
2236 2153 T31M1
2237 4561 JMS I TMSG
2240 2157 T31M2
2241 1514 TAD I TABPTR /GET SELECT CHAR
2242 4557 JMS I TPRINT /TYPE IT FOR MSG
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 7650 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 TMSG /TRY PRINTING ERROR MSG
2260 2131 T31EM
2261 7326 CLA CLL CML RTL
2262 4557 JMS I TPRINT /SEND STX
2263 4561 JMS I TMSG /TYPE SELECT MSG 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 MESSG
2267 4554 JMS I TCRLF /SEND CR-LF
2270 4561 JMS I TMSG /PRINT INSTRUCTIONS
2271 6656 T31M3
2272 4860 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 TMSG /TRY PRINTING ERROR MESSG
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 TMSG /PRINT MESS ON SELECTED TERMINAL
2317 2157 T31M2
2320 1514 TAD I TABPTR /PRINT SELECT CHAR FOR MESSG
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 TMSG /PRINT MESS ON SELECTED TERMINALS
2332 2157 T31M2
2333 1514 TAD I TABPTR /GET SELECT CHAR
2334 4557 JMS I TPRINT /PRINT IT FOR MESSG
2335 4554 JMS I TCRLF /SEND CR-LF
2336 2114 ISE 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 1042 TAD P7
2343 4557 JMS I TPRINT
2344 7326 CLA CLL CML RTL
2345 4557 JMS I TPRINT
2346 5565 JMP I TEXT /EXIT TEST

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2347 804 T31DES, 804 /DESELECT CHAR = "EOT"
2350 8045 T31DS, 845 /DUMMY SELECT CHARACTER = X
/IF "X" 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 2391
2400 PAGE

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/TEST32 = AUTO ANSWER BACK OPTION

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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 TMSG /NO, PRINT SELECT MSG
2417 0000 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 TAD (5 /SEND END CHAR
2426 4557 JMS I TPRINT
2427 4237 JMS T32S /READ AND PRINT MSG
2430 4561 JMS I TMSG /PRINT INSTRUCTIONS
2431 2531 T32M1
2432 4237 JMS T32S /READ AND PRINT MSG
2433 4561 JMS I TMSG /PRINT INSTRUCTIONS
2434 0351 T32M2
2435 4237 JMS T32S /READ AND PRINT MSG
2436 5565 JMP I TEXT /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 KY9D FLAG
2446 5245 JMP ,=1
2447 4544 JMS I TKRB /READ CHAR
2450 5256 JMP T32D /CONTINUE
2451 1107 T32C, TAD STAT /SET SELECT CODE
2452 6117 *TON /SELECT TEST TERMINAL ONLY
2453 6111 *KSF /WAIT FOR KY9D FLAG
2454 5253 JMP ,=1
2455 6116 T32CA, *KRB /READ CHAR
2456 1100 T32D, AND P177 /MASK UNWANTED BITS
2457 3125 DCA CHAR
2462 1125 TAD CHAR /GET CHAR AGAIN
2461 1053 TAD M177 /CHECK CHAR
2462 7650 SNA CLA
2463 5326 JMP T32X /EXIT IF RUBOUT

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2464 1125 TAD CHAR /GET CHAR
2465 3410 DCA I AUTPTR /STORE CHAR IN TABLE (BUFFER)
2466 1047 TAD M63
2467 3137 DCA DELAY0
2472 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 KY9D FLAG
2476 5307 JMP T32H /NOT SET, CONTINUE
2477 5247 JMP T32B /YES, READ CHAR
2500 6111 T32G, *KSF /DC02 KY9D 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 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 TEXT /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
2544 0012
2545 0000 STORE, EBLOCK 25 /20 CHAR + TERMINATOR BUFFER
2546 2542
2547 2544
2548 0005
2549 2600

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/TEST33 = TOP OF FORM OPTION

2608	4562	TEST33,	JMS I	TPRHDR	/PRINT TEST HEADER
2601	1377		TAD	(T33T1=1	/SET TABLE POINTERS
2602	3819		DCA	AUFPTR	
2603	1376		TAD	(T33T2	
2604	3114		DCA	TABPTR	
2605	7326		CLA	CLL' CML' RTL'	
2606	1114		TAD	TABPTR	
2607	3113		DCA	TABPT2	
2610	4561		JMS I	THESG	/PRINT INSTRUCTIONS
2611	6782		T33M4		
2612	4561		JMS I	THESG	
2613	6721		T33M5		
2614	4561		JMS I	THESG	
2615	4393		T33M7		
2616	4561		JMS I	THESG	
2617	3805		T33M6		
2620	1844		TAD	H28	/SET LF COUNT TO 16
2621	3138		DCA	CHRCNT	/STORE IT
2622	4568		JMS I	TREAD	/WAIT FOR KYBD FLAG
2623	1853		TAD	M177	/CHECK CHAR
2624	7658		SNA	CLA	
2625	5331		JMP	T33X	/EXIT IF RUBOUT
2626	7248		CLA	CHA	
2627	4551		JMS I	TDDELAY	/DELAY FOR HALF DUPLEX
2630	3107		DCA	STAT	
2631	4555		JMS I	TCR	/SEND CR
2632	4556	T33A,	JMS I	TLF	/SEND LF
2633	2138		ISE	CHRCNT	/INC COUNT
2634	5232		JMP	T33A	/CONTINUE LF'S
2635	1864		TAD	P14	/SEND FORM FEED
2636	4557		JMS I	TPRINT	
2637	1334		TAD	T33T1	/GET FILL COUNT
2640	3138		DCA	CHRCNT	/SAVE IT
2641	4557	T33B,	JMS I	TPRINT	/SEND NULL
2642	2138		ISE	CHRCNT	/INC COUNT
2643	5241		JMP	T33B	/FINISH NULLS
2644	4561		JMS I	THESG	/PRINT INSTRUCTIONS
2645	3805		T33M6		
2646	4568	T33BA,	JMS I	TREAD	/WAIT FOR KYBD FLAG
2647	1853		TAD	M177	/CHECK CHAR
2650	7658		SNA	CLA	
2651	5331		JMP	T33X	/EXIT IF RUBOUT
2652	7248		CLA	CHA	
2653	4551		JMS I	TDDELAY	/DELAY FOR HALF DUPLEX
2654	3107		DCA	STAT	
2655	4555		JMS I	TCR	/SEND CR
2656	1864		TAD	P14	/SEND FF
2657	4557		JMS I	TPRINT	
2660	1418		TAD	AUFPTR	/GET FILL COUNT
2661	3138		DCA	CHRCNT	
2662	4557	T33C,	JMS I	TPRINT	/SEND NULL
2663	2138		ISE	CHRCNT	/INC FILL COUNT
2664	5262		JMP	T33C	

2665	4561		JMS I	THESG	/PRINT MSG
2666	3362		T33M1		
2667	1514	T33D,	TAD I	TABPTR	/PRINT FIRST CHAR
2670	7812		RTR		
2671	7812		RTR		
2672	7812		RTR		
2673	4566		JMS I	TPCHAR	/PRINT CHAR
2674	1514		TAD I	TABPTR	/GET CHARS
2675	2114		ISE	TABPTR	/INC TABLE POINTER
2676	8873		AND	P77	/MASK CHAR
2677	7450		SNA		/DONE?
2700	5303		JMP	T33E	/YES, NEXT PART OF MESSG
2701	4566		JMS I	TPCHAR	/NO, SEND CHAR
2702	5267		JMP	T33D	/CONTINUE
2703	4561	T33E,	JMS I	THESG	/PRINT MORE OF MESSG
2704	6675		T33M2		
2705	1515	T33F,	TAD I	TABPT2	/GET CHARS
2706	7812		RTR		
2707	7812		RTR		
2710	7812		RTR		
2711	4566		JMS I	TPCHAR	/PRINT FIRST CHAR
2712	1515		TAD I	TABPT2	
2713	2115		ISE	TABPT2	/INC TABLE POINTER
2714	8873		AND	P77	/MASK CHAR
2715	7450		SNA		/DONE?
2716	5321		JMP	T33G	/YES, CONTINUE MESSG
2717	4566		JMS I	TPCHAR	/NO, PRINT CHAR
2720	5305		JMP	T33F	/CONTINUE
2721	4561	T33G,	JMS I	THESG	/PRINT LAST OF MESSG
2722	3808		T33M3		
2723	4561		JMS I	THESG	
2724	3362		T33M1		
2725	1515		TAD I	TABPT2	/CHECK NEXT ENTRY IN TABLE
2726	7640		SEA	CLA	/DONE TEST?
2727	5246		JMP	T33BA	/NO, CONTINUE TEST
2730	4554		JMS I	TCRLF	/YES, SEND CR=LF
2731	7248	T33X,	CLA	CHA	
2732	4551		JMS I	TDDELAY	/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 =78
2746 7674 =104

2776 0432
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 ---1/
3006 5555
3007 4023
3010 0524
3011 4040
3012 6340
3013 1116
3014 0310
3015 4000
3016 1722
3017 1500
3020 0505
3021 0440
3022 5555
3023 5555
3024 7700

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/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 CHL RFL
3041 4570 JMS I TPOCT
3042 4555 JMS I TCR
3043 1914 T34C, TAD I TABPTR /RETURN CARRIAGE
3044 3127 DCA LPCNT /GET SPACE COUNT FOR TAB
3045 9253 JMP T34E /SAVE IT
3046 1067 T34D, TAD P40 /CONTINUE
3047 4557 JMS I TPRINT /SEND SPACE
3050 2130 ISE CHRCNT /INC COLUMN COUNT
3051 7410 SKP
3052 9267 JMP T34F /SEND CR WHEN DONE LINE
3053 2127 T34E, ISE LPCNT /INC SPACE COUNT
3054 9246 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 "0"
3064 4557 JMS I TPRINT
3065 2130 ISE CHRCNT /INC COLUMN COUNT
3066 9243 JMP T34C /FINISH LINE
3067 4555 T34F, JMS I TCR /SEND CR
3070 1124 TAD COLMN /RESET COLUMN COUNT
3071 3130 DCA CHRCNT
3072 1914 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 1914 TAD I TABPTR
3077 3127 DCA LPCNT
3080 1915 T34H, TAD I TABPT2 /STORE COLUMN COUNT FOR TAB
3081 3131 DCA PASCNT /GET FILL CHAR COUNT
3082 1130 TAD CHRCNT /SAVE IT
3083 1127 TAD LPCNT /GET COLUMN COUNT
3084 7910 SPA /SUBTRACT TAB FROM COLUMN COUNT
3085 9717 JMP I T34B /JUMP IF TOO MANY COLUMNS
3086 3130 DCA CHRCNT /STORE NEW COUNT
3087 1373 TAD (11 /SEND TAB
3110 4557 JMS I TPRINT
3111 4557 T34I, JMS I TPRINT /SEND NULL

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3112 2131 ISE PASCNT /INC FILL COUNT
3113 5311 JMP T34I /CONTINUE FILLS
3114 1875 TAD P138 /PRINT X
3115 4597 JMS I TPRINT /CONTINUE
3116 5300 JMP T34H
3117 3120 T34AB; T34AC CLA CLL /SKIP FOLLOWING CODE AFTER FIRST TIME THRU
3120 7300 T34AC; T34AC DCA (T34AD T34AB
3121 1372 TAD T34AD
3122 3317 DCA T34AB
3123 4595 JMS I TCR /SEND CR
3124 1875 TAD P138 /PRINT X
3125 4597 JMS I TPRINT
3126 7240 CLA CMA /RESET COLUMN COUNT = 1
3127 1124 TAD COLHN
3130 3130 DCA CHRCNT /STORE COUNT
3131 5272 JMP T34G /CONTINUE
3132 4594 T34AD; JMS I TCR LF /SEND CR-LF
3133 2114 ISE TABPTR /INC TABLE POINTERS
3134 2115 ISE TABPTR2
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 COLHN /CHECK IF TOO LARGE
3141 7700 SNA 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 8000 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 8011
3174 8117
3175 3120
3176 3136
3177 3144

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3200 PAGE
/TEST35 = VERTICAL TAB OPTION

3200 4562 TEST35; JMS I TPRHOR /PRINT TEST HEADER
3201 4561 JMS I THESG /PRINT INSTRUCTIONS
3202 3340 T35M1
3203 4561 JMS I THESG
3204 3353 T35M2
3205 4596 JMS I TLF /SEND BLANK LINES
3206 4596 JMS I TLF
3207 4560 JMS I TREAD /WAIT FOR KYBD FLAG
3210 1853 TAD M177 /CHECK CHAR
3211 7650 SNA CLA /EXIT IF RUBOUT
3212 5326 JMP T35X
3213 7240 CLA CMA /DELAY FOR HALF DUPLEX
3214 4591 JMS I TDELAY
3215 3107 DCA STAT
3216 3127 DCA LPCNT /SET LINE COUNT
3217 1866 TAD P33 /CLEAR VERTICAL TABS
3220 4597 JMS I TPRINT
3221 1861 TAD P4
3222 4570 JMS I TPOCT
3223 4595 JMS I TCR
3224 1867 TAD P40
3225 4597 JMS I TPRINT
3226 4561 T35A; JMS I THESG /TYPE REF LINE
3227 6736 T35M3
3230 4595 JMS I TCR /SEND CR
3231 7240 CLA CMA /INC LINE COUNT
3232 1127 TAD LPCNT
3233 3127 DCA LPCNT
3234 1377 TAD I3 /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 4596 T35B; JMS I TLF /SEND LF
3243 2130 ISE CHRCNT /INC COUNT
3244 5242 JMP T35B /CONTINUE LF'S
3245 1866 TAD P33 /SET TAB
3246 4597 JMS I TPRINT
3247 1376 TAD I31
3250 4570 JMS I TPOCT /CONTINUE SETTING TABS
3251 5226 JMP T35A /SEND FF
3252 1864 T35C; TAD P14
3253 4597 JMS I TPRINT
3254 4331 JMS T35B /SEND FILLS
3255 4561 JMS I THESG /TYPE MESS
3256 5751 T35M4
3257 4560 JMS I TREAD /WAIT FOR KYBD FLAG
3260 1853 TAD M177 /CHECK CHAR
3261 7650 SNA CLA
3262 5326 JMP T35X /EXIT IF RUBOUT

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3263 3187          DCA  STAT
3264 7248          CLA  CHA
3265 4551          JMS  I  TDELAY          /DELAY FOR HALF DUPLEX
3266 7388          CLA  CLL          /CLEAR AC AND LINK
3267 1867          TAD  P48          /SEND SPACE
3270 4557          JMS  I  TPRINT
3271 4561          JMS  I  THESC          /PRINT REF LINE
3272 6736          T39M3
3273 4555          JMS  I  TCR
3274 7248          CLA  CHA          /INC LINE COUNT
3275 1127          TAD  LPONT
3276 3127          DCA  LPONT          /STORE NEW COUNT
3277 1377          TAD  (13          /CHECK LINE COUNT
3300 1127          TAD  LPONT
3301 7658          SNA  CLA
3302 5315          JMP  T39F          /JUMP IF DONE
3303 1377          TAD  (13
3304 4557          JMS  I  TPRINT          /SEND TAB
3305 1865          TAD  P28          /SUBTRACT 16 FROM LINE COUNT
3306 1127          TAD  LPONT
3307 7508          SNA
3308 5266          JMP  T39D          /SKIP FILLS IF COUNT <= 3
3309 3138          DCA  CHRCNT          /SET FILL COUNT
3310 5557          JMP  I  TPRINT          /SEND FILL
3311 2138          ISE  CHRCNT          /INC FILL COUNT
3312 5312          JMP  T39E          /CONTINUE SENDING FILLS
3313 1866          T39F, TAD  P33          /CLEAR VERTICAL TABS
3314 4557          JMS  I  TPRINT
3315 1861          TAD  P4
3316 4578          JMS  I  TPQCT
3317 1864          TAD  P14          /SEND FF
3318 4557          JMS  I  TPRINT
3319 4331          JMS  I  T39H          /SEND FILLS
3320 4554          JMS  I  TCRLF          /SEND CR=LF
3321 4556          JMS  I  TLF          /BLANK LINE
3322 7248          T35X, CLA  CHA
3323 4551          JMS  I  TDELAY          /DELAY INCREASE HALF DUPLEX
3324 5565          JMP  I  TEXT          /EXIT TEST
3331 8888          T35H, B
3332 1844          TAD  M28          /SET FILL COUNT
3333 3127          DCA  LPONT
3334 4557          T35G, JMS  I  TPRINT          /SEND FILLS
3335 2127          ISE  LPONT          /INC COUNT
3336 5334          JMP  T39G          /FINISH FILLS
3337 5731          JMP  I  T39H          /RETURN

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3340 2305          T35H1, TEXT /SET 14 INCH FORMFEED/
3341 2440
3342 6164
3343 4211
3344 1603
3345 1848
3346 8617
3347 2215
3350 1605
3351 504
3352 8888
3353 4405          T35H2, TEXT /DEPRESS TOP OF FORM RESET SWITCH/
3354 2022
3355 523
3356 2348
3357 2417
3360 2848
3361 1786
3362 4886
3363 1722
3364 1548
3365 2205
3366 2305
3367 2440
3370 2327
3371 1124
3372 8318
3373 8888
3376 8883
3377 8813
3400          PAGE

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/*****

/ STANDARD I=O TESTS

/*****

/TEST40 = CHECK KCC CLEARS AC

3480	7300	TEST40,	CLA	CLL		/CLEAR AC & LINK
3481	1052		TAD	H144		/SET LOOP COUNT FOR 100(10) TESTS
3482	3127		DCA	LPCNT		/STORE LOOP COUNT
3483	7240	T40A,	CLA	CHA		/SET AC = #1 (7777)
3484	4542		JMS	I	TKCC	/ISSUE KCC TO CLEAR AC AND FLAG
3485	7440		ISE			/IS AC = 0 ?
3486	4552		JMS	I	TERR	/NO, ERROR
3487	2127		ISE	LPCNT		/DONE TEST?
3410	5205		JMP	I	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	H144		/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		ISE	LPCNT		/DONE TEST?
3422	5215		JMP	I	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	H144		/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		ISE	LPCNT		/DONE TEST?
3434	5227		JMP	I	T42A	/NO, CONTINUE
3435	5564		JMP	I	TEXITA	/YES, EXIT TEST

/TEST43 = CHECK TSP SKIPS ON FLAG

3436	7300	TEST43,	CLA	CLL		/CLEAR AC AND LINK
3437	1042		TAD	H18		/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	TTL5	/CLEAR FLAG
3444	4545	T43B,	JMS	I	TTSF	/SKIP IF FLAG SET
3445	5253		JMP	I	T43C	
3446	4545		JMS	I	TTSF	/SKIP IF FLAG SET
3447	4552		JMS	I	TERR	/ERROR, DID NOT SKIP
3450	2127		ISE	LPCNT		/DONE TEST?
3451	5241		JMP	I	T43A	/NO, CONTINUE TEST
3452	5564		JMP	I	TEXITA	/YES, EXIT TEST
3453	2261	T43D,	ISE	T43D		/STILL WAIT FOR FLAG?
3454	7410		SKP			
3455	2262		ISE	T43E		
3456	5244		JMP	I	T43B	/YES, CONTINUE
3457	4552		JMS	I	TERR	/ERROR, FLAG DID NOT COME UP
3460	5241		JMP	I	T43A	/CONTINUE AFTER ERROR
3461	0000	T43D,	0000			/DELAY COUNTS
3462	0000	T43E,	0000			

/TEST44 = CHECK TSP DOESN'T SKIP WITH FLAG RESET

3463	7300	TEST44,	CLA	CLL		/CLEAR AC AND LINK
3464	1052		TAD	H144		/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		ISE	LPCNT		/DONE TEST?
3473	5266		JMP	I	T44A	/NO, CONTINUE
3474	5564		JMP	I	TEXITA	/YES, EXIT TEST

/TEST45 = CHECK TCP 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	4590	T45A, JMS I	TTL3	/CLEAR FLAG
3501	4545	JMS I	TTSF	/WAIT FOR FLAG TO SET
3502	5301	JMP	,=1	/CLEAR FLAG
3503	4546	JMS I	TTCF	/SKIP IF FLAG SET
3504	4545	JMS I	TTSF	/OK, CONTINUE
3505	7410	SKP		/ERROR, FLAG NOT CLEARED
3506	4592	JMS I	TERR	/DONE TEST?
3507	2127	ISZ	LPCNT	/NO, CONTINUE
3510	5300	JMP	T45A	/YES, EXIT
3511	5564	JMP I	TEXITA	

/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	4590	JMS I	TTL3	/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	4592	T46A, JMS I	TERR	/ERROR, UNEXPECTED INTERRUPT
3531	1376	T46G, TAD	T46B	/SET RETURN ADDRESS FOR INTERRUPT
3532	3116	DCA	INTSRV	
3533	4590	JMS I	TTL3	/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	4592	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 TRANSMITTER 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	4592	JMS I	TERR	/ERROR
3572	5365	JMP	T60D	/CONTINUE AFTER ERROR
3573	0000	T60C, 0000		/XHTR 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	TKCC		/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	/NO, CONTINUE
3620	5564	JMP I	TEXITA	/YES, EXIT TEST
3621	3224	T61B, DCA	T61C	/STORE FLAGS SET IN ERROR
3622	4592	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	1092		TAD		M144	/SET LOOP COUNT FOR 100(10) TESTS
3627	3127		DCA		LPCNT	/STORE LOOP COUNT
3630	7240	T62A,	CLA	OMA		/SET AC = 7777
3631	0110		AND		SELECT	/TEST ONLY SELECTED TERMINALS
3632	7450		SNA			
3633	7040		OMA			/TEST ALL CHANNELS IF NONE SELECTED
3634	0117		MTON			/SELECT ALL STATIONS
3635	0129		MINS			/MULTIPLE SKIP
3636	7410		SKP			/SKIP OK
3637	4952		JMS	I	TERR	/ERRORP, ILLEGAL SKIP
3640	2127		ISE		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	7690		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	3390		DCA		CNT1	/STORE GROUP COUNT
3652	1069		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	0117		MTON			/SELECT STATION
3706	7300		CLA		CLL	/CLEAR AC & LINK
3707	0111		MKSF			/DC02 FLAG ON THIS STATION, GROUP
3710	5313		JMP		DC021	/NO, CHECK NEXT STATION, GROUP
3711	0110		MKRB			/YES, READ CHARACTER
3712	5326		JMP		CKCHAR	/CHECK CHAR
3713	7200	DC021,	CLA			/CLEAR AC
3714	2351		ISE		CNT2	/DONE ALL STATIONS?
3715	5264		JMP		NXTS	/NO, CHECK NEXT STATION
3716	2350		ISE		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 C8CHAR /SAVE FOR CONSOLE PACKAGE
3731 7240 CLA CMA /SET DELAY COUNT FOR 30 NSEC
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 ISE INMODE /SET CHAR FLAG
3737 4423 C8CNTR /CHECK FOR CHARACTERS,
3740 7000 NOP

/////////
3741 7200 CLA CHAR /GET INPUT CHARACTER
3742 1125 TAD M377 /CHECK CHAR
3743 1057 TAD M377 /CHAR = RUBOUT?
3744 7650 SNA CLA /CHAR = RUBOUT?
3745 5576 JMP I TECH /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 /MASK CHAR
3755 0062 AND P7 /MAKE ASCII
3756 1071 TAD P60 /PRINT DIGIT
3757 4557 JMS I TPRINT /PRINT DIGIT
3760 5754 JMP I POCT /EXIT

```

```

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

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

/I=0 INSTRUCTIONS
4000 0000 RKSF, 0000 /SKIP IS FLAG IS SET
4001 6031 I01, KSF
4002 7410 SKP
4003 2200 ISE RKSF /INCREMENT RETURN ADDRESS FOR SKIP
4004 5600 JMP I RKSF /RETURN

4005 0000 RKCC, 0000 /CLEAR FLAG
4006 6032 I02, KCC
4007 5605 JMP I RKCC /RETURN

4010 0000 RKRS, 0000 /READ BUFFER (STATIC)
4011 6034 I03, XRS
4012 5610 JMP I RKRS /RETURN

4013 0000 RKRB, 0000 /CLEAR AC, READ BUFFER, CLEAR FLAG
4014 6036 I04, XRB
4015 5613 JMP I RKRB /RETURN

4016 0000 RTSF, 0000 /SKIP IS FLAG IS SET
4017 6041 I05, TSF
4020 7410 SKP
4021 2216 ISE RTSF /INCREMENT RETURN ADDRESS FOR SKIP
4022 5616 JMP I RTSF /RETURN

4023 0000 RTCF, 0000 /CLEAR FLAG
4024 6042 I06, TCF
4025 5623 JMP I RTCF /RETURN

4026 0000 RTPC, 0000 /LOAD BUFFER
4027 6044 I07, TPC
4030 5626 JMP I RTPC /RETURN

4031 0000 RTLS, 0000 /PRINT CHARACTER
4032 6046 I08, TLS
4033 5631 JMP I RTLS /RETURN

```


/ROUTINE TO SET I=0 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 POSITIONS
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 I01 /SET KSF INSTRUCTION
4046 1302 TAD IOT2 /GET KCC
4047 1306 TAD IOCODE /ADD IOT
4050 3206 DCA I02 /SET KCC INSTRUCTION
4051 1303 TAD IOT3 /GET KRS
4052 1306 TAD IOCODE /ADD IOT
4053 3211 DCA I03 /SET KRS INSTRUCTION
4054 1304 TAD IOT4 /GET KRB
4055 1306 TAD IOCODE /ADD IOT
4056 3214 DCA I04 /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 I05 /SET TSF INSTRUCTION
4067 1302 TAD IOT2 /GET TCF
4070 1306 TAD IOCODE /ADD IOT
4071 3224 DCA I06 /SET TCF INSTRUCTION
4072 1303 TAD IOT3 /GET TPC
4073 1306 TAD IOCODE /ADD IOT
4074 3227 DCA I07 /SET TPC INSTRUCTION
4075 1304 TAD IOT4 /GET TLS
4076 1306 TAD IOCODE /ADD IOT
4077 3232 DCA I08 /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
4111 3031
4112 4041
4113 4243
4114 4445
4115 4647
4116 0000 /END OF TABLE

```

/TYPE MESSAGE ROUTINE

```

4117 0000 MSG, 0000
4120 7300 CLA CLL /CLEAR AC & LINK
4121 1717 TAD I MSG /GET MESSAGE ADDRESS
4122 3363 DCA HSAVE /STORE MESSAGE ADDRESS
4123 0317 ISZ MSG /GET RETURN ADDRESS
4124 0326 JMP ,+2
4125 0363 MSGA, ISZ HSAVE /SET NEXT CHAR ADDRESS
4126 7300 CLA CLL /CLEAR AC AND LINK
4127 1763 TAD I HSAVE /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 0361 JMP HESGB /YES, SEND CR=LF
4136 3364 DCA CSAVE /SAVE CHAR
4137 0051 TAD M77 /CHECK CHAR
4140 1364 TAD CSAVE
4141 7650 SNA CLA /END OF MESSAGE?
4142 0717 JMP I MSG /YES, EXIT
4143 1364 TAD CSAVE /NO, GET CHAR AGAIN
4144 4566 JMS I TPCHAR /PRINT CHAR
4145 1763 TAD I HSAVE /GET CHAR PAIR AGAIN
4146 0073 AND P77 /SAVE SECOND CHAR
4147 7450 SNA /END OF LINE?
4150 0361 JMP HESGB /YES, SEND CR=LF
4151 3364 DCA CSAVE /SAVE CHAR
4152 0051 TAD M77 /CHECK CHAR
4153 1364 TAD CSAVE
4154 7650 SNA CLA /END OF MESSAGE
4155 0717 JMP I MSG /YES, EXIT
4156 1364 TAD CSAVE /NO, GET CHAR AGAIN
4157 4566 JMS I TPCHAR /PRINT CHAR
4160 0325 JMP HESGA /CONTINUE
4161 4554 HESGB, JMS I TCR LF /SEND CR=LF
4162 0717 JMP I MSG /RETURN

4163 0000 HSAVE, 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 DC#2 FLAG
4201 1111 TAD TSTNO /GET TEST NUMBER
4202 1844 TAD H20 /CHECK NUMBER
4203 7510 SPA /PRINTING TEST?
4204 5574 JMP I TSETUP /YES, GO TO SETUP
4205 1844 TAD H20 /CHECK TEST NUMBER AGAIN
4206 7700 SMA CLA /ECHO TEST?
4207 5574 JMP I TSETUP /NO, GO TO SETUP
4208 1841 TAD H4 /SET TIME DELAY COUNT
4209 4551 JMS I TDELAY /DELAY 120 MSEC,
4210 4554 JMS I TCRLF /SEND CR-LF
4211 4556 JMS I TLF /SEND BLANK LINE
4212 4561 EEM, /PRINT MESSAGE
4213 4330 LAS /"ECHO TEST "
4214 4425 CLL RTL /GET SWITCH REGISTER
4215 7106 CLL RTL /GET SWITCH 4
4216 7106 SPA CLA /KEYBOARD CONTROL?
4217 5574 JMP I TSETUP /YES, GO TO SETUP
4218 5565 JMP I TEXIT /GO TO EXIT ROUTINE

```

/PRINT TEST HEADER ROUTINE

```

4224 1000 PRTHOR, P000
4225 7200 CLA /CLEAR AC
4226 3107 DCA STAT /CLEAR SINGLE DC#2 FLAG
4227 4554 JMS I TCRLF /SEND CR-LF
4228 1111 TAD TSTNO /GET TEST NUMBER
4229 7041 CIA /NEGATE
4230 1113 TAD HDRPTR /ADD PREVIOUS TEST POINTER
4231 7650 SMA CLA /THIS HEADER PRINTED BEFORE?
4232 5624 JMP I PRTHOR /YES, EXIT
4233 3131 DCA PASCNT /CLEAR PASS COUNT FOR TEST 12
4234 1111 TAD TSTNO /NO, GET TEST NUMBER AGAIN
4235 3113 DCA HDRPTR /STORE POINTER
4236 4561 JMS I TMSG /PRINT MESSAGE
4237 4340 TSTMS
4238 1111 TAD TSTNO /GET TEST NUMBER
4239 7112 CLL RTR /GET HIGH DIGIT
4240 7110 CLL RAR
4241 0862 AND P7
4242 4570 JMS I TPOCT /PRINT DIGIT
4243 7300 CLA CLL /CLEAR AC AND LINK
4244 1111 TAD TSTNO /GET TEST NUMBER AGAIN
4245 4570 JMS I TPOCT /PRINT DIGIT
4246 4554 JMS I TCRLF /SEND CR-LF
4247 1111 TAD TSTNO /GET TEST NUMBER
4248 7450 SMA /TEST 3 ?
4249 5264 JMP PRT0 /YES, PRINT # COLUMNS MESSAGE
4250 1377 TAD (=5
4251 7450 SMA /TEST 5 ?
4252 5264 JMP PRT0 /YES, PRINT # COLUMNS MESSAGE

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4261 1843 TAD H12
4262 7440 SZA
4263 5321 JMP PRT1 /TEST 17?
4264 7300 CLA CLL /NO, SKIP # COLUMNS MESSAGE
4265 3134 DCA HUNDS /CLEAR AC AND LINK
4266 3135 DCA TENS /CLEAR CONVERSION COUNTERS
4267 3136 DCA ONES
4270 1124 TAD COLMN /GET NUMBER OF COLUMNS
4271 2134 ISZ HUNDS /CONVERT NUMBER TO DECIMAL/ASCII
4272 1052 TAD H144
4273 7500 SMA
4274 5271 JMP ,=3
4275 1077 TAD P144
4276 2135 ISZ TENS
4277 1043 TAD H12
4300 7500 SMA
4301 5276 JMP ,=3
4302 3136 DCA ONES
4303 7240 CLA CHA
4304 1134 TAD HUNDS /DELETE LEADING ZEROS
4305 7450 SMA
4306 5311 JMP ,+3
4307 1071 TAD P60
4310 4557 JMS I TPRINT /PRINT HUNDRED DIGIT
4311 1070 TAD P57
4312 1135 TAD TENS /PRINT TENS DIGIT
4313 4557 JMS I TPRINT
4314 1072 TAD P72
4315 1136 TAD ONES /PRINT UNITS DIGIT
4316 4557 JMS I TPRINT /PRINT COLUMNS MESSAGE
4317 4561 JMS I TMSG
4320 4345 COLMES
4321 4556 PRT1, JMS I TLF /SEND BLANK LINE
4322 4546 JMS I TTCF /CLEAR FLAGS
4323 7240 CLA CHA
4324 6117 MTDN
4325 6112 MKCC
4326 7300 CLA CLL /CLEAR AC AND LINK
4327 5624 JMP I PRTHOR /RETURN

```

```

4330 2405 EEM1, TEXT /TEST TERMINATED/
4331 2324
4332 4024
4333 0922
4334 1511
4335 1601
4336 2405
4337 0400
4340 2405 TSTHES, TEXT /TEST # 7/
4341 2324
4342 4043
4343 4040
4344 7700
4345 4040 COLHES, 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

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/EXIT FROM I=0 TEST SEQUENCE
4400 3117 IOEXIT, DCA IOFLAG /CLEAR I=0 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 SNA /HALT AT END OF TEST?
4432 5236 JMP /NO, CONTINUE
4433 4436 CBINDU /INTERGATE 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 SNA 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?

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4460 5310      JMP      EXIT3A      /NO, RESET TEST NUMBER
4461 1846      TAD      M28         /YES, CHECK TEST NUMBER
4462 1111      TAD      TSTNO
4463 7648      SZA     CLA         /LEGAL NUMBER?
4464 5267      JMP      EXIT2       /YES, CONTINUE CHECK
4465 1865      TAD      P28         /NO, RESET TEST NUMBER
4466 5310      JMP      EXIT3A
4467 1375      TAD      (=47       /CHECK TEST NUMBER
4470 1111      TAD      TSTNO
4471 7648      SZA     CLA         /LEGAL NUMBER?
4472 5308      JMP      EXIT3       /YES, CONTINUE CHECK
4473 1117      TAD      IOPLAG      /NO, CHECK IO FLAG
4474 7648      SZA     CLA         /IO FLAG SET?
4475 5208      JMP      IOEXIT      /YES, LAST IO TEST
4476 1867      TAD      P48
4477 5310      JMP      EXIT3A
4500 1847      EXIT3:  TAD      M63         /CONTINUE CHECK OF TEST NUMBER
4501 1111      TAD      TSTNO
4502 7648      SZA     CLA         /LEGAL NUMBER?
4503 5311      JMP      EXIT4       /YES, GO TO TEST
4504 1117      TAD      IOPLAG      /GET I=0 FLAG
4505 7648      SZA     CLA         /FLAG SET?
4506 5208      JMP      IOEXIT      /YES, LAST IO TEST
4507 1871      TAD      P68
4510 3111      EXIT3A: DCA     TSTNO      /RESET TEST NUMBER
4511 1111      EXIT4:  TAD      TSTNO      /STORE NEW TEST NUMBER
4512 1374      TAD      (=48
4513 7708      SMA     CLA         /CONTINUE IF NOT I/O TEST
4514 5321      JMP      EXIT5
4515 1111      TAD      TSTNO      /CHECK IF OPTION TEST
4516 1373      TAD      (=38
4517 7708      SMA     CLA
4520 5574      EXIT5: JMP     I     TSETUP      /GO TO TEST SELECT IF OPTION TEST
4521 1111      TAD      TSTNO      /GET TEST NUMBER
4522 1163      TAD      TTP2       /ADD TABLE ADDRESS
4523 3114      DCA     TABPTR      /STORE TEST POINTER
4524 1514      TAD     I     TABPTR      /GET TEST ADDRESS
4525 7458      SNA
4526 5218      JMP      EXITA       /TEST SELECTED IN TABLE?
4527 3112      DCA     TSTPTR      /NO, CHECK NEXT TEST IN SEQUENCE
4530 5512      JMP     I     TSTPTR      /STORE ADDRESS
4530 5512      JMP     I     TSTPTR      /GO TO SELECTED TEST

```

/ROUTINE TO PRINT DOUBLE REFERENCE LINES

```

4531 8000      DREFL: 8000
4532 4341      JMS     DREFL0      /SEND REFERENCE LINE
4533 4554      JMS     I     TCRLF      /SEND CR=LF
4534 1372      TAD      (=41       /SET DELAY COUNT FOR 1 SECONDO
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 8000      DREFL0: 8000
4542 7308      CLA     CLL         /CLEAR AC AND LINK
4543 1123      TAD      WIDTH      /GET # COLUMNS
4544 3138      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     LPONT       /STORE COUNT
4551 1125      DREFL1: TAD     CHAR      /GET CHAR
4552 4557      JMS     I     TPRINT      /PRINT CHAR
4553 2125      ISE     CHAR        /GET NEXT CHAR
4554 2138      ISE     CHRCNT      /DONE LINE?
4555 7418      SKP
4556 5741      JMP     I     DREFL0      /NO, CHECK CHAR
4557 2127      ISE     LPCNT       /YES, EXIT
4560 5351      JMP     DREFL1      /DONE CHAR SET?
4561 1871      TAD      P68
4562 3125      DCA     CHAR        /NO, SEND CHAR
4563 1843      TAD      M12
4564 3127      DCA     LPONT       /YES, RESET CHAR
4565 5351      JMP     DREFL1      /STORE NEW CHAR
4570 7767      /STORE NEW COUNT
4571 8861      /CONTINUE
4572 7737
4573 7758
4574 7748
4575 7731
4576 7765
4577 7761
4608      PAGE

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4600 8000          /OUTPUT A CHARACTER ROUTINE, EXIT WITH CLEAR AC
4601 8000          PRINT, 8000
4602 8237          DCA      TEMP      /SAVE CHARACTER
4603 8237          TAD      DC02PL    /GET DC02 FLAG
4604 8237          SNA CLA    /USING DC02?
4605 8237          JMP      CPRINT    /NO, GO TO CONSOLE PRINT ROUTINE

/DC02 PRINT ROUTINE
4606 6117          MTON
4607 6117          TAD      STAT      /DESELECT ALL STATIONS
4608 6117          SZA
4609 6117          JMP      DC02P     /GET SINGLE DC02 FLAG
4610 6117          CLA
4611 6117          TAD      SELECT    /ORE STATION?
4612 6117          SNA
4613 6117          CLA CHA          /YES, XMT TO ONE STATION ONLY
4614 6117          /CLEAR AC
4615 6117          /GET SELECTED DC02 CODE
4616 6117          /STATIONS SELECTED?
4617 6117          /NO, SELECT ALL STATIONS

DC02P, 4618 6117  MTON
4619 6117          CLA
4620 6117          TAD      TEMP      /SELECT STATIONS
4621 6117          MTL5
4622 6117          MTSF
4623 6117          JMP      ,=1      /CLEAR AC
4624 6117          CLA
4625 6117          TAD      SELECT    /GET CHARACTER
4626 6117          SZA CLA          /LOAD CHARACTER
4627 6117          JMS I   TFLAG     /DONE?
4628 6117          JMP I   PRINT     /NO, WAIT FOR FLAG
4629 6117          /CLEAR AC
4630 6117          /CHECK SELECTED CHANNELS
4631 6117          /SKIP IF NONE SELECTED
4632 6117          /CHECK KYBD FLAGS
4633 6117          /EXIT

/CONSOLE PRINT ROUTINE
4634 1237         CPRINT, TAD      TEMP      /GET CHARACTER
4635 4557         JMS I   TT5F      /LOAD CHARACTER
4636 4557         JMS I   TT5F      /DONE?
4637 4557         JMP      ,=1      /NO, WAIT FOR FLAG
4638 4557         JMS I   TT5F      /CLEAR FLAG
4639 4557         JMS I   TFLAG     /CHECK KYBD FLAGS
4640 4557         JMP I   PRINT     /EXIT

4641 8000         TEMP, 8000          /TEMPORARY STORAGE FOR CHARACTER

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```

/ROUTINE TO CONVERT PACKED DATA TO ASCII AND PRINT
4642 8000         PCHAR, 8
4643 8073         AND      P77
4644 3252         DCA      PCHAR0    /MASK CHAR
4645 1252         TAD      PCHAR0    /STORE CHAR
4646 8067         AND      P40
4647 8067         SNA CLA          /GET CHAR AGAIN
4648 1074         TAD      P100
4649 1252         TAD      PCHAR0    /MAKE ASCII
4650 4557         JMS I   TPRINT
4651 5640         JMP I   PCHAR
4652 8000         PCHAR0, 8000      /PRINT CHAR
4653 8000         /RETURN
4654 8000         PCHAR0, 8000      /TEMP STORAGE FOR CHAR

/CARRIAGE RETURN = LINE FEED ROUTINES
4655 8000         CRLF, 8
4656 4257         JMS      CR
4657 4264         JMS      LF
4658 5653         JMP I   CRLF
4659 8000         CR, 8
4660 7200         CLA
4661 1377         TAD      (15
4662 4557         JMS I   TPRINT
4663 5657         JMP I   CR
4664 8000         LF, 8
4665 7200         CLA
4666 1376         TAD      (12
4667 4557         JMS I   TPRINT
4668 5664         JMP I   LF
4669 8000         /GET ASCII FOR CR
4670 8000         /PRINT CR
4671 8000         /RETURN
4672 8000         /GET ASCII FOR LF
4673 8000         /SEND LF
4674 8000         /RETURN

/ROUTINE TO CHECK FLAGS
4675 8000         FLAG, 8000
4676 7300         CLA CLL
4677 1111         TAD      TSTNO
4678 1844         TAD      M20
4679 7700         SNA CLA          /CLEAR AC AND LINK
4680 5310         JMP      FLGA
4681 1022         TAD      22
4682 1103         AND      P400
4683 7640         SZA CLA          /GET TEST NUMBER
4684 5310         JMP      FLGA
4685 4425         LAS
4686 7106         CLL RTL
4687 7106         CLL RTL
4688 7700         SNA CLA          /CHECK NUMBER
4689 5334         JMP      FLAG3
4690 7106         CLL RTL
4691 7106         CLL RTL
4692 7700         SNA CLA          /PRINTING TEST?
4693 5334         JMP      FLAG3
4694 7106         CLL RTL
4695 7106         CLL RTL
4696 7700         SNA CLA          /NO, CHECK FLAGS
4697 5334         JMP      FLAG3
4698 7106         CLL RTL
4699 7106         CLL RTL
4700 7700         SNA CLA          /MASK CONSOLE BIT,
4701 5334         JMP      FLAG3
4702 7106         CLL RTL
4703 7106         CLL RTL
4704 7700         SNA CLA          /ON CONSOLE PACKAGE?
4705 5334         JMP      FLAG3
4706 7106         CLL RTL
4707 7106         CLL RTL
4708 7700         SNA CLA          /YES, CHECK FOR CHARACTER INPUT?
4709 5334         JMP      FLAG3
4710 7106         CLL RTL
4711 7106         CLL RTL
4712 7700         SNA CLA          /NO, GET SWITCH REG,
4713 5334         JMP      FLAG3
4714 7106         CLL RTL
4715 7106         CLL RTL
4716 7700         SNA CLA          /CHECK SWITCH 4
4717 5334         JMP      FLAG3
4718 7106         CLL RTL
4719 7106         CLL RTL
4720 7700         SNA CLA          /KEYBOARD CONTROL?
4721 5334         JMP      FLAG3
4722 7106         CLL RTL
4723 7106         CLL RTL
4724 7700         SNA CLA          /NO, SKIP FLAG CHECK
4725 5334         JMP      FLAG3

```



```

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
4719 5325  JMP      FLAG8  /YES, HANDLE FLAG
4716 7240  FLAG1,  CLA CMA /SET AC = #1 (7777)
4717 0110  AND      SELECT /TEST ONLY SELECTED TERMINALS
4720 7450  SNA      /TEST ALL TERMINALS IF NONE SELECTED
4721 7040  CMA      /SELECT CHANNELS
4722 6117  MTON     /FLAGS SET?
4723 6111  MKSF     /NO, EXIT
4724 5334  JMP      FLAG3  /READ CHAR
4725 4560  FLAG0,  JMS I   TREAD /CLEAR FLAGS
4726 4546  JMS I   TTOP
4727 7240  CLA CMA
4730 6117  MTON     /SELECT CHANNELS
4731 6112  MKCC
4732 7300  CLA CLL  /CLEAR AC AND LINK
4733 3107  DCA      /CLEAR SINGLE DC02 FLAG
4734 7300  FLAG3,  CLA CLL  /CLEAR AC AND LINK
4735 1375  TAD      /CHECK IF TEST24
4736 1111  TAD      /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      /NOT PRINTING HEADER = CHECK CHAR
4747 1054  TAD      H203
4750 7640  SZA CLA  /CHAR = CNTRL C ?
4751 5671  JMP I   FLAG  /NO, RETURN
4752 3125  DCA      /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      /SET DELAY COUNT
5002 4551  JMS I   M4      /DELAY 120 MSEC,
5003 3122  DCA      /CLEAR ONE RUN FLAG
5004 3121  DCA      /CLEAR LOOP ON TEST FLAG
5005 3132  DCA      /ALLOW CHAR CHECK IN READ ROUTINE
5006 4425  LAS      /GET SWITCH REGISTER
5007 7106  CLL RTL  /CHECK SWITCH 4
5010 7106  CLL RTL

```

```

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      /MASK BITS
5023 3111  DCA      /STORE TEST NUMBER
5024 1047  TAD      /CHECK IF LEGAL NUMBER
5025 1111  TAD      TSTNO
5026 7700  SMA CLA  /LEGAL?
5027 5200  JMP      SETUP /NO, HALT
5030 3107  DCA      /START TEST
5031 5327  JMP      SETA

/KEYBOARD CONTROL ROUTINE

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

```

5071	3111	DCA	TSTNO	/STORE CONVERTED TEST NUMBER
5072	1111	TAD	TSTNO	/GET TEST NUMBER
5073	1377	TAD	(=48	/CHECK TEST NUMBER
5074	7700	SHA	CLA	/LEGAL TEST NUMBER?
5075	5200	JMP	SETUP	/NO, ASK FOR NUMBER AGAIN
5076	1111	TAD	TSTNO	/GET TEST NUMBER
5077	1844	TAD	M20	/CHECK NUMBER
5100	7500	SHA		/PRINTING TEST?
5101	5322	JMP	KYBDRT	/NO, RUN ONLY ONCE
5102	7300	KYBDRT,	CLA CLL	/CLEAR AC AND LINK
5103	1125	TAD	CHAR	/GET CONTROL CHARACTER
5104	1374	TAD	(=256	/CHECK CODE
5105	7650	SHA	CLA	/CHAR = "I" ?
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	SHA	CLA	/CHAR = L ?
5113	5325	JMP	KYBDLT	/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	SEA	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	KYBDLT,	CLA CMA	/SET AC = #1
5126	3121	DCA	TLOOP	/SET LOOP ON TEST FLAG
5127	1111	TAD	TSTNO	/GET TEST NUMBER
5130	1163	TAD	TFP0	/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	0800			
5162	0061	T48MES,	TEXT	/01 START?/
5163	4023			
5164	2401			
5165	2224			
5166	7700	T4EMES,	TEXT	/00?/
5167	0060			
5170	7700			
5173	7455			
5174	7464			
5175	7737			
5176	7522			
5177	7740			
	5200		PAGE	
5200	2410	IMES1,	TEXT	/THIS TERMINAL USING [DT=S] ?/
5201	1123			
5202	4024			
5203	0522			
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	/ (XHTR/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 C0CKSW
/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 CBPASS TO PRINT PASS
/SETUP OF CNTVAL WILL BE FOUND IN CBPASS
/SET UP X00SW 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
6804 GTF= 6804
7701 ACL= 7701
6807 CAF= 6807
7421 MQL= 7421
7802 BSW= 7802

```

```

/*****
/CBPASS
/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 COMPLETE THIS MANY CBPASS TO BE IN THE 1 TO 4 MINUTE
/RANGE
/ CBPASS=JMS XCBPAS
/EX, CBPASS
/ 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 XCBPAS, 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 XCBPAS /GO CHECK END HALT
5235 4254 DOPACK, JMS CKCOUT /CLASS CHECK CBPASS COUNT
5236 5252 JMP CBBY1 /CBPASS COUNT NOT DONE REDO PROGRAM
5237 2272 ISE PSCNT /CBPASS COUNT DONE SET CBPASS COUNT
5240 4432 C0CRLF /CRLF
5241 4427 C0PRNT /C0PRNT BUFFER
5242 5275 XESPAS
5243 1272 TAD PSCNT /GET NUMBER
5244 4431 C0C0TA /CONVERT IT TO ASCII
5245 4432 C0CRLF /DO A CARRIAGE RETURN
5246 4425 C0CKSW /CHECK A HALT AT END OF CBPASS
5247 0377 AND (2000 /MASK BIT
5250 7640 SZA CLA /HALT #1 NO SKIP CONTINUE #0
5251 4436 C0INDU /STOP PROGRAM EXECUTION=LOOK FOR INPUT
5252 2226 CBBY1, ISE XCBPAS /BUMP RETURN
5253 5626 JMP I XCBPAS
5254 0000 CKCOUT, 0
5255 1273 TAD DOSET /CHECK IF SET UP NEEDED
5256 7640 SZA CLA /#0SET UP CBPASS COUNT VALUE
/1=CBPASS COUNT VALUE OK
/CBPASS COUNT VALUE ON
/GET COUNT VALUE FOR THIS PROG
/SET TO NEGATIVE
/STORE IN HERE
5257 5263 JMP NOSET /INDICATE VALUE SET UP
5260 1274 TAD CNTVAL /COUNT THE NUMBER OF PASSES
5261 7040 CMA /EXIT FOR ANOTHER PASS
5262 3271 DCA DOCNT /SET TO CBPRNT CBPASS
5263 2273 NOSET, ISE DOSET /BUMP RETURN FOR
5264 2271 ISE DOCNT /CBPASS C0TYPE OUT
5265 5252 JMP CBBY1
5266 3273 DCA DOSET
5267 2254 ISE CKCOUT
5270 5654 JMP I CKCOUT
5271 0000 DOCNT, 0
5272 0000 PSCNT, 0
5273 0000 DOSET, 0
5274 0000 CNTVAL, 0

```


5275 0411
5276 1481
5277 0204
5300 4040
5301 4040
5302 2001
5303 2323
5304 4040
5305 0000

```

/*****
/CBCKSW
/ROUTINE THAT WILL CHECK WHERE TO READ THE
/CB SWITCHES FROM IE, FROM PANEL OR PSEUDO CB SWIT REGISTER
/      CBCKSW= JMS XCBSW
/EX      CBCKSW          /READ THE CBSWIT REGISTER
                          /RETURN WITH THE CONTENTS OF SWITCH REGISTER
/RETURN TO NEXT LOCATION FOLLOWING CALL WITH THE AC= TO VALUE OF CBSWIT SETTING

```

```

5306 0000      XCBSW, 0
5307 7200      CLA          /CLEAR AC
5310 4437      CBCKPA      /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      TAD        7614      /LAS AND SKIP FROM PANEL
5315 1020      TAD        20          /PSEUDO SW
5316 5706      JMP I      XCBSW      /EXIT WITH STATUS BIT IN AC,

```

```

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

```

```

5317 0000      XCBTYI, 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 EIGHTH BIT
5325 3776      DCA        CBCHAR    /STORE IT
5326 1776      TAD        CBCHAR
5327 5717      JMP I      XCBTYI    /EXIT

```

```

/*****
/CBPRNT
/THIS ROUTINE WILL TYPE THE CONTENTS OF THE CB PRINT BUFFER, THE LOCATION
/OF THE BUFFER WILL BE IN THE ADDR5 FOLLOWING THE CALL, CB PRINTING OF THE BUFFER
/ WILL STOP WHEN A 00 CHAR IS DETECTED, CHARACTERS ARE PACKED 2 PER WORD.
/      CBPRNT= JMS XCBPNT
/EX,      CBPRNT          /CBPRNT THE CONTENTS OF THE FOLLOWING BUFFER
                          /MESS77          /LOCATION OF CBPRNT BUFFER
/CBPRNT WILL USE THE LOCATION FOLLOWING THE CALL AS THE POINTER FOR THE
/CBPRNT ROUTINE, RETURN TO CALL PLUS TWO WITH AC= 0

```

```

5330 0000      XCBPNT, 0
5331 7300      CLA CLL
5332 1730      TAD I      XCBPNT      /GET CBPRNT BUFFERS STARTING LOCATION
5333 3363      DCA        PTSTOR     /STORE IN PTSTOR
5334 2330      ISZ        XCBPNT     /BUMP RETURN
5335 1763      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      XCBPNT     /EXIT
5341 7500      SHA
5342 7020      CHL          /IS AC MINUS
5343 7001      IAC
5344 7012      RTR          /MAKE CHAR A 300 AFTER ROTATE
5345 7012      RTR          /MAKE CHAR A 200 AFTER ROTATE
5346 7012      RTR
5347 4434      CBTYPE      /PUT CHAR IN BITS 4=11 MAKE IT 8 BIT ASCII
5350 1763      TAD I      PTSTOR     /CBPRNT IT ON CONSOLE
5351 0073      AND        P77       /GET DATA WORD
5352 7450      SNA        /MASK FOR RIGHT BYTE
5353 5730      JMP I      XCBPNT     /CHECK IF 00 TERMINATOR
5354 1375      TAD        (3740)     //EXIT
5355 7500      SHA          /ADD FUDGE FACTOR TO DETERMINE IF 200
5356 1074      TAD        P100      /OR 300 IS TO BE ADD TO CHAR
5357 1374      TAD        (240)     /ADD 100
5360 4434      CBTYPE      /ADD 200
5361 2363      ISZ        PTSTOR     /CBTYPE ONLY BITS 4=11
5362 5335      JMP        CB001      /BUMP POINTER FOR NEXT WORD
5363 0000      PTSTOR, 0          /DO AGAIN
5364 0000      STOPNT, 0          /STOR FOR CBPRNT BUFFER
                          /0000 CBPRNT 7777=00 NOT CBPRNT

```

5374 0240
5375 3740
5376 5497
5377 0000

5400

PAGE

.....

/CBCNTR
/THIS ROUTINE WILL CHECK FOR THE PRESENCE OF CONTROL CHARACTERS
/IT WILL CHECK FOR THE FOLLOWING CHAR C=R=0=0=L=5
/CBCNTR= JMS XCBCNT

/EX; CBCNTR /CHECK FOR CONTROL CHARACTER
/ JMS ANYTHING /LOC FOLLOWING CALL IS FOR CONTINUING THE PROGRAM
/ JMS ANYTHING /LOC; IS FOR RETURN IF INMODE SET AND NOT CNTRL CHAR

/RETURN IS TO CALL PLUS ONE IF CONTINUE
/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 XCBCNT, 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 XCBCNT /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 REDDA, 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 ISE INDEXA /NO MATCH NOT END OF TABLE REDD
5427 2262 ISE GETDAT /BUMP INDEX FOR EXIT WHEN CONTROL FOUND
5430 5220 JMP REDDA /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 CBTYPE /CBPRNT CHAR
5436 1073 TAD P77 /GET CODE FOR "?"
5437 4434 CBTYPE
5440 4432 CBCRLF
5441 2200 ISE XCBCNT /UPDATE POINTER,
5442 5600 JMP I XCBCNT /EXIT AND CONTINUE PROGRAM
5443 2200 ISE XCBCNT /BUMP RETURN FOR MAIN PROGRAM CHECK OF CHAR
5444 1257 TAD C8CHAR /PUT CHAR IN AC,
5445 5600 JMP I XCBCNT /EXIT

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 1074 TAD P100 /MAKE IT JXX,
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 UP 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 PRINTING 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, CNTRLQ
5477 5537 CNTRLQ
5500 5545 CNTRLQ
5501 5506 CNTRLQ
5502 5512 CNTRLQ
5503 5521 CNTRLQ
5504 5553 CNTRLQ
5505 5600 CNTRLQ
/
/START SENDING CHAR, TO THE DISPLAY
/
5506 3335 CNTRLQ, DCA CBSETS /CLEAR SOFTWARE FLAG!
5507 3774' DCA INMODE /CLEAR SOFTWARE FLAG!
5510 4773' JMS CBGET /REPLACE REGISTERS!
5511 5736 JMP I CBRETR /EXIT CONTROL Q
/GO TO THE QUESTION C8SWIT
/
5512 4772' CNTRLR, JMS UPAROW /CBPRNT A * AND THE CHAR
5513 3335 DCA CBSETS /CLEAR SOFTWARE FLAG!
5514 3774' DCA INMODE
5515 4432 CBCRLF
5516 3771' C8BY4, DCA C8SWST /CLEAR REENTRY FLAG
5517 5720 JMP I XDO5W /GO TO ADDRS OF C8SWIT
5520 2523 XDO5W, C8DOR /DO5W IS LABEL FOR C8SWIT QUESTION

```

/STOP SENDING CHAR, TO DISPLAY UNTIL A *0 IS RECEIVED
/REMAIN IN LOOP TILL 0,
/
5521 1335 CNTRL5, TAD CBSETS /GET SOFTWARE FLAG1
5522 7640 SZA CLA /SET?
5523 5330 JMP CB007 /YES, BYPASS!
5524 7001 IAC
5525 1200 TAD XCBCNT /GET RETURN POINTER
5526 3336 DCA CBRETR /SAVE IT!
5527 2335 ISE CBSETS /SETUP REENTRY FLAG1
5530 4426 CB007, CBTYYI JMS CBGET /CHECK FOR NEXT CHAR,
5531 4773 JMS CBGET /REPLACE AC, MO, AND LINK,
5532 4423 CBENCR CLA /CHECK FOR CONTROL CHARACTER,
5533 7200 CLA JMP CNTRL5 /EXIT
5534 5321 /
5535 0000 CBSETS, 0
5536 0000 CBRETR, 0
/
/ SWITCH OUTPUT FROM ONE OUTPUT DEVICE TO ANOTHER = THE TWO OUTPUTS ARE THE
/ CONSOLE AND THE PRINTER WITH DEVICE CODE 06,
/
5537 1770 CNTRL5, TAD TTYLPT /GET PRESENT CBSWIT INDICATOR
5540 7040 CHA /COMPLEMENT IT
5541 3770 DCA TTYLPT /STOR NEW CBSWIT
5542 4772 JMS UPAROW /CBPRNT * AND CHAR ON NEW DEVICE
5543 4773 JMS CBGET /REPLACE AC, MO, AND LINK,
5544 5600 JMP I XCBCNT /EXIT
/
/ STOP CBPRNTING CBERR MESSAGES = TO CONTINUE CBPRNTING CBTYPE *0
/
5545 4772 CNTRL0, JMS UPAROW /CBPRNT UPAROW AND CHARACTER!
5546 1767 TAD STOPNT /GET STOP OR START CBPRNT INDICATOR
5547 7040 CHA
5550 3767 DCA STOPNT /STORE OPPOSITE STATE
5551 4773 JMS CBGET /REPLACE AC, MO, AND LINK,
5552 5600 JMP I XCBCNT /EXIT
/
/ CONTROL E
/ CONTINUE RUNNING FROM A INQUIRE OR ERROR
/
5553 4772 CNTRL0, JMS UPAROW /PRINT THE CONTROL CHAR
5554 4773 JMS CBGET /GET THE REGISTERS
5555 5600 JMP I XCBCNT /RETURN TO CALL PLUS ONE
5570 5364
5570 6100
5571 5747
5572 5615
5573 5623
5574 6131
5575 6305
5576 6306
5577 6304
5600 PAGE

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/CONTROL D
/CHANGE THE SWITCHES ON THE FLY:
/
5600 4215 CNTRL0, JMS UPAROW /PRINT THE CNTRL CHAR
5601 1214 TAD CBSETD /GET FLAG1
5602 7640 SZA CLA /SET?
5603 5207 JMP CB0011 /YES, BYPASS SAVE RETURN!
5604 1777 TAD XCBCNT /NO, GET POINTER!
5605 3213 DCA CBRETD /SAVE POINTER!
5606 2214 ISE CBSETD /SET FLAG1
5607 4430 CB0011, CBSWIT /CHECK FOR SWITCHES!
5610 3214 DCA CBSETD /CLEAR FLAG
5611 4223 JMS CBGET /REPLACE AC, MO, AND LINK,
5612 5613 JMP I CBRETD /RETURN!
/
5613 0000 CBRETD, 0
5614 0000 CBSETD, 0
/
5615 0000 UPAROW, 0
5616 1376 TAD I336 /CBPRNT THE "*" AND THE CHAR CBTYPED IN
5617 4434 CBTYPE /CODE FOR *
5620 1775 TAD CBCHAR /CBTYPE THE CHAR
5621 4434 CBTYPE
5622 5615 JMP I UPAROW /EXIT
/
5623 0000 CBGET, 0
5624 7200 CLA /RESTORE MO
5625 1774 TAD M0SAVE
5626 7421 MQL /RESTORE THE LINK
5627 1773 TAD FLSAVE
5630 7004 RAL
5631 7200 CLA /RESTORE THE AC
5632 1772 TAD ACSAVE
5633 5623 JMP I CBGET /GET THE REGISTERS

```

.....

/CBINQU
/CBINQU ROUTINE WILL PRINT A *
/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 * IS REPRINTED
/AND PROGRAM WAITS FOR A CONTROL CHAR AGAIN
//

/ CBINQU JMS XCBING

/EX CBINQU /CB WILL PRINT A * AND WAIT FOR INPUT
DO ANYTHING /RETURN IS CALL PLUS ONE AC 88 CONTINUE

5634 0000 XCBING, 8
5635 7300 CLA CLL
5636 1022 TAD 22 /GET CONTROL WORD1
5637 7650 SNA CLA /ON CONSOLE PACKAGE?
5640 5634 JMP I XCBING /NO, RETURN!
5641 4427 CBPRNT
5642 5651 WATHES /INQUIR WAITING
5643 4432 CBCLRF
5644 4426 CBTTYI
5645 4223 JMS C0GET /GET CHARACTER1
5646 4423 CBONTR /REPLACE AC, MO, AND LINK1
5647 5634 JMP I XCBING /CHECK IF CONTROL CHARACTER1
5650 5235 JMP XCBING+1 /EXIT AND CONTINUE
5651 2701 WATHES, 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, 8
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 0 EXIT?
5666 5771 JMP C8BY4 /YES, EXIT!
5667 2347 ISE C8SWST /NO, SET REENTRY FLAG!
5670 4427 CBPRNT /CBPRNT SR=XXXX
5671 5024 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 ISE 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 TMCNT /STORE IN TEMP COUNT
5705 4433 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 ISE TMCNT /BUMP COUNT
5715 5305 JMP GETCH1 /JMP BACK + GET NEXT CHAR
5716 5344 JMP ENDIT /END 4 CHAR CBYPED IN
5717 0000 TSTCHA, 8
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 /HAS CARRIAGE RETURN
5724 1775 TAD C8CHAR /NOT CR, GET CHAR


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5725 1366      TAD      (=260      /CHECK IF IT IS IN RANGE
5726 7710      SPA CLA      /IF NOT POSITIVE CBERR CHAR SMALLER THEN 260
5727 9340      JMP      ERR1      /CBERR = 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 9340      JMP      ERR1      /CBERR 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 9717      JMP I   TSTCHA      /EXIT
5740 1073      ERR1,  TAD      P77      /EXIT
5741 4434      CBTYPE      /CBPRNT
5742 4432      C8CRLF      /
5743 9297      JMP      XC8PSW*1      /
5744 4432      ENDIT, C8CRLF      /EXIT * ASK AGAIN
5745 3347      DCA      C8SWST      /DO A CR LP
5746 5656      JMP I   XC8PSW      /CLEAR REENTRY FLAG
                    /EXIT ROUTINE

5747 0000      C8SWST, 0
5750 0000      THPCNT, 0
                    /
T35M4: TEXT   'REMOVE / RESET REP?'

5751 2205
5752 1517
5753 2605
5754 4057
5755 4022
5756 0523
5757 0524
5760 4022
5761 0506
5762 7700
5765 7510
5766 7320
5767 0215
5770 6131
5771 5516
5772 6304
5773 6306
5774 6305
5775 5457
5776 0336
5777 5400
6000

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PAGE

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6000 2431      T32M0: 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 2114
6017 4024
6020 1740
6021 2405
6022 2324
6023 0000
6024 2322      MESA: TEXT   "SR= "
6025 7540
6026 0000

/*****
/CBOCTA
/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
/
CBOCTA= JMS XCBOCT
/
/EX, CBOCTA      /AC CONTAINS NUMBER TO BE CHANGE

6027 0000      XCBOCT, 0
6030 7106      CLL RTL
6031 7006      RTL
6032 3250      DCA      C8TMP1      /POSITION THE FIRST CHAR FOR PRINTING
6033 1041      TAD      H4      /SAVE CORRECT POSITIONED WORD HERE
6034 3251      DCA      C8CKP      /STORE COUNTER IN HERE
6035 1250      TAD      C8TMP1      /GET FIRST NUMBER
6036 0042      AND      P7      /MASK
6037 1071      TAD      P60      /ADD THE PRINT CONSTANT
6040 4434      CBTYPE      /TYPE THE NUMBER
6041 1250      TAD      C8TMP1      /
6042 7006      RTL
6043 7004      RAL
6044 3250      DCA      C8TMP1      /PUT NEXT NUMBER IN POSITION
6045 2251      ISE      C8CKP      /STORE IT
6046 5235      JMP      C8004      /DONE YET WITH FOUR NUMBERS
6047 5627      JMP I   C8004      /NOT YET DO MORE
6050 0000      JMP I   XCBOCT      /DONE WITH FOUR
6051 0000      C8TMP1, 0
                    C8CKP, 0

```



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/*****
/CBCRLF
/CBTYPE CR AND LF WITH FILLERS FOLLOWING EACH LF AND CR
/
  CBCRLF= JMS XCBCRL
/EX,  CBCRLF          /CBPRNT A CR AND LF WITH FILL
          /RETURN TO CALL PLUS ONE AC 88

6052 8880  XCBCRL, 8
6053 7380  CLA CLL
6054 1377  TAD (215)          /GET CODE FOR CR
6055 4434  CBTYPE
6056 1266  TAD FILLER
6057 7840  CHA
6060 3267  DCA FILCNT          /STORE FILLER IN HERE
6061 1376  TAD (212)          /GET CODE FOR LF
6062 4434  CB002, CBTYPE
6063 2267  ISE FILCNT          /CHECK ON FILLER CHAR
6064 5262  JMP CB002          /TYPE A NON PRINTING CHAR
6065 5652  JMP I XCBCRL        /EXIT
6066 8884  FILLER, 8884      /FILLER SET FOR 4 CHAR
6067 2880  FILCNT, 8         /COUNTER FOR FILL
/
/RETURN TO MONITOR

6070 3360  CNTRLC, DCA TTYLPT          /CLEAR LINE PRINTER FLAG,
6071 4775' JMS UPARCH          /CBPRNT A AND LETTER IN CHAR
6072 6203  CDF CIF              /GO TO 8 FLD
6073 6807  CAF                  /CLEAR THE WORLD
6074 5774  JMP I (7688)         /GO TO DIAGNOSTIC MONITOR

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/*****
/CBCKPA
/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 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.
/
  CBCKPA= JMS XCCKP
/
/EX,  CBCKPA          /CHECK IF CONSOLE DEVICE KEYBOARD SET
          NOP          /RETURN IF NOT FLAG, NOT CONSOLE!
          NOP          /RETURN IF NON-CONTROL OR CONTINUE FUNCTION.

6075 8880  XCCKP, 8
6076 3773' DCA ACSAVE          /SAVE AC,
6077 6204  GTF              /GET FLAGS,
6100 3772' DCA FLSAVE          /SAVE FLAGS,
6101 7701  ACL              /GET MO,
6102 3771' DCA HQSAVE          /SAVE IT,
6103 6831  KSF              /CHECK THE CONSOLE FLAG
6104 7316  JMP CBBY3         /NO EXIT CALL +1
6105 1822  TAD 22
6106 8103  AND P400          /MASK CONSOLE BIT,
6107 7650  SNA CLA          /CONSOLE PACKAGE?
6110 5316  JMP CBBY3         /NO,
6111 4426  CBTTYI           /GET CHARACTER!
6112 4770' JMS CBGET          /RESTORE AC, MO, AND LINK!
6113 4423  CBCNTR           /YES, CHECK FOR CONTROL!
6114 7880  NOP              /SAFTEY!
6115 2275  ISE XCCKP        /UPDATE POINTER FOR CALL +2 RETURN,
6116 4770' JMS CBGET          /REPLACE AC, LINK, AND MO,
6117 5675  JMP I XCCKP        /EXIT

/*****
/CBECHO
/THIS ROUTINE WILL LOOK FOR A CHAR FROM THE KEYBOARD, STORE IT IN LOCATION CHAR
/CHECK IF IT WAS A CBCNTR CHARACTER = SET INMODE = CBPRNT CHARACTER
/
  CBECHO= JMS XCBECH
/EX,  CBECHO          /LOOK FOR CONSOLE CHAR CBPRNT IT
          /RETURN CALL PLUS ONE AC = CHAR CBTYPED IN
/
XCBECH, 8
6120 8880  CBTTYI           /WAIT FOR CHAR FROM KEYBOARD
6121 4426  ISE INMODE        /SET INMODE IDENTIFYING THIS AS A EXPECTED CHAR
6122 2331  CBCNTR           /GO CHECK IF IT IS A CONTROL CHAR
6123 4423  JMP I XCBECH      /WAS A CONTROL CHAR = CONTINUE RUNNING
6124 5720  CBTYPE           /NOT A CONTROL CHAR CBPRNT IT
6125 4434  DCA INMODE        /CLEAR FLAG THAT CHAR EXPECTED
6126 3331  TAD CBCHAR        /GET CHAR IN AC
6127 1767' JMP I XCBECH      /EXIT
6130 5720  INMODE, 8
6131 8880

```

/*****

/CBTYPE
/THIS ROUTINE WILL CBPRINT ON THE CONSOLE ON THE LPT WITH DEVICE CODE 66;
/
/ CBTYPE= JMS XCBTYP
/EX. CBTYPE /CBPRINT THE CHAR IN THE AC;
/RETURN 0 ALL PLUS ONE AC #8888

6132 0800 XCBTYP, 0
6133 8100 AND P177 /MASK BIT 8
6134 3357 DCA PNTBUF /STORE CHAR
6135 1360 C8005, TAD TTYLPT /CHECK 0NTY 7777=LPT
6136 7640 SZA CLA
6137 5346 JMP XDOLPT /OO OUT PUT ON LPT
6140 1357 TAD PNTBUF
6141 6846 TLS
6142 6841 TSP
6143 5342 JMP ,=1
6144 6842 TCF
6145 5355 JMP C8BY5 /EXIT
6146 1357 XDOLPT, TAD PNTBUF /GET CHAR
6147 6666 PSTB PCLF /CBPRINT IT
6150 4437 C8CKPA /CHECK FOR CONTROL C,
6151 7800 NOP
6152 6661 PSKF
6153 5350 JMP ,=3 /WAIT UNTIL DONE
6154 6662 PCLF /CLEAR FLAG
6155 7200 C8BY5, CLA
6156 5732 JMP I XCBTYP /EXIT
6157 0800 PNTBUF, 0
6160 0800 TTYLPT, 0
6167 5457
6170 5623
6171 6305
6172 6306
6173 6304
6174 7600
6175 5615
6176 0212
6177 0215
6200 PAGE

/*****

/CBERR
/THIS ROUTINE WILL DETERMINE WHAT TO DO WHEN A CBERR IS ENCOUNTERED
/WILL CHECK IF CLASSIC SYSTEM, WILL CHECK C8SWIT REGISTERS;
/ CBERR= JMS XC8ERR
/EX. CBERR /GO TO CBERR CALL IF NOT CONSOL /0/
/RETURN IS CALL PLUS ONE AC #8888

6200 0800 XC8ERR, 0
6201 3304 DCA ACSAVE /SAVE AC
6202 6804 GTF
6203 3306 DCA FLSAVE /SAVE THE FLAGS
6204 7781 ACL
6205 3305 DCA HQSAVE /SAVE THE HQ
6206 7340 CLA CLL CMA /SUBTRACT & 1 FOR TRUE LOCATION
6207 1200 TAD XC8ERR /GET RETURN LOCATION
6210 3303 DCA PCSAVE /SAVE ADD OF CBERR CALL
6211 1822 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 HTCLAS /NOT CLASSIC SYSTEM
6215 1710 TAD I TSTOPN
6216 7640 SZA CLA /CHECK FOR STOP PRINTI
6217 5244 JMP C8D010 /YES, STOP!
6220 4432 CBCLRF /CRLF
6221 4427 CBPRNT
6222 6260 ERMES /PRINT THE ERROR MESSAGE
6223 4427 CBPRNT
6224 6270 MESPC /PRINT THE PC STATEMENT
6225 1303 TAD PCSAVE
6226 4431 C8DCTA /CONVERT 4 DIGIT PC TO ASCII
6227 4427 CBPRNT
6230 6272 MESAC /PRINT THE AC MESS
6231 1304 TAD ACSAVE
6232 4431 C8DCTA
6233 4427 CBPRNT
6234 6275 MESHQ /PRINT HQ
6235 1305 TAD HQSAVE
6236 4431 C8DCTA
6237 4427 CBPRNT
6240 6300 MESFL /PRINT FL
6241 1306 TAD FLSAVE
6242 4431 C8DCTA
6243 4432 CBCLRF
6244 4425 C8CKSW /CHECK SWITCH REGISTER
6245 7710 SPA CLA /SKIP IF BIT 8 CLEAR
6246 5600 JMP I /GO
6247 4436 C8INDU /GO TO THE INQUIRE ROUTINE
6250 5600 JMP I XC8ERR /INQUIRE CONTINUE.

```

0251 4425  NTCLAS, C8CKSW /CHECK PSEUDO SWITCH REGISTER
0252 7718          SPA CLA /CHECK THE CBSWIT REGISTER
0253 5688          JMP I  XC8ERR /SKIP IF HALT
0254 1189          TAD  P7482 /NO HALT CONTINUE
0255 3783          DCA I  PC8AVE /CODE FOR HLT
0256 4787          JMS I  TC8GET /PUT IT IN CALL LOC;
0257 5783          JMP I  PC8AVE /REPLACE AC, NO, AND LINK;
                                /EXIT TO CALL AND HALT

ERRMES,
0260 0411          TEXT  "DILABD FAILED "
0261 1481
0262 0284
0263 4848
0264 0601
0265 1114
0266 0584
0267 4888
0270 2883  MESPC, TEXT  "PCI"
0271 7288
0272 4881  MESAC, TEXT  "ACI"
0273 8372
0274 0888
0275 4815  MESMQ, TEXT  "MQI"
0276 2172
0277 0888
0300 4886  MESFL, TEXT  "FLI"
0301 1472
0302 0888
0303 7777  PC8AVE, 7777
0304 7777  AC8AVE, 7777
0305 7777  MQ8AVE, 7777
0306 7777  FL8AVE, 7777
0307 5623  TC8GET, C8GET
0310 5364  TSTOPN, STOPNT

```

```

/CBPAUS
/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 7482 HALT AND THEN RETURN TO THE HALT,

/      CBPAUS= JMS XC8PAU
/
/
/EX.      CBPAUS /CHECK IF ON ACTIVE CONSOL IF NOT HALT HERE
/          ANYTHING /RETURN HERE IF ON ACTIVE CONSOL

0311 0888  XC8PAU, 0
0312 7388  CLA CLL
0313 1822  TAD  22 /GET SYS, CONFIG.
0314 8183  AND  P488 /CHECK IF ACTIVE CONSOL PACKAGE
0315 7640  SZA CLA /NOT CONSOL SKIP
0316 5324  JMP  C8803 /GO DO CONSOL PART RETURN CALL +1
0317 7848  CMA /PUT HLT IN CALL
0320 1311  TAD  XC8PAU /GET CORRECT RETURN ADDR
0321 3311  DCA  XC8PAU /SET UP RETURN
0322 1189  TAD  P7482 /GET CODE FOR HLT
0323 3711  DCA I  XC8PAU /PUT HALT IN CALL LOCATION
0324 5711  C8803, 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	0100		0100	/ACK
6334	1303		1303	
6335	0420		0420	/DLE
6336	0514		0514	
6337	0421		0421	/DC1
6340	0103		0103	
6341	0422		0422	/DC2
6342	0203		0203	
6343	0423		0423	/DC3
6344	0303		0303	
6345	0424		0424	/DC4
6346	0403		0403	
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	/EH
6360	0015		0015	
6361	2332		2332	/SUB
6362	0225		0225	
6363	0634		0634	/FS
6364	0023		0023	
6365	0735		0735	/GS
6366	0023		0023	
6367	2236		2236	/RS
6370	0023		0023	
6371	2537		2537	/US
6372	0023		0023	
6373	0477		0477	/DEL
6374	1405		1405	
6375	0207		0207	/BEL
6376	1405		1405	
6377	0210		0210	/BS
6400	0023		0023	
6401	1011		1011	/HT
6402	0024		0024	
6403	1412		1412	/LF
6404	0006		0006	
6405	2613		2613	/VT
6406	0024		0024	
6407	0614		0614	/FP
6410	0006		0006	
6411	0315		0315	/CN

6412	0022		0022	
6413	2316		2316	/SO
6414	0017		0017	
6415	2317		2317	/SI
6416	0011		0011	
6417	0533		0533	/ESC
6420	0323		0323	
6421	2340		2340	/SPACE = SP
6422	0020		0020	
6423	0503		0503	/ETX
6424	3024		3024	
6425	0504		0504	/EOT
6426	2417		2417	
6427	0505		0505	/END
6430	2116		2116	
6431	0000		0000	

/END OF TABLE

6432	0040	T33T2,	TEXT	/ 3/	/FORM FEED SETTINGS
6433	0300				
6434	0356		TEXT	/3,5/	
6435	0500				
6436	0040		TEXT	/ 4/	
6437	0400				
6440	0556		TEXT	/5,5/	
6441	0500				
6442	0040		TEXT	/ 6/	
6443	0600				
6444	0040		TEXT	/ 7/	
6445	0700				
6446	0040		TEXT	/ 8/	
6447	7000				
6450	7056		TEXT	/8,5/	
6451	0500				
6452	0061		TEXT	/ 11/	
6453	0100				
6454	0061		TEXT	/ 12/	
6455	0200				
6456	0061		TEXT	/ 14/	
6457	0400				
6460	0040		TEXT	/ /	
6461	0000				
6462	0000		0		/END OF TABLE

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

0463	0600	TP0,	TEST0	
0464	0626		TEST1	
0465	0672		TEST2	
0466	1000		TEST3	
0467	1035		TEST4	
0470	1126		TEST5	
0471	1200		TEST6	
0472	1233		TEST7	
0473	1275		TEST10	
0474	1400		TEST11	
0475	1411		TEST12	
0476	5000		SETUP	/RESERVED FOR FUTURE TESTS
0477	5000		SETUP	
0500	5000		SETUP	
0501	5000		SETUP	
0502	1425		TEST17	
0503	1534		TEST20	
0504	1541		T21T22	/TEST 21
0505	1541		T21T22	/TEST 22
0506	1600		TEST23	
0507	1674		TEST24	
0510	2000		TEST25	
0511	5000		SETUP	
0512	5000		SETUP	
0513	2037		TEST30	
0514	2200		TEST31	
0515	2400		TEST32	
0516	2600		TEST33	
0517	3025		TEST34	
0520	3200		TEST35	
0521	5000		SETUP	
0522	5000		SETUP	/RESERVED FOR FUTURE TESTS
0523	3400		TEST40	
0524	3412		TEST41	
0525	3424		TEST42	
0526	3436		TEST43	
0527	3463		TEST44	
0530	3475		TEST45	
0531	3512		TEST46	
0532	5000		SETUP	
0533	5000		SETUP	
0534	5000		SETUP	
0535	5000		SETUP	
0536	5000		SETUP	
0537	5000		SETUP	
0540	5000		SETUP	
0541	5000		SETUP	
0542	5000		SETUP	/RESERVED FOR FUTURE TESTS
0543	3547		TEST60	
0544	3600		TEST61	
0545	3625		TEST62	

0546	1501	HORN5G, TEXT	/MAINDEC=00-DILAB=DI	LA36 TERMINAL DIAGNOSTIC/
0547	1116			
0550	1405			
0551	2355			
0552	6070			
0553	5504			
0554	1114			
0555	0102			
0556	5504			
0557	7340			
0560	4040			
0561	4040			
0562	1401			
0563	6366			
0564	4024			
0565	1522			
0566	1511			
0567	1601			
0570	1440			
0571	0411			
0572	0107			
0573	1617			
0574	2324			
0575	1103			
0576	0000	IN53, TEXT	/TESTING THIS TERMINAL ONLY/	
0577	2405			
0600	2324			
0601	1116			
0602	0740			
0603	2410			
0604	1123			
0605	4024			
0606	0522			
0607	1511			
0610	1601			
0611	1440			
0612	1716			
0613	1431			
0614	0000	T25H, TEXT	/TYPE ANY PRINTABLE CHARACTER AND LISTEN FOR BELL
0615	2431			
0616	2005			
0617	4001			
0620	1631			
0621	4020			
0622	2211			
0623	1624			
0624	0102			
0625	1405			
0626	4003			
0627	1001			
0630	2201			
0631	0324			
0632	0522			
0633	4001			
0634	1604			

6635 4814
6636 1123
6637 2409
6640 1648
6641 0617
6642 2248
6643 0205
6644 1414
6645 4848
6646 5656
6647 5656
6650 5656
6651 5656
6652 5656
6653 5656
6654 5677
6655 0800
6656 2431 T31M3, TEXT /TYPE ANY PRINTABLE CHAR /
6657 2085
6660 4801
6661 1631
6662 4020
6663 2211
6664 1624
6665 0102
6666 1405
6667 4803
6670 1801
6671 2248
6672 5656
6673 5677
6674 0800
6675 4240 T33M2, TEXT /" FF / ?/
6676 5606
6677 4857
6700 4877
6701 0800
6702 1405 T33M4, TEXT /DEPRESS FORMFEED RESET SWITCH/
6703 2222
6704 0523
6705 2348
6706 0617
6707 2215
6710 0605
6711 0504
6712 4822
6713 0523
6714 0524
6715 4823
6716 2711
6717 2403
6720 1800
6721 0106 T33M5, TEXT /AFTER EACH SWITCH SETTING/
6722 2405
6723 2248

6724 0501
6725 0310
6726 4823
6727 2711
6730 2403
6731 1848
6732 2305
6733 2424
6734 1116
6735 0700
6736 5555 T39M3, TEXT /#####<<<<<<<<<?/
6737 5555
6740 5555
6741 5555
6742 7474
6743 7474
6744 7474
6745 7474
6746 7700
6747 0803 T24TAB, 0803 /SELECTIVE PATTERN STORAGE
6750 0800 ZBLOCK 400 /FOR 256 CHARACTERS

ACL	7701	CNTRLC	6070	FLAG0	4725	M10	8842
ACSAVE	6304	CNTRLD	5608	FLAG1	4716	M12	8843
APTCGN	0921	CNTRLE	5593	FLAG2	4794	M144	8852
AUTPTR	0810	CNTRLL	5537	FLAG3	4734	M1753	8860
BSW	7802	CNTRLO	5545	FLAVA	4710	M177	8853
CBY1	5292	CNTRLQ	5586	FLAVE	6306	M20	8844
CBY3	6116	CNTRLR	5512	GETCH1	5785	M203	8854
CBY4	5516	CNTRLS	5521	GETDAT	5462	M204	8855
CBY5	6195	CNTVAL	5274	GOITA	5440	M22	8849
CBCHAR	5497	COLMES	4345	GOTOA	5460	M240	8856
CBCKP	6051	COLMN	0124	GTF	6004	M26	8846
CBCKPA	4437	CPRINT	4630	HRMSG	6546	M377	8857
CBCKSW	4425	CR	4687	HRPTR	0113	M4	8841
CBONTR	4423	DREAD	3721	HUNDS	0134	M63	8847
CBRLF	4432	CRLF	4653	IMES1	5200	M74	8850
CBDO1	5335	CSAVE	4164	IMES2	5217	M77	8851
CBDO10	6244	DCB21	3713	IMES3	6577	M9A	6024
CBDO11	5607	DCB2FL	0120	INDEXA	5461	MESAC	6272
CBDO2	6862	DCB2P	4615	INMODE	6131	MESFL	6300
CBDO3	6324	DCB2R	3600	INTSRV	0110	MESG	4117
CBDO4	6035	DELAY	0325	IO1	4001	MESGA	4125
CBDO5	6135	DELAY0	0137	IO2	4000	MESGB	4161
CBDO7	5530	DELAY1	0140	IO3	40E1	MESHQ	6275
CBDO8	5923	DELAYA	0327	IO4	4014	MESPA5	5275
CBDOHO	4433	DOCNT	5271	IO5	4017	MESPO	6270
CBERR	4435	DONEA	5431	IO6	4024	MINS	6125
CBGET	5623	DOPACK	5235	IO7	4027	MINT	6115
CBINQU	4436	DOSET	5273	IO8	4032	MKCC	6112
CBCTA	4431	DREFL	4531	IOCODE	4106	MKR8	6116
CBPASS	4424	DREFL0	4541	IOEXIT	4400	MKR5	6114
CBPAUS	4440	DREFL1	4551	IOFLAG	0117	MKSF	6111
CBPRNT	4427	EEH	4200	IOF1	4101	MQA	7501
CBREYD	5613	EEH1	4330	IOF2	4102	MQL	7421
CBRETR	5536	ENDIT	5744	IOF3	4103	MQSAVE	6305
CBSEYD	5614	ENDPAS	5152	IOF4	4104	MSAVE	4163
CBSETS	5535	EOT	0132	IOF5	0407	MYCF	6122
CBSHIT	4430	ERR1	5740	IOF6	0425	MYKF	6123
CBSHST	5747	ERRMES	6260	IOF7	0432	MTLS	6126
CBTHP1	6050	ERROR	0314	IOF8	0445	MYDN	6117
CBTTY1	4426	EXIT	4407	IOF9	0517	MYPC	6124
CBTYPE	4434	EXIT0	4450	IOFSEL	4105	MYRS	6127
CAF	6007	EXIT2	4467	IOFSET	4034	MYSF	6121
CHAR	0125	EXIT3	4500	IOFTAB	4107	NOSET	5263
CHAR1	0126	EXIT3A	4510	K300	0545	NRMALL	0534
CHAR2	0325	EXIT4	4511	KYB00	5102	NYCLAS	6251
CHART1	0177	EXIT5	4521	KYB01	5125	NXTC	3694
CHRCNT	0130	EXITA	4410	KYB02	5122	NXYS	3664
CK0	3746	EXITA0	4427	KYB03	5032	ONES	0136
CKCHAR	3726	EXITA1	5443	LAS	4425	P10	0063
CKCOUT	5254	FILCNT	6067	LF	4664	P100	0074
CNT1	3750	FILLER	6066	LPCNT	0127	P130	0075
CNT2	3751	FLAG	4671				

P134	0076	SETUP	5000	T25A	2006	T33E	2703
P14	0064	SP	3761	T25AA	2010	T33F	2705
P144	0077	SP0	3770	T25B	2021	T33G	2721
P177	0100	SP1	3763	T25H	6615	T33M1	0362
P20	2065	START	0216	T25M1	2025	T33M2	6678
P200	0101	START0	0247	T2A	0075	T33M3	3008
P204	0102	START1	0236	T2B	0700	T33M4	6702
P33	0066	START2	0231	T2BA	0715	T33M5	6721
P4	0061	START3	0260	T2C	0745	T33M6	3005
P40	0067	START4	0253	T2D	0756	T33M7	4353
P400	0103	STAT	0107	T2X	0762	T33T1	2734
P444	0104	STOPNT	5364	T30A	2042	T33T2	6432
P57	0070	STORE	2545	T30B	2062	T33X	2731
P60	0071	STRG	3752	T30L	2130	T34AB	3117
P7	0062	STRS	3753	T30M1	2122	T34AC	3120
P72	0072	T0A	0603	T30M2	2125	T34AD	3132
P7402	0105	T0B	0611	T30S	2072	T34AE	3143
P77	0073	T0C	0616	T30SA	2102	T34B	3034
P7700	0106	T0D	0622	T30SB	2120	T34C	3043
PASCNT	0131	T10A	1302	T31A	2224	T34D	3046
PCHAR	4640	T10B	1305	T31B	2246	T34E	3053
PCHAR0	4652	T10C	1312	T31C	2250	T34F	3067
PCLF	6662	T10E	1323	T31D	2340	T34G	3072
PCSAVE	6303	T10F	1326	T31DES	2347	T34H	3100
PNTBUF	6157	T10G	1334	T31DS	2350	T34I	3111
POCT	3754	T11A	1403	T31EM	2131	T34T1	3144
PRINT	4600	T17A	1430	T31GS	2351	T34T2	3156
PRTB	4264	T17B	1432	T31M1	2153	T35A	3226
PRTL	4321	T17C	1442	T31M2	2157	T35B	3242
PRTHDR	4224	T17D	1444	T31M3	6656	T35C	3252
PSCNT	5272	T1A	0633	T31US	2362	T35D	3266
PSIE	6665	T1B	0643	T32A	2425	T35E	3312
PSKE	6663	T1C	0645	T32B	2447	T35F	3315
PSKF	6661	T1E	0660	T32C	2451	T35G	3334
PSB	6664	T1E	0631	T32CA	2455	T35H	3331
PTSTOR	5363	T1E	0670	T32D	2456	T35M1	3340
QD1	3703	T20A	1505	T32F	2472	T35M2	3353
READ	3643	T21A	1544	T32G	2500	T35M3	6736
REDOA	5420	T21B	1546	T32H	2507	T35M4	5751
RKCC	4005	T21T22	1541	T32I	2517	T35X	3326
RKR8	4013	T23A	1601	T32J	2524	T3D	1003
RKR5	4010	T23B	1603	T32K	2470	T3E	1013
RKSF	4000	T23C	1605	T32M0	6000	T3P	1016
RTCF	4023	T23H	1605	T32M1	2531	T40A	3403
RTLS	4031	T24A	1704	T32M2	0351	T41A	3415
RTPC	4020	T24AA	1702	T32S	2437	T42A	3427
RTSF	4016	T24B	1703	T32X	2526	T43A	3441
SOLAY	0340	T24C	1703	T33A	2632	T43B	3444
SOLAYA	2342	T24E	1741	T33B	2641	T43C	3493
SELECT	0110	T24R	1752	T33BA	2646	T43D	3461
SELMES	5141	T24S	1676	T33C	2662	T43E	3462
SETA	5127	T24TAB	6747	T33D	2667	T44A	3466

T45A	3500	TEST30	2037	TTPB	0163
T46A	3530	TEST31	2200	TTPC	0147
T40B	3542	TEST32	2400	TTSP	0145
T40C	3531	TEST33	2600	TTYLPT	0100
T4A	1092	TEST34	3025	UPAROM	5015
T4EMES	5167	TEST35	3200	WATMES	5051
T49MES	5162	TEST4	1035	WIDTH	0123
T4TAB	1117	TEST40	3400	XQBCKP	0075
T4X	1104	TEST41	3412	XQBENT	5400
T5A	1161	TEST42	3424	XQBCTL	0052
T5B	1194	TEST43	3436	XQBECN	0120
T60A	3555	TEST44	3463	XQBERR	0200
T60B	3570	TEST45	3475	XQBING	5034
T60C	3573	TEST46	3512	XQBROCT	0027
T60D	3565	TEST5	1126	XQBPA5	5226
T61A	3606	TEST6	1200	XQBPAU	0311
T61B	3621	TEST60	3547	XQBPNL	5330
T61C	3624	TEST61	3600	XQBPSW	5056
T61D	3616	TEST62	3625	XCB5W	5306
T62A	3630	TEST7	1233	XCBTTY	5317
T6A	1220	TEXT	0165	XCBTYP	0132
T7A	1251	TEXTA	0164	XDOLPT	0146
T7AA	1236	TFLAG	0173	XDOSH	5520
T7B	1253	THOUS	0133	XTABLA	5463
T7C	1264	TKCC	0142	XTABLB	5464
T7TAB	1271	TKRB	0144	XXCBCK	0037
TABLA	5465	TKRS	0143	XXCBEN	0023
TABLB	5476	TKSF	0141	XXCBEC	0032
TABPT2	0115	TLF	0156	XXCBEC	0033
TABPTR	0114	TLOOP	0121	XXCBER	0035
T0BGET	6307	THESG	0161	XXCBIG	0036
TCHART	0171	THPCNT	5750	XXCBIC	0031
TCR	0195	TP0	0463	XXCBPC	0024
TCRLF	0194	TPCHAR	0166	XXCBPN	0027
TDELAY	0191	TPDCT	0170	XXCBPS	0030
TDRFL	0172	TPRHOR	0162	XXCBPU	0040
TEEM	0176	TPRINT	0157	XXCB5W	0025
TEMP	4637	TREAD	0160	XXCBTT	0026
TENS	0135	TRONE	0122	XXCBTY	0034
TEHR	0152	TSOLY	0175		
TEST0	0600	TSET	0193		
TEST1	0626	TSETUP	0174		
TEST10	1275	TSP	0167		
TEST11	1400	TSTART	0547		
TEST12	1411	TSTCHA	0717		
TEST17	1425	TSTHES	4340		
TEST2	0672	TSTNO	0111		
TEST20	1534	TSTOPN	0310		
TEST23	1600	TSTPTR	0112		
TEST24	1674	TSTRT1	0546		
TEST25	2000	TTCF	0146		
TEST3	1000	TTL5	0150		

ERRORS DETECTED: 0
 LINKS GENERATED: 46
 RUN-TIME: 23 SECONDS
 3K CORE USED