SYSTEM TEST SERVICE GUIDE

```
CCCCCCC   AAAAAAAA  UU      UU TTTTTTTTTT IIIIIIIIII 0000000000 NN     NN
CCCCCCCCC AAAAAAAAAA UU     UU TTTTTTTTTT IIIIIIIIII 0000000000 NNN    NN
CC     CC AA      AA UU     UU    TT         II      00      00 NNNN   NN
CC        AA      AA UU     UU    TT         II      00    00NN NN NN  NN
CC        AAAAAAAAAA UU     UU    TT         II      00  00  00 NN  NN NN NN
CC        AAAAAAAAAA UU     UU    TT         II      00      00 NN   NNNNNN
CC        AA      AA UU     UU    TT         II      00      00 NN    NNNN
CC     CC AA      AA UU     UU    TT         II      00    00NN NN     NN
CCCCCCCCC AA      AA UUUUUUUUUU   TT      IIIIIIIIII 0000000000 NN     NN
CCCCCCC   AA      AA  UUUUUUUU    TT      IIIIIIIIII 0000000000 NN      N
```

A) --- RECORD, FOR FUTURE REFERENCE, ALL AUTO SYSTEM TEST DEVICE ADDRESS AND THEIR RESPECTIVE DEVICE TYPES IN THE TABLE SUPPLIED ON THE FOLLOWING PAGE.

B) --- AT FIRST INSTALLATION THE SYSTEM TEST DISKETTE SHOULD BE CONFIGURED BY THE DCP (DIAGNOSTIC) DISKETTE. (USE PROGRAM ID U38F0 <CONFIGURATION PROGRAM> OPTION - D - TO COPY THE CONFIGURATION TABLE)

C) --- WHEN AN ENTRY IN THE CONFIGURATION TABLE HAS BEEN IN ANY WAY CHANGED OR A NEW ONE ADDED, UTILITY U34F8 MUST BE EXECUTED TO ADD THIS NEW ENTRY TO THE SYSTEM TEST AUTO TEST RUN. THIS IS COMPLETED BY FIRST DELETING THEN ADDING EITHER THE CHANGED OR ADDED ENTRY.

D) --- IF THE SYSTEM TEST IS TO BE EXECUTED AFTER RUNNING FRIEND THE SYSTEM MUST AGAIN BE IPL'ED. IF THIS IS NOT DONE A PROGRAM CHECK WILL OCCUR.

E) --- WHILE SYSTEM TEST IS RUNNING THE PROGRAMMER CONSOLE WILL BE USED AS AN INDICATOR TO THE OPERATOR THAT THE SYSTEM IS IN OPERATION. IF THE LEDS ARE NOT INDICATING ACTION THE SYSTEM IS STOPPED AND WAITING FOR ACTION BY THE OPERATOR OR, IF THE FLOATING POINT TEST IS ACTIVE, MAY BE IN A PROCESSING UNIT LOOP. THE LEDS SHOULD CONTAIN OF0F OR F0F0.

F) --- WHEN A DEVICE ADDRESS IS REQUESTED, AND IF THE DEVICE ADDRESS IS CHAINED TO ANOTHER, THEN THE ONLY ACCEPTABLE ADDRESS IS THE BASE ADDRESS OF THAT GROUP. WHEN THE BASE ADDRESS IS INDICATED ALL ADDRESSES OF THE CHAINED GROUP ARE SELECTED.

G) --- THE FLOATING POINT FEATURE (DEVICE TYPE 3D) IS NOT ASSOCIATED WITH ANY DEVICE ADDRESS, BUT A DEVICE ADDRESS MUST BE ASSIGNED TO THE FLOATING POINT FEATURE (THROUGH THE CONFIGURATION TABLE) SINCE THE SYSTEM TEST SUPERVISOR (ID 3410) HAS SPECIFIED ALL INPUT AND OUTPUT TO BE RELATIVE TO GIVEN DEVICE ADDRESSES. THIS DEVICE ADDRESS MUST BE A DEVICE ADDRESS NOT ALREADY USED (IN ANY WAY) BY THE SYSTEM. WHEN THIS IS DONE (THROUGH THE USE OF THE UTILITY PROGRAM 34F8) THE MODULE USED TO TEST THE FLOATING POINT FEATURE CAN THEN BE REFERENCED BY ITS OWN IDENTIFIABLE DEVICE ADDRESS.

H) --- WHEN A PROGRAMMERS CONSOLE IS THE ONLY CONSOLE, REGISTER THREE (3) LEVEL THREE (3) WILL CONTAIN INFORMATION NEEDED BY THE USER. (THAT IS --- REGISTER THREE LEVEL THREE IS ALWAYS THE INDICATED INFORMATION REGISTER)

I) --- SYSTEM TEST MODULE TEST SPECIFICATIONS:
   1) FLOATING POINT -- MUST BE ASSIGNED A DEVICE ADDRESS (SEE G ABOVE).
   2) TWO CHANNEL SWITCH -- THE TCS CONSOLE MUST BE IN MANUAL MODE.
   3) 4966 -- MUST HAVE EITHER 1, 3, 13 OR 23 DISKETTES INSTALLED.
   4) 4974 -- SHOULD NEVER BE RUN ON A PRINTER USING MULTIPART PAPER.
   5) 4982 -- MUST HAVE A FEATURE CARD PLUGGED INTO ITS BASE ADDRESS.
   6) 5250 -- WILL ONLY TEST TWO WORK STATION ADDRESS (ONE OF EACH TYPE).

AUTO SYSTEM TEST HISTORY TABLE

DATE OF CHG.	LIST HERE DEVICE ADDRESS AND ASSOCIATED DEVICE TYPE ----> ADDR / TYPE										

01.00.00 INTRODUCTION.

THE PURPOSE OF THIS MAP IS TO AID THE C.E. IN DETERMINING A PROBLEM ON THE SYSTEM THAT THE BASIC DIAGNOSTIC DISKETTE FAILED TO SENSE. THE TWO MAIN AREAS THIS MAP IS RELATIVE TO ARE:

A) INTERMITTENT PROBLEMS NOT FOUND BY THE BASIC DEVICE MAPS
B) ONE DEVICE AFFECTING ANOTHER DEVICE THROUGH THE CHANNEL AND NOT FOUND BY THE BASIC DEVICE MAPS

IT IS ASSUMED THAT ON ENTERING THIS MAP EITHER REASON (A) OR (B) IS VALID. IN STARTING SYSTEM TEST USE ALL SUITABLE DEVICE ADDRESSES FOR THE SUSPECT SYSTEM, AND IF AN ERROR IS FOUND ANALYZE THE ERROR AND TAKE SUITABLE ACTION. IF THE ERROR IS CAUSED BY REASON (B) ABOVE THEN THE INDICATED ERROR MAY OR MAY NOT BE THE VALID ERROR AND MORE ERROR LOCATING WILL BE NEEDED.

IT IS FROM THIS POINT THAT THE C.E. MUST FREELANCE FOR IT IS NOT POSSIBLE TO DESCRIBE THROUGH EXACT PROCEDURE(S) EITHER THE EXACT CAUSE OR REASON(S) FOR THE ERROR. ERROR LOCATION IS THEREFORE LEFT TO THE C.E. USING:

1) SYSTEM TEST ISOLATING METHOD
   (SWAPPING PROGRAMS IN AND OUT OF STORAGE)
2) FRIEND (SEE THE NOTE BELOW)
   (ATTEMPT TO DUPLICATE THE ERROR INDICATED BY THE CUSTOMER)
   (REFERENCE MAP 0017)
3) PROBLEM DETERMINING PROCEDURE
   (REFERENCE MAP 0070)
   (DO NOT USE THIS REFERENCE UNLESS SYSTEM TEST OR FRIEND INDICATES AN ERROR)

WHEN THE CE DOES FIND AN ERROR THE SUSPECT UNIT SHOULD BE EXCHANGED AND THE REPAIR VERIFIED. FIRST USING THE BASIC DEVICE TEST THEN USING THE TEST, IN SYSTEM TEST, WHERE THE ERROR WAS FOUND IN THE FIRST PLACE.

```
**********************************************************************
*                                                                  *
*                                                                  *
*  NOTE:     IF SYSTEM TEST IS TO BE EXECUTED AFTER FRIEND, YOU MUST *
*            IPL THE SYSTEM AGAIN, OR A PROGRAM CHECK WILL OCCUR.    *
*                                                                  *
*                                                                  *
**********************************************************************
```

02.00.00 SYSTEM TEST START UP AND EXECUTION

AT FIRST INSTALLATION:
- COPY THE CONFIGURATION TABLE FROM THE BASIC TO THE SYSTEM TEST DISKETTE.
- IPL THE SYSTEM TEST DISKETTE.
- PREPARE THE AUTO SYSTEM TEST BY EXECUTING PROGRAM NAME 34F8 BEFORE CONTINUING. (SEE SECTION 03.00.00)
WHEN THE AUTO TEST TABLE HAS BEEN INITIALIZED:
- START PROGRAM 3410.
WHEN 3410 HAS BEEN STARTED IT WILL AUTOMATICALLY READ IN THE TEST(S) AND START THEM.   THE ONLY
VALID COMMAND(S) THAT WILL BE PERMITTED AFTER THIS ARE:

(A) ANSWER A QUESTION NO
    0 --- THIS COMMAND WILL ANSWER ANY QUESTION WITH A 'NO': <(B),0,(I),(I)>

(B) ANSWER A QUESTION YES
    1 --- THIS COMMAND WILL ANSWER ANY QUESTION WITH A 'YES': <(B),1,(I),(I)>

(C) STOP ERROR COUNTING
    2 --- THIS COMMAND WILL STOP ALL ERROR COUNTING. (NO ERROR LIMIT OF 5)
          <(B),2,(I),(I)>

(D) CONTINUE ERROR COUNTING
    3 --- THIS COMMAND WILL START AGAIN THE ERROR LIMIT OF 5
          <(B),3,(I),(I)>

(E) CONTINUE PROGRAM
    6 --- THIS COMMAND, USED WITH THE PROGRAMMER CONSOLE, WILL LET THE
          OPERATOR COLLECT ALL DATA THEN CONTINUE WHERE INTERRUPTED
          <(B),6,(I),(I)>

(F) TERMINATE (STOP) SYSTEM TEST
    7 --- THIS COMMAND WILL TERMINATE ALL ACTIVE DEVICE ADDRESSES AND SYSTEM TEST.
          <(B),7,(I),(I)>

(G) DISPLAY EXECUTION AND ERROR NUMBER(S)
    8 --- THIS WILL DISPLAY THE EXECUTION AND ERROR NUMBER(S) OF THE SYSTEM
          (COMMAND NOT VALID WITHOUT AN ALTERNATE CONSOLE)

(H) TERMINATE DEVICE ADDRESS
    9 DA -- WHERE DA IS ANY DEVICE NOW ACTIVE
            <(B),9,(I),(B),D,A,X,X,(I),(I)>

(I) START DEVICE ADDRESS
    B DA -- WHERE DA IS ANY DEVICE ADDRESS VALID TO THE SYSTEM
            AND ATTACHED TO A VALID SYSTEM TEST DEVICE TYPE.
            <(B),B,(I),(B),D,A,X,X,(I),(I)>

(J) DUMP STORAGE TO THE ALTERNATE CONSOLE
    D XXXX YYYY - WHERE XXXX = FROM ADDRESS AND YYYY = TO ADDRESS
                 (COMMAND NOT VALID WITHOUT AN ALTERNATE CONSOLE
                  OR WHEN THE ALTERNATE CONSOLE IS UNDER TEST)

COMMAND(S) 7, 9 AND B WILL NOT WORK UNTIL A PRECEDING COMMAND HAS BEEN FULLY EXECUTED. ALSO THE
B (START) COMMAND WILL NOT START A PROGRAM UNTIL THE IPL DEVICE IS TERMINATED BY THE 9
(TERMINATE) COMMAND.
SYSTEM TEST IS STOPPED WHILE ONE OF THE FOLLOWING IS BEING EXECUTED:
(1) A YES OR NO QUESTION IS DISPLAYED TO THE OPERATOR AND WAS NOT ANSWERED
(2) A PROGRAM IS BEING LOADED TO START EXECUTION
(3) ERROR INFORMATION IS BEING DISPLAYED TO THE OPERATOR BY A CONSOLE
(4) A DEVICE ADDRESS IS BEING TERMINATED.

```
***************************************************************
*  NOTE:  WHILE THE SYSTEM TEST IS RUNNING THE PROGRAMMER CONSOLE LEDS WILL  *
*         BE USED AS AN INDICATOR TO THE OPERATOR THAT THE SYSTEM IS IN      *
*         OPERATION. IF THE LEDS ARE NOT INDICATING ACTION AND ONE OF THE    *
*         ABOVE 4 HALT(S) ARE NOT ACTIVE THE SYSTEM COULD BE IN AN ERROR     *
*         CONDITION (I.E. HUNG IN A FLOATING POINT LOOP). TO DETERMINE IF THIS *
*         IS THE CONDITION, WAIT FOR THE LEDS TO SHOW 'TEST IS RUNNING'. THE  *
*         LEDS WILL CONTAIN X'F0F0' OR X'0F0F' AND WILL CHANGE IN 15 SECONDS. *
*                                                                            *
*  NOTE:  WHEN A DEVICE ADDRESS IS REQUESTED, (EITHER THROUGH A 'B' OR '9'   *
*         COMMAND), IF THE DEVICE ADDRESS IS CHAINED TO ANOTHER ADDRESS (SEE *
*         MAP 0010 SECTION 8.00.00) THEN THE ONLY ACCEPTABLE ADDRESS IS THE  *
*         BASE ADDRESS OF THAT GROUP. WHEN THE BASE ADDRESS IS INDICATED,    *
*         ALL ADDRESSES OF THE CHAINED GROUP ARE SELECTED.                   *
*                                                                            *
*  NOTE:  WHEN AN ENTRY IN THE CONFIGURATION TABLE HAS BEEN CHANGED OR A NEW *
*         ONE ADDED, UTILITY U34F8 MUST BE EXECUTED TO ADD THIS NEW ENTRY TO THE*
*         SYSTEM TEST AUTO RUN. THIS IS DONE BY FIRST DELETING THEN ADDING THE *
*         CHANGED/ADDED ENTRY.                                               *
***************************************************************
```

02.01.00 SYSTEM TEST HALT CODES. (---) = PROGRAMMER CONSOLE DATA

```
***************************************************************
*                                                           *
*                   >>>>>>>> NOTE <<<<<<<<                   *
*  1)  R3 -> SHOULD BE INTERPRETED AS ----- REGISTER THREE IS POINTING AT. *
*  2)  A '*' AFTER THE HALT CODE INDICATES THAT WHEN THE MESSAGE IS DECODED *
*      THE PROGRAM IS STARTED WITH A RESUME (6) COMMAND.    *
*                                                           *
***************************************************************
```

3430   WAIT
        THE OPERATOR IS REQUESTED TO WAIT UNTIL THE PRECEDING OPERATION IS COMPLETE

3431   NOT VALID REQUEST
        THE OPERATOR ENTERED ILLEGAL DATA OR NO DATA

3432*   XX NOT FOUND
        DEVICE ADDRESS XX IS NOT UNDER TEST AT PRESENT. (R3 -> HEXADECIMAL DEVICE ADDRESS)

3433*   XX TERM
        DEVICE ADDRESS XX HAS TERMINATED (R3 -> HEXADECIMAL DEVICE ADDRESS)

3434*   PNF
        THE PROGRAM TO TEST THE REQUESTED DEVICE ADDRESS CAN NOT BE FOUND ON THE DISKETTE. (R3 ->
        HEXADECIMAL DEVICE ADDRESS)

3435   NO PROGRAM ACTION
        THE LAST DEVICE OPERATING UNDER SYSTEM TEST HAS TERMINATED,
        BUT SYSTEM TEST IS STILL ACTIVE

3436   PNF
        THE AUTO TEST TABLE CAN NOT BE FOUND ON THE DISKETTE. (PROGRAM ID EQUAL U34F1)

3437   NO STORAGE
        THERE IS NOT ENOUGH STORAGE TO START ANOTHER PROGRAM.
        THIS INDICATES EITHER STORAGE IS FILLED OR THE DEVICE TABLE NEEDED TO CONTAIN ALL THE DEVICE
        CONFIGURATION DATA IS TO SMALL.

3438*   XX ACTIVE - NOT VALID REQUEST
        DEVICE ADDRESS XX IS ALREADY ACTIVE. (R3 -> HEXADECIMAL DEVICE ADDRESS)

3439*   XX ST
        DEVICE ADDRESS XX HAS STARTED. (R3 -> HEXADECIMAL DEVICE ADDRESS)

343A*   XX MUST TERM
        DEVICE ADDRESS XX (IPL DEVICE) MUST TERM BEFORE STARTING ANOTHER DEVICE (R3 -> HEXADECIMAL
        DEVICE ADDRESS)

343B*   XX - NOT VALID DEVICE TYPE
        DEVICE ADDRESS XX IS NOT COMPATIBLE WITH SYSTEM TEST. (R3 -> HEXADECIMAL DEVICE ADDRESS)

343C*   ****ERROR****
        AN ERROR OCCURRED WHILE TESTING. (R3 -> THE ERROR FIELD(S) AS ARE DESCRIBED IN SECTION
        04.00.00 THIS MAP. THE FIELD(S) ARE DISPLAYED IN SEQUENCE FROM THE FLAG FIELD THROUGH THE
        ERROR NUMBER FIELD IN HEXADECIMAL.
        THE DEVICE TYPE AND DEVICE ADDRESS CAN BE FOUND IN EBCDIC AT THE ADDRESS THAT IS OBTAINED WHEN
        ZEROING OUT THE LAST TWO DIGITS OF R3. THAT IS IF R3 IS EQUAL TO 3262 THEN THE DEVICE TYPE
        AND ADDRESS CAN BE OBTAINED STARTING AT LOCATION 3200, HEXADECIMAL ROUTINE AT 320A, AND
        HEXADECIMAL CHECKPOINT AT 320C.)

343D*   XX ERROR LIMIT
        DEVICE ADDRESS XX HAS REACHED ITS ERROR LIMIT. (R3 -> EBCDIC DEVICE ADDRESS)

03.00.00 SYSTEM TEST UTILITY - PROGRAM NAME 34F8

WHEN IT IS NECESSARY TO INITIALIZE OR CHANGE THE AUTO SYSTEM TEST THIS PROGRAM MUST BE STARTED.
IT'S PURPOSE IS TO INITIALIZE A TABLE (34F1) THAT THE SYSTEM TEST PROGRAM WILL USE, TO DETERMINE
THE DEVICE ADDRESS AND TYPE OF CONNECTED DEVICE, TO AUTOMATICALLY TEST. WHEN THIS PROGRAM IS
STARTED IT WILL INFORM THE OPERATOR OF THE MAXIMUM QUANTITY OF TESTED DEVICES THAT CAN BE
INCLUDED IN THE PROCESSING UNIT (IN HEXADECIMAL), AND HOW MANY TEST(S) (IN HEXADECIMAL) ARE NOW
ASSIGNED. THE VALID OPTION(S) WITH THIS UTILITY ARE:

    NOTE:
        IF THE AUTO TEST TABLE HAS NEVER BEEN INITIALIZED, OR IF THE COMMAND 'F' IS ISSUED, THIS
        PROGRAM WILL AUTOMATICALLY ADD (IF POSSIBLE) ALL THE VALID DEVICE ADDRESSES (EXCEPT THE
        ALTERNATE CONSOLE AND THOSE DEVICES ATTACHED TO THE COMMON I/O CHANNEL THROUGH A TWO
        CHANNEL SWITCH) TO THE AUTO TEST TABLE, PLUS ASSIGN A DEVICE ADDRESS TO THE FLOATING POINT
        FEATURE (IF INSTALLED).

ADD (A A1 A2 A3 A4-----)

THIS COMMAND WILL ADD TO THE TABLE (IF VALID) ALL GIVEN DEVICE ADDRESSES
            <(B),1,F,(I),(B),A,X,Y,Y,(I),(I)> YY=DEVICE ADDRESS

LIST (B)

THIS COMMAND WILL LIST ALL ACTIVE DEVICE ADDRESSES
            <(B),1,F,(I)(B),B,X,X,X,(I),(I)>

KEEP (C)

THIS COMMAND WILL KEEP THE UPDATED TABLE ON THE DISKETTE FOR USE
BY THE 3410 PROGRAM (IF NOT GIVEN, ALL UPDATING IS LOST)
            <(B),1,F,(I),(B),C,X,X,X,(I),(I)>

DELETE (D A1 A2 A3 A4-----)

THIS COMMAND WILL DELETE ALL ACTIVE DEVICE ADDRESSES GIVEN
            <(B),1,F,(I),(B),D,X,Y,Y,(I),(I)> YY=DEVICE ADDRESS

END (E)

THIS COMMAND WILL TERMINATE PROGRAM 34F8
            <(B),1,F,(I),(B),E,X,X,X,(I),(I)>

INITIALIZE (F)

THIS COMMAND WILL INITIALIZE THE TABLE AND
SET THE MAXIMUM QUANTITY OF ACTIVE PROGRAMS.
            <(B),1,F,(I),(B),F,X,X,X,(I),(I)>

    NOTE: WHEN AN ENTRY IN THE CONFIGURATION TABLE HAS BEEN IN ANY WAY CHANGED OR A NEW ENTRY
    HAS BEEN ADDED. UTILITY U34F8 MUST BE EXECUTED TO ADD THIS ENTRY TO SYSTEM TEST'S AUTO
    TEST RUN. THIS IS COMPLETED BY FIRST DELETING THEN ADDING THE CHANGED/ADDED ENTRY.

03.01.00 SYSTEM TEST UTILITY HALT CODES. (---) = PROGRAMMER CONSOLE DATA

****
*   *
*   >>>>>>>> NOTE <<<<<<<<   *
*   1)   R3 -> SHOULD BE INTERPRETED AS ----- REGISTER THREE IS POINTING AT.   *
*   2)   A '*' AFTER THE HALT CODE INDICATES THAT WHEN THE MESSAGE IS DECODED   *
*   THE PROGRAM IS STARTED WITH A RESUME (6) COMMAND.   *
*   *
****

3460*   STORAGE INDICATES UP TO 'XXXX' CONCURRENTLY EXECUTING PROGRAMS

        THIS INDICATES THE MAXIMUM NUMBER OF PROGRAMS IN STORAGE. (R3 -> XXXX IN HEXADECIMAL)

3461*   THIS SYSTEM IS NOW CONFIGURED TO EXECUTE XXXX DEVICE ADDRESS(S).

        THIS INDICATES THE NUMBER OF DEVICES NOW ACTIVE IN THE AUTO SYSTEM TEST.
        (R3 -> XXXX IN HEXADECIMAL)

3462*   ENTER OPTIONS
        ENTER FROM THE MENU THE OPTION DESIRED.

3463*   NOT VALID REQUEST
        AN ILLEGAL OPTION WAS SELECTED

3464*   DEVICE ADDRESS ACTIVE
        DEVICE ADDRESS XX --- TYPE YY
        THIS IS A LIST OF ALL DEVICES ACTIVE WHILE AUTO TESTING, WITH XX BEING THE DEVICE ADDRESS AND
        YY BEING THE DEVICE TYPE.
            (R3 = HEXADECIMAL DEVICE ADDRESS, DEVICE TYPE 'XXYY')

3465*   XX NOT ADDED ---- TABLE FILLED
        DEVICE ADDRESS XX NOT ADDED INTO TABLE 34F1 BECAUSE THE TABLE IS FILLED (R3 -> EBCDIC DEVICE
        ADDRESS).

3466*   XX NOT FOUND IN SYSTEM CONFIGURATION TABLE
        DEVICE ADDRESS XX IS NOT PRESENT IN THE CONFIGURATION TABLE. (R3 -> EBCDIC DEVICE ADDRESS).

3467*   XX ILLEGAL DEVICE TYPE FOR SYSTEM TEST
        DEVICE ADDRESS XX IS AN ILLEGAL DEVICE TYPE FOR EXECUTION UNDER SYSTEM TEST (R3 -> EBCDIC
        DEVICE ADDRESS).

3468*   -- EMPTY --
        A LIST OF THE TABLE WAS REQUESTED AND THE TABLE WAS EMPTY

3469*   XX NOT DELETED --- NOT FOUND
        A REQUEST FOR DELETE WAS TERMINATED BECAUSE THE ENTRY COULD NOT BE LOCATED (R3 -> EBCDIC
        DEVICE ADDRESS)

346A*   NOT KEPT ---- ENTER C OR E
        THE OPERATOR ENDED THIS UTILITY AFTER THE TABLE WAS CHANGED, BUT DID NOT KEEP IT. IF THE
        TABLE IS TO BE KEPT, ENTER 'C'. IF THE TABLE IS NOT TO BE KEPT ENTER END (E) AGAIN.

346B*   KEPT
        THE TABLE HAS BEEN KEPT WITHOUT ERROR

346C*   XX NOT ADDED ---- DUPLICATE
        DEVICE ADDRESS XX WAS NOT ADDED BECAUSE IT ALREADY OCCURRED IN THE TABLE (R3 -> EBCDIC DEVICE
        ADDRESS)

346D*   XX ADDED
        DEVICE ADDRESS XX HAS BEEN ADDED TO THE TABLE (R3 -> EBCDIC DEVICE ADDRESS)

346E*   XX DELETED
        DEVICE ADDRESS XX HAS NOW BEEN DELETED FROM THE TABLE (R3 -> EBCDIC DEVICE ADDRESS).

346F*   READ ERROR -- COULD NOT READ EITHER U34F1 OR U38F1
        A READ ERROR WAS DECODED WHEN ATTEMPTING TO READ INTO STORAGE EITHER INDICATED TABLE

3470*   XX ILLEGAL --- CHAINED
        DEVICE ADDRESS XX IS ILLEGAL BECAUSE IT IS NOT THE FIRST ENTRY IN A CHAINED GROUP (R3 ->
        EBCDIC DEVICE ADDRESS)

3471*   XX -- IS THE DEVICE ADDRESS USED FOR FLOATING POINT
        DEVICE ADDRESS XX HAS BEEN ASSIGNED TO THE FLOATING POINT FEATURE FOR SYSTEM TEST REASONS.
        WHILE EXECUTING SYSTEM TEST REFERENCE THE FLOATING POINT FEATURE WITH THIS ADDRESS

04.00.00 SYSTEM TEST ERROR REPORTING METHOD

WHEN THE SYSTEM TEST HAS DECODED AN ERROR IN ONE OF THE DEVICES, SYSTEM TEST IS STOPPED WHILE THE ERROR IS REPORTED TO THE OPERATOR BY THE ALTERNATE CONSOLE. WHEN THE ERROR REPORTING IS COMPLETED, THE TEST WILL CONTINUE WHERE IT LEFT OFF ON ALL OTHER DEVICES BUT THE ONE. THE ERROR WAS FOUND ON, THIS DEVICE WILL CONTINUE FROM THE START OF ITS TEST AND GO FROM THERE. AUTOMATIC TERMINATING OF ANY DEVICE UNDER TEST WILL TAKE PLACE WHEN FIVE (5) ERRORS HAVE BEEN FOUND FOR THAT DEVICE. (UNLESS ERROR COUNTING IS INHIBITED) IF, AFTER TERMINATING, THE DEVICE IS STARTED BY THE OPERATOR ERROR COUNTING WILL START AGAIN FOR A MAXIMUM OF FIVE (5) BEFORE TERMINATING. IF UNDER ANY CONDITION THE OPERATOR WILL WANT TO TERMINATE THE DEVICE (OR ANY DEVICE) THE COMMAND '9 DA' MUST BE GIVEN TO TERMINATE DEVICE.

IF AN ERROR IS FOUND, THE NEEDED DATA WILL BE SENT TO THE OPERATOR. THIS INFORMATION WILL BE IN THE FOLLOWING FORMAT:

```
****ERROR*****
ETTDA  ROUTINE = XXXX CKPT=YYYY
FLAG   IOIN  ISB  INST  DEV1 DEV2 DEV3 DEV4
AAAA   BBCC  DDEE FFFF  GGGG GGGG GGGG GGGG

CNTL   DCB2  DCB3 DCB4  DCB5 CHAD BYCT ADDR
HHHH   HHHH  HHHH HHHH  HHHH HHHH HHHH HHHH

RSAD   CS-2  CS-3 CS-4  CS-5 CS-5 CS-7 CS-8
IIII   IIII  IIII IIII  IIII IIII IIII IIII

EXECUTE/ERROR COUNT = PPPPPPPP  SSSSSS
```

WHERE:

TT = FAILING DEVICE TYPE

```
3D = FLOATING POINT
3E = TWO CHANNEL SWITCH
40 = TTY
41 = SERIES/1 RING
44 = DISPLAY UNIT
45 = DISPLAY UNIT
48 = DISKETTE
4A = DISKETTE
4B = 4952/65 DISKETTE
50 = TIMER
58 = TAPE
64 = PRINTER <MATRIX>
68 = PRINTER <CHAIN>
78 = DISK
7A = DISK
A0 = IDIDO
A3 = OEMIA
A4 = SENSOR I/O
E0 = PROGRAMMABLE COMMUNICATIONS SUBSYSTEM
E4 = 5250 ATTACHMENT
E6 = MULTIFUNCTION ATTACHMENT
E8 = ACCA SL
E9 = ACCA ML
EA = FPMLC
F0 = BSCA SL
F1 = BSCA ML
F8 = SDLC
FC = SYNC COM SL C/HS
```

```
*********   NOTE: THE INDICATED TYPE IS USED TO DETERMINE WHICH
=========>        ERROR MAP TO USE TO ANALYZE THE ERROR. THE
                  MAP IS NAMED TTE0, WHERE TT IS AS INDICATED
```

DA = FAILING DEVICE ADDRESS

XXXX = ROUTINE NUMBER (SEE SPECIFIC DEVICE INFORMATION THIS MAP)

YYYY = CHECKPOINT NUMBER (SEE SPECIFIC DEVICE INFORMATION THIS MAP)

AAAA = FLAG WORD (BIT CODED)

BIT	HEXADECIMAL	MEANING
0	8000	NOT EXPECTED I/O INTERRUPT
1	4000	ERROR CONDITION WAS DECODED
2	2000	I/O GIVEN - INTERRUPT EXPECTED
3	1000	I/O INTERRUPT WAS RECEIVED
4	0800	I/O GIVEN - ERROR INTERRUPT EXPECTED
5	0400	I/O INTERRUPT RECEIVED ON WRONG LEVEL
6	0200	I/O INTERRUPT EXPECTED NOT RECEIVED (LOST)
7	0100	CYCLE STEAL STATUS WAS GIVEN
8	0080	CYCLE STEAL STATUS ERROR INTERRUPT RECEIVED
9	0040	I/O INTERRUPT GOOD - ERROR EXPECTED
10	0020	POSSIBLE ERROR EXPECTED
11	0010	NO INTERRUPT EXPECTED
12	0008	FLOATING POINT DATA TRANSMIT ERROR
13	0004	SOFT EXCEPTION TRAP ERROR
14-15		NOT USED

BB = CONDITION CODE OF THE LAST I/O INSTRUCTION (7 = GOOD)

CC = CONDITION CODE OF THE LAST I/O INTERRUPT

*DD = INTERRUPT STATUS BYTE BIT 0 = ON INDICATES CYCLE
      STEAL INFORMATION IS AVAILABLE

*EE = DEVICE ADDRESS

FFFF = PRINTOUT ADDRESS OF LAST I/O INSTRUCTION

GGGG = FOUR WORDS OF DEVICE DATA (SEE SPECIFIC DEVICE
       INFORMATION THIS MAP)

HHHH = LAST DCB OR IDCB. IF CHAD IS NOT EQUAL TO 0000 THEN
       THE CHAINED DCB WILL BE DISPLAYED AS ADDITIONAL INFORMATION

IIII = CYCLE STEAL INFORMATION IF AVAILABLE (FF INDICATES NO DATA)

PPPPPPPP = HEXADECIMAL NUMBER OF TIMES THAT EXECUTION WAS PASSED TO
           ROUTINE ONE.(THAT IS THE NUMBER OF PROGRAM STARTS)

SSSSSS = NUMBER OF ERRORS FOUND WHILE TESTING

* NOTE: ON A CYCLE STEAL OPERATION ERROR THESE VALUES ARE PLACED
         IN CS-8

IN DECODING THE PRECEDING ERROR DATA THE FIRST AREA TO BE INSPECTED SHOULD BE THE OIO CONDITION CODE (IOIN). IF THIS IS NOT EQUAL TO SEVEN (07XX) THEN ALL INFORMATION CONNECTED WITH THIS MATERIAL MAY OR MAY NOT BE VALID. IF THIS VALUE IS EQUAL TO SEVEN (07XX) THEN THE INFORMATION RECEIVED IN THE FLAG, IOIN AND ISB FIELD(S) SHOULD INDICATE THE TYPE OF ERROR FOUND. (FOR MORE DETAIL SEE THE SPECIFIC DEVICE SECTION IN THIS MAP.)

WHEN DECODING, THE FIELD 'INST' WILL GIVE THE PRINTOUT ADDRESS OF THE LAST I/O INSTRUCTION. ALL OTHER ADDRESSES THAT IS, CHAD (CHAIN ADDRESS), ADDR (BUFFER ADDRESS) AND RSAD (CYCLE STEAL RESIDUAL ADDRESS) ARE EXACT STORAGE ADDRESSES IN THE PROCESSING UNIT.

05.00.00 SYSTEM TEST SAMPLE SESSION

```
     THE  SYSTEM TEST DISKETTE IS IPL'ED AS PER SECTION 02.00.00 MAP 0015 WITH A CORRECT CONFIGURATION
TABLE PRESENT ON THE DISK.  THIS TABLE WAS COPIED TO THIS DISKETTE BY THE CONFIGURATION PROGRAM'S
OPTION 'OD'.  A SAMPLE SYSTEM TEST SESSION (ASSUMING THERE IS NO  CHANGE  TO  THE  CONFIGURATION
TABLE) IS AS FOLLOWS:
### ---> NOT PART OF THE SESSION (COMMENT)
$$$ ---> COMMENT IGNORED IF PROGRAMMER CONSOLE ONLY
<-> ---> PROGRAMMER CONSOLE INPUT
əəə ---> THE NEXT LINE IS OPERATOR INPUT

     NOTE:  ALL  OUTPUT  MESSAGES IN THE FOLLOWING EXAMPLE (NOT EXPECTING A ANSWER) MUST BE STARTED
     WITH <(B),6,(I),(I)> IF AN ALTERNATE CONSOLE IS NOT ATTACHED OR IS UNDER TEST.
RDY
ENTER
əəə                         ### INITIALIZE SYSTEM TEST AUTO TABLE
B 34F8                          <(B),B,(I),(B),3,4,F,8,(I),(I)>
U34F8 LOADED
ST
U34F1 LOADED
U38F1 LOADED
STORAGE INDICATES UP TO '0015' CONCURRENTLY EXECUTING PROGRAMS
THIS SYSTEM IS NOW CONFIGURED TO EXECUTE 0000 DEVICE ADDRESS(S)
ENTER OPTIONS
ENTER
əəə                         ### MAKE FOUR DEVICES ACTIVE
FA 10 02 40                     <(B),1,F,(I),(B),A,X,1,0,(I),(I)>
                                <(B),1,F,(I),(B),A,X,0,2,(I),(I)>
                                <(B),1,F,(I),(B),A,X,4,0,(I),(I)>
10 ADDED
02 ADDED
40 ADDED                    ### NOTE THAT DEVICE ADDRESS 40 WAS A
41 ADDED                    ### CHAINED ENTRY WITH 41
ENTER OPTIONS
ENTER
əəə                         ### THE NEW TABLE MUST BE KEPT
FC                              <(B),1,F,(I),(B),C,X,X,X,(I),(I)>
KEPT
ENTER OPTIONS
ENTER                       ### OPTION COMPLETE - END
əəə                             <(B),1,F,(I),(B),E,X,X,X,(I),(I)>
FE
PT
ENTER
ENTER                       ### WE ARE NOW READY TO START SYSTEM TEST
B 3410                          <(B),B,(I),(B),3,4,1,0,(I),(I)>
D3410 LOADED
ST
U34F1 LOADED
E4010 LOADED AT 2800        ### DEVICE ADDRESS 10 TYPE 40 LOADED
E4802 LOADED AT 3200        ### DEVICE ADDRESS 02 TYPE 48 LOADED
E5040 LOADED AT 3C00        ### DEVICE ADDRESS 40 TYPE 50 LOADED
IS THERE A TTY ATTACHED TO DA = 10
ENTER
əəə                         ### ASSUME NO
0                               <(B),0,(I),(I)>
IS THERE A WRAP CABLE CONNECTED TO DA = 10
əəə                         ### ASSUME YES
1                               <(B),1,(I),(I)>
```

```
*****************************************************************************
*                                                                         *
*                                                                         *
*      NOTE:   AT THIS POINT IN TIME SYSTEM TEST WILL START TO EXECUTE     *
*              THE DEVICE ADDRESS INDICATED IN THE TABLE INITIALIZED BY    *
*              PROGRAM ID 34F8. TESTING WILL CONTINUE UNTIL EITHER         *
*              STOPPED BY THE OPERATOR, OR AN ERROR IS FOUND.              *
*              THE LEDS DISPLAY EITHER HEXADECIMAL FOFO OR OFOF DURING     *
*              THE TIME THE TEST IS OPERATING.                             *
*              (IF THIS IS NOT OCCURRING SEE SECTION 02.00.00 THIS MAP)    *
*                                                                         *
*                                                                         *
*****************************************************************************
```

```
                                 ### ASSUME AN ERROR OCCURRED
****ERROR*****
E4802 ROUTINE = 0003 CHECKPOINT=0001
FLAG IOIN ISB  INST DEV1 DEV2 DEV3 DEV4
4100 0702 8002 0330 104B 0003 0000 0000
CNTL DCB2 DCB3 DCB4 DCB5 CHAD BYCT ADDR
8005 0849 0000 0000 0000 3634 0000 0000
RSAD CS-2 CS-3 CS-4 CS-5 CS-6 CS-7 CS-8
3643 0800 FFFF FFFF FFFF FFFF FFFF FFFF
CNTL DCB2 DCB3 DCB4 DCB5 CHAD BYCT ADDR
200A 0000 0000 0000 0000 0000 0004 321A
EXECUTE/ERROR COUNT = 000000005  000001
                                 $$$ OPERATOR CAUSES INTERRUPT
ENTER
əəə                         ### ADDRESS 40 IS TO BE TERMINATED
9 40                            <(B),9,(I),(B),4,0,X,X,(I),(I)>
40 TERM
41 TERM                     ### NOTE CHAINED ENTRY
                                 $$$ OPERATOR CAUSES INTERRUPT
ENTER
əəə                         ### OPERATOR WANTED TO START 40
B 40                            <(B),B,(I),(B),4,0,X,X,(I),(I)>
40 ST
41 ST                       ### AGAIN NOTE CHAINED ENTRY
                                 $$$ OPERATOR CAUSES INTERRUPT
ENTER
əəə                         ### OPERATOR WANTED TO STOP SYSTEM TEST
7                               <(B),7,(I),(I)>
10 TERM
02 TERM
40 TERM
41 TERM
PT
ENTER
```

TO DESCRIBE THE SESSION WE WILL ANALYZE THE ERROR INDICATED ABOVE:
(SEE SECTION 04.00.00)

FROM THE FIRST ERROR ENTRY WE CAN DETERMINE THAT THE DEVICE TYPE IN ERROR IS '48' AND THAT IT
IS AT DEVICE ADDRESS '02', ALSO THE FAILURE OCCURRED IN THIS PROGRAM AT ROUTINE 3 - CHECKPOINT
1. FROM THIS WE ARE SENT TO MAP 48E0 WHERE WE FOLLOW THE STEPS IN THE FOLLOWING SEQUENCE:

     001->002->003->069->070->072->073 --->
     THIS INDICATES A CHAINED SEEK AND READ SECTOR ID ERROR

THE ABOVE ERROR REPORTING METHOD IS USED THROUGH EACH SYSTEM TEST MODULE. WHEN AN ERROR OCCURS
SEE SECTION 04.00.00 REMEMBERING THAT ONLY FIVE (5) ERRORS WILL BE RECORDED BEFORE THE DEVICE IN
ERROR IS AUTOMATICALLY TERMINATED BY SYSTEM TEST. (UNLESS ECP COMMAND 2 WAS GIVEN. REFERENCE
MAP 0015 SECTION 03.00.00)

05.01.00 SYSTEM TEST MODULE HALT CODES

```
************************************************************************
*                                                                    *
*   NOTE:    R3 -> INTERPRET AS -- REGISTER THREE IS POINTING AT.     *
*                                                                    *
*                                                                    *
************************************************************************
```

========> TWO CHANNEL SWITCH HALT CODES

3EE1 CAN A RESERVE BE ISSUED FROM DA. = XX
      IS DEVICE ADDRESS XX ON ONE PROCESSING UNIT PERMITTED TO ISSUE RESERVES TO THE OTHER
      PROCESSING UNIT THROUGH THE TWO CHANNEL SWITCH.
      (R3 -> EBCDIC DEVICE ADDRESS).

========> TTY HALT CODES

40E1 IS THERE A TTY ATTACHED TO DA = XX
      DEVICE ADDRESS XX IS ATTACHED TO A TTY (Y OR N).
      (R3 -> EBCDIC DEVICE ADDRESS).

40E2 IS THERE A WRAP CABLE CONNECTED TO DA = XX
      DEVICE ADDRESS XX IS WRAPPED WITH A CABLE (Y OR N).
      (R3 -> EBCDIC DEVICE ADDRESS).

========> 4966 HALT CODES

4AE1 23 DISKETTES LOADED ON DA = XX
      IS DEVICE ADDRESS XX LOADED WITH DISKETTES (I.E.   3 IN THE OPENINGS PLUS TWO LOADED
      CONTAINERS) -- (Y OR N).
      (R3 -> EBCDIC DEVICE ADDRESS).

4AE2 13 DISKETTES LOADED ON DA = XX
      IS DEVICE ADDRESS XX LOADED WITH 13 DISKETTES (I.E. 3 IN THE OPENINGS PLUS ONE LOADED
      CONTAINER) -- (Y OR N)
      (R3 -> EBCDIC DEVICE ADDRESS).

4AE3   3 DISKETTES LOADED ON DA = XX
      IS DEVICE ADDRESS XX LOADED WITH 3 DISKETTES (I.E. 3 IN THE OPENINGS) -- (Y OR N).
      (R3 -> EBCDIC DEVICE ADDRESS).

4AE4 SHOULD THERE BE HARDWARE RETRIES - DA = XX
      DEVICE ADDRESS XX HAS AUTOMATIC HARDWARE RETRY -- SHOULD IT BE USED (Y OR N).
      (R3 -> EBCDIC DEVICE ADDRESS).

4AE5 SHOULD HARDWARE RETRIES BE AN ERROR -- DA = XX
      IF HARDWARE RETRIES ARE SELECTED AS AN OPTION FOR DEVICE ADDRESS XX SHOULD RETRIES, IF THEY
      OCCUR, BE AN ERROR.
      (R3 -> EBCDIC DEVICE ADDRESS).

========> 4952/65 HALT CODES

4BE4 SHOULD THERE BE HARDWARE RETRIES - DA = XX
      DEVICE ADDRESS XX HAS AUTOMATIC HARDWARE RETRY -- SHOULD IT BE USED (Y OR N).
      (R3 -> EBCDIC DEVICE ADDRESS).

4BE5 SHOULD HARDWARE RETRIES BE AN ERROR -- DA = XX
      IF HARDWARE RETRIES ARE SELECTED AS AN OPTION FOR DEVICE ADDRESS XX SHOULD RETRIES, IF THEY
      OCCUR, BE AN ERROR.
      (R3 -> EBCDIC DEVICE ADDRESS).

========> 4974 PRINTER <MATRIX> HALT CODES

64E1 FORMS WIDTH FOR THE 4974 PRINTER D.A. = XX
      (ENTER PRINT POSITIONS I.E. F0132 - AND SO ON).
      THE PRINT POSITIONS SHOULD BE A DECIMAL NUMBER.
      THE QUESTION SHOULD BE ANSWERED AS DESCRIBED REMEMBERING THAT MULTIPART PAPER SHOULD NEVER
      BE USED DURING TEST.
      (R3 -> EBCDIC DEVICE ADDRESS)

========> 4962 DISK HALT CODES

78E1 CAN THE 4962 C.E. TRACK BE WRITTEN ON DA = XX
      CAN A 256 BYTE SECTOR BE WRITTEN AT DEVICE ADDRESS XX CYLINDER (DECIMAL) 302.
      (R3 -> EBCDIC DEVICE ADDRESS)

========> 4963 DISK HALT CODES

7AE1 CAN THE 4963 C.E. TRACK BE WRITTEN ON DA = XX
      CAN A 256 BYTE SECTOR BE WRITTEN AT DEVICE ADDRESS XX ON THE C.E. CYLINDER.
      (R3 -> EBCDIC DEVICE ADDRESS)

7AE2 DO YOU WANT 4963 HARDWARE RETRIES ON DA = XX
      DEVICE ADDRESS XX HAS AUTOMATIC HARDWARE RETRY -- SHOULD IT BE USED (Y OR N).
      (R3 -> EBCDIC DEVICE ADDRESS).

7AE3 IS A 4963 HARDWARE RETRY AN ERROR ON DA = XX
      IF HARDWARE RETRIES ARE SELECTED AS AN OPTION FOR DEVICE ADDRESS XX SHOULD RETRIES, IF THEY
      OCCUR, BE AN ERROR.
      (R3 -> EBCDIC DEVICE ADDRESS).

========> IDIDO HALT CODE

A0E1 IS THERE A WRAP CABLE CONNECTED TO DA = XX
      DOES THE DEVICE ADDRESS XX HAVE A WRAP CABLE CONNECTED (Y OR N)
      (R3 -> EBCDIC DEVICE ADDRESS)

========> 5250 HALT CODE

E4E1 ENTER STATION ADDRESS FOR DISPLAY (FF = DO NOT TEST) DA = XX
      FOR DEVICE ADDRESS XX ENTER THE STATION ADDRESS OF THE DISPLAY STATION TO BE TESTED. IF NO
      STATION IS DESIRED ENTER FF AS THE STATION ADDRESS.
      (R3 -> EBCDIC DEVICE ADDRESS)

E4E2 ENTER STATION ADDRESS FOR PRINTER (FF = DO NOT TEST) DA = XX
      FOR DEVICE ADDRESS XX ENTER THE STATION ADDRESS OF THE DISPLAY STATION TO BE TESTED. IF NO
      STATION IS DESIRED ENTER FF AS THE STATION ADDRESS.
      (R3 -> EBCDIC DEVICE ADDRESS)

E4E3 FORMS WIDTH FOR THE 4974 PRINTER D.A. = XX
      (ENTER PRINT POSITIONS I.E. F0132 - AND SO ON)
      THE PRINT POSITIONS SHOULD BE A DECIMAL NUMBER.
      THE QUESTION SHOULD BE ANSWERED AS DESCRIBED REMEMBERING THAT MULTIPART PAPER SHOULD NEVER BE
      USED DURING TEST.
      (R3 -> EBCDIC DEVICE ADDRESS)

========> SDLC HALT CODE

F8E1 IS THERE A WRAP CONNECTED TO DA = XX
      DOES THE DEVICE ADDRESS XX HAVE A WRAP CABLE CONNECTED (Y OR N)
      (R3 -> EBCDIC DEVICE ADDRESS)

========> SYNC COM SL C/HS HALT CODE

FCE1 IS THERE A WRAP CABLE CONNECTED TO DA = XX
      DOES THE DEVICE ADDRESS XX HAVE A WRAP CABLE CONNECTED (Y OR N)
      (R3 -> EBCDIC DEVICE ADDRESS)

06.00.00 FLOATING POINT ROUTINE DESCRIPTION ---- TYPE 3D

BEFORE EXECUTION OF THIS SYSTEM TEST PROGRAM, THE SYSTEM TEST DISKETTE SHOULD BE CONFIGURED TO HAVE THE FLOATING POINT ENTRY HAVE A DEVICE ADDRESS DIFFERENT FROM ANY OTHER ON THE SYSTEM. WHEN THIS IS DONE AND THE TEST HAS BEEN STARTED THREE ROUTINES ARE EXECUTED TO TEST THE MOVING OF DATA FROM AND TO THE FLOATING POINT CARD. THESE ROUTINES ARE DESCRIBED AS FOLLOWS:

ROUTINE 1:
THIS ROUTINE FIRST TEST THE FLOATING POINT SET LEVEL BLOCK COMMANDS. THIS IS FIRST DONE ON LEVEL 0 THEN 1, 2, AND 3. ON EACH LEVEL GIVEN DATA PATTERNS ARE WRITTEN AND READ BACK TO VERIFY THAT THE DATA CAN BE MOVED CORRECTLY. IF NO ERRORS ARE FOUND ROUTINE 2 IS STARTED.

ROUTINE 2:
THIS ROUTINE IS THE SAME AS ROUTINE ONE BUT TESTS THE WORD COMMANDS SUCH AS FMV FOR MOVEMENT OF DATA TO THE CARD, WITH THE DATA BEING READ AS A BLOCK COMING FROM THE FLOATING POINT CARD. IF NO ERRORS ARE FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
THIS ROUTINE IS THE SAME AS ROUTINE ONE BUT TESTS THE DOUBLE WORD COMMANDS SUCH AS FMVD FOR MOVEMENT OF DATA TO THE CARD, WITH THE DATA BEING READ AS A BLOCK COMING FROM THE FLOATING POINT CARD. IF NO ERRORS ARE FOUND, ROUTINE 1 IS STARTED.

TERMINATING SEQUENCE:
(1) RESET ALL LOW STORAGE POINTERS
(2) ENSURE THE PROGRAM IS ON LEVEL THREE
(3) PROGRAM TERMINATE

```
*******************************************************************************
*                                                                           *
*  NOTE:   THE FLOATING POINT FEATURE (DEVICE TYPE 3D) IS NOT ASSOCIATED WITH *
*          ANY DEVICE ADDRESS, BUT A DEVICE ADDRESS MUST BE ASSIGNED TO THE  *
*          FLOATING POINT FEATURE (THROUGH THE CONFIGURATION TABLE) BECAUSE THE *
*          SYSTEM TEST SUPERVISOR (ID 3410) HAS SPECIFIED ALL INPUT AND OUTPUT *
*          TO BE RELATIVE TO GIVEN DEVICE ADDRESSES. THIS DEVICE ADDRESS MUST *
*          BE A DEVICE ADDRESS NOT ALREADY USED (IN ANY WAY) BY THE SYSTEM.  *
*          WHEN THIS IS DONE (THROUGH THE USE OF THE UTILITY PROGRAM (PROGRAM ID *
*          34F8) THE MODULE USED TO TEST THE FLOATING POINT FEATURE CAN THEN *
*          BE REFERENCED BY ITS OWN IDENTIFIABLE DEVICE ADDRESS.             *
*                                                                           *
*******************************************************************************
```

07.00.00 TWO CHANNEL SWITCH ROUTINE DESCRIPTION ---- TYPE 3E

BEFORE EXECUTION OF THIS SYSTEM TEST PROGRAM, THE TWO CHANNEL SWITCH CONSOLE SHOULD BE PLACED INTO MANUAL MODE FOR MORE COMPLETE TESTING OF THE DEVICE. ON THE SYSTEM WHICH DOES NOT HAVE CONTROL OF THE COMMON I/O, A QUESTION WILL BE PRESENTED TO THE OPERATOR ABOUT RESERVES BEING PRESENTED TO THE OTHER PROCESSING UNIT (THE ONE WHICH HAS THE COMMON I/O). IF THE ANSWER IS YES, ROUTINE FIVE (5) WILL PRESENT THESE RESERVES. A DESCRIPTION OF THESE ROUTINES FOLLOWS:

ROUTINE 1:
THIS ROUTINE FIRST DOES A READ DEVICE ID FOLLOWED BY A DEVICE RESET THEN ISSUES A DEVICE READ STATUS. THIS STATUS IS THEN STORED INTO THE AREA 'DEVI'. A COMPARE IS THEN MADE TO THE DATA STORED IN THE CONFIGURATION TABLE. IF NO ERRORS ARE FOUND ROUTINE 2 IS STARTED.

ROUTINE 2:
THIS ROUTINE WILL ENSURE THAT ALL ILLEGAL DCB'S WILL GIVE A COMMAND REJECT. AFTER THIS A RESET IS GIVEN TO THE ATTACHMENT CARD. IF NO ERRORS ARE FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
THIS ROUTINE FIRST TESTS TO DETERMINE IF THIS SIDE OF THE TWO CHANNEL SWITCH HAS THE COMMON I/O (IF NO ROUTINE 4 IS STARTED). AFTER THIS THE ACK LED IS TURNED ON THEN A TIMEOUT UNDER TEST IS ISSUED ON (3) INTERRUPT LEVELS (0,1,2) TO ENSURE THE ATTACHMENT CARD WILL INTERRUPT ON THESE LEVELS. IF NO ERRORS ARE FOUND, ROUTINE 4 IS STARTED.

ROUTINE 4:
THIS ROUTINE FIRST TESTS TO DETERMINE IF THIS SIDE OF THE TWO CHANNEL SWITCH HAS THE COMMON I/O (IF NO ROUTINE 5 IS STARTED), THEN TEST TO DETERMINE IF THE CONSOLE SWITCH IS IN MANUAL MODE (IF NOT ROUTINE 5 IS STARTED). AFTER THE CHECK IS MADE THE TIMER IS STARTED, THEN RESET TO ENSURE THAT THE TIMER CAN BE RESET WHILE RUNNING. IF NO ERRORS ARE FOUND, ROUTINE 5 IS STARTED.

ROUTINE 5:
THIS ROUTINE FIRST TESTS TO DETERMINE IF THIS SIDE OF THE TWO CHANNEL SWITCH HAS THE COMMON I/O (IF NO ROUTINE 1 IS STARTED), THEN TEST TO DETERMINE IF RESERVES CAN BE ISSUED FROM THIS SIDE (IF NOT ROUTINE 1 IS STARTED). AFTER THE CHECK IS MADE DECIMAL 32 RESERVES WILL BE ISSUED TO THE OTHER PROCESSING UNIT. IF NO ERRORS ARE FOUND, ROUTINE 5 IS STARTED.

TERMINATING SEQUENCE:
(1) PREPARE WITH 'I' BIT OFF
(2) RESET
(3) PROGRAM TERMINATE

07.01.00   TWO CHANNEL SWITCH HALT CODES

3EE1 CAN A RESERVE BE ISSUED FROM DA. = XX
IS DEVICE ADDRESS XX ON ONE PROCESSING UNIT PERMITTED TO ISSUE RESERVES TO THE OTHER PROCESSING UNIT THROUGH THE TWO CHANNEL SWITCH.
(R3 -> EBCDIC DEVICE ADDRESS).

08.00.00 TTY ROUTINE DESCRIPTION ---- TYPE 40

BEFORE EXECUTION OF THIS SYSTEM TEST PROGRAM, THE QUESTION(S) - IS THE, ATTACHMENT CARD CONNECTED TO A TTY OR WRAPPED TO A CONNECTOR WILL BE DISPLAYED TO THE OPERATOR. IF THE ANSWER IS YES THERE IS A TTY THEN ROUTINE 5 WILL BE EXECUTED AND ROUTINE 4 WILL NOT. IF THE ANSWER IS YES THE CARD HAS A WRAP CONNECTOR THEN ROUTINE 4 WILL BE EXECUTED AND ROUTINE 5 WILL NOT. ROUTINE ONE THROUGH THREE WILL RUN AUTOMATICALLY WITH THE ATTACHMENT IN DIAGNOSTIC WRAP MODE. ROUTINE 6 WILL ONLY BE EXECUTED AFTER THE X - ON KEY IS PRESSED ON THE TTY KEYBOARD AND WILL BE TERMINATED BY PRESSING THE SAME KEY.

ROUTINE 1:
    THIS ROUTINE FIRST GIVES A DIAGNOSTIC RESET AND READ ID TO THE DEVICE, THEN WILL PREPARE THE DEVICE FOR LEVEL 0 THROUGH 2. ON EACH LEVEL A DUMMY WRITE AND A READ TO BLANK THE BUFFER IS GIVEN TO ENSURE THAT ALL LEVELS WILL INTERRUPT CORRECTLY. IF NO ERRORS ARE FOUND ROUTINE 2 IS STARTED.

ROUTINE 2:
    THIS ROUTINE FIRST WILL PREPARE (WITH THE 'I' BIT OFF) THE DEVICE THEN GIVE A WRITE TO ENSURE THAT THE DEVICE DOES NOT INTERRUPT. AFTER WHICH THE DEVICE IS PREPARED AND THE DELAYED INTERRUPT IS CHECKED FOR VALIDITY. WHEN THIS IS COMPLETED HEXADECIMAL '0000' AND '00FF' ARE WRITTEN AND READ TO ENSURE DATA INTEGRITY. IF NO ERRORS ARE FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
    THIS ROUTINE WILL ENSURE THAT ALL ILLEGAL DCB'S WILL GIVE A COMMAND REJECT. AFTER THIS A RESET IS GIVEN TO THE ATTACHMENT CARD. IF NO ERRORS ARE FOUND, ROUTINE 4 IS STARTED.

ROUTINE 4:
    THIS ROUTINE WILL VERIFY THAT THE ATTACHMENT CARD HAS A WRAP CABLE CONNECTED. IF NOT ROUTINE 5 IS STARTED. IF ONE IS ATTACHED HEXADECIMAL '00' THROUGH 'FF' ARE WRITTEN TO AND READ FROM THE CARD FOR A VALIDITY CHECK. IF NO ERRORS ARE FOUND, ROUTINE 5 IS STARTED.

ROUTINE 5:
    THIS ROUTINE WILL CHECK TO DETERMINE IF A TTY IS ATTACHED. IF NOT ROUTINE 1 IS STARTED. IF IT IS ATTACHED THREE LINES OF DATA ARE WRITTEN TO THE DEVICE (THAT IS THE DEVICE IS USED AS A PRINTER.) IF NO ERRORS ARE FOUND, ROUTINE 1 IS STARTED.

ROUTINE 6:
    THIS ROUTINE, STARTED BY PRESSING THE X - ON KEY WHILE ROUTINE FIVE IS PRINTING, WILL ECHO ANY CHARACTER RECEIVED FROM THE TTY UNTIL THE OPERATOR AGAIN PRESSED THE X - ON KEY. THIS WILL THEN CAUSE ROUTINE 1 TO START AGAIN.

    TERMINATING SEQUENCE:
    (1) PREPARE WITH THE 'I' BIT OFF
    (2) RESET
    (3) PROGRAM TERMINATE

08.01.00 TTY HALT CODES

40E1 IS THERE A TTY ATTACHED TO DA = XX
         DEVICE ADDRESS XX IS ATTACHED TO A TTY (Y OR N).
         (R3 -> EBCDIC DEVICE ADDRESS).

40E2 IS THERE A WRAP CABLE CONNECTED TO DA = XX
         DEVICE ADDRESS XX IS WRAPPED WITH A CABLE (Y OR N).
         (R3 -> EBCDIC DEVICE ADDRESS).

09.00.00 SERIES/1 RING ROUTINE DESCRIPTION ---- TYPE 41

WHEN EXECUTING THE SERIES/1 RING SYSTEM TEST PROGRAM, THREE (3) ROUTINES ARE STARTED AUTOMATICALLY. THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
    THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL ZERO (0) THEN A RESET AND READ ID COMMAND IS ISSUED TO THE DEVICE. IF NO ERRORS ARE FOUND, ROUTINE TWO (2) IS STARTED. THE NEXT PASS THE LEVEL IS CHANGED AND TESTING CONTINUES. ALL LEVELS ARE TESTED EXCEPT LEVEL THREE (3).

ROUTINE 2:
    THIS ROUTINE WILL ENSURE THE SERIES/1 RING ATTACHMENT WILL RESPOND WITH 'COMMAND REJECT' TO EACH INVALID IO INSTRUCTION. IF NO ERRORS ARE FOUND, ROUTINE THREE (3) IS STARTED.

ROUTINE 3:
    THIS ROUTINE WILL EXERCISE THE SERIES/1 RING INTERFACE FRONT END BUFFER. THE SERIES/1 RING ATTACHMENT IS IN BY-PASS MODE AND A BROADCAST MESSAGE IS CIRCULATED FOR A PERIOD OF TIME. THEN THE ATTACHMENT IS PREPARED WITH THE 'I' BIT ON TO ALLOW THE FRAME TO BE RECEIVED. THE DATA RECEIVED IS COMPARED WITH THE DATA WRITTEN. IF NO ERRORS ARE FOUND, ROUTINE ONE (1) IS STARTED. EACH PASS THE TEST PATTERN IS CHANGED. THE FIRST PASS WILL BE A TEST PATTERN OF ALL 'FF'. THE NEXT PASS THE PATTERN WILL BE ALL '55'. THEN A PATTERN OF ALL 'AA'.

    TERMINATING SEQUENCE:
    (1) PREPARE WITH 'I' BIT OFF
    (2) RESET
    (3) PROGRAM TERMINATE

10.00.00 DISPLAY ROUTINE DESCRIPTION (4979) ---- TYPE 44

WHEN EXECUTING THE DISPLAY SYSTEM TEST PROGRAM, FIVE (5) ROUTINES ARE STARTED AUTOMATICALLY. A SIXTH ROUTINE MAY BE STARTED BY THE OPERATOR PRESSING THE ATTENTION KEY WHILE EITHER ROUTINE 3 OR 4 (SHIFT UP OR DOWN TEST) IS ACTIVE. THE AUTO TEST CAN BE CONTINUED BY A SECOND DEPRESSION OF THE ATTENTION KEY, EACH DEPRESSION OF THE ATTENTION KEY AFTER THIS WILL EITHER GO IN OR OUT OF THE ECHO TEST.

```
************************************************************************
*                                                                    *
*   NOTE:   AN ERROR IS INDICATED WHILE TESTING, BY AUTOMATICALLY     *
*           ENTERING AND TERMINATING THE ECHO TEST (NOT EXPECTED I/O  *
*           INTERRUPT(S) EQUAL TO THAT OF THE ATTENTION KEY)          *
*                                                                    *
************************************************************************
```

        THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:
ROUTINE 1:
    THIS ROUTINE FIRST WILL PREPARE THE DEVICE TO LEVEL ZERO (0) THEN DOES A RESET AND READ ID TO THE DEVICE. AFTER WHICH A DUMMY WRITE IS GIVEN TO ENSURE THE DEVICE WILL INTERRUPT ON THE PREPARED LEVEL. THIS SAME PROCEDURE IS FOLLOWED FOR LEVELS 1 AND 2. AFTER THE ABOVE IS COMPLETED A DIAGNOSTIC READ IS GIVEN FROM LEVEL ONE AND THE CHECKSUM VALUE IS INSPECTED FOR VALIDITY. IF NO ERRORS ARE FOUND, ROUTINE TWO (2) IS STARTED.

ROUTINE 2:
    THIS ROUTINE WILL FIRST BLANK THE SCREEN THEN WRITE EACH CHARACTER TO EACH SCREEN LOCATION. THIS IS PERFORMED BY SENDING A WRITE COMMAND CHAINED TO A READ COMMAND. THE WRITTEN DATA IS THEN COMPARED TO THE DATA RECEIVED BY THE READ. IF NO ERRORS ARE FOUND ROUTINE THREE (3) IS STARTED.

ROUTINE 3:
    THIS ROUTINE WILL FIRST BLANK THE SCREEN. THEN DATA IS WRITTEN ON THE BOTTOM LINE WITH A SHIFT UP, UNTIL IT IS AT THE TOP. THIS IS DONE BY EXECUTING A WRITE TO THE BOTTOM LINE WITH A SHIFT UP. IF NO ERRORS ARE FOUND, ROUTINE FOUR (4) IS STARTED.

ROUTINE 4:
    THE TEST IS EQUAL TO THAT OF ROUTINE THREE (3) WITH THE EXCEPTION OF WRITING TO THE TOP LINE WITH A DOWNWARD SHIFT. IF NO ERRORS ARE FOUND, ROUTINE FIVE (5) IS STARTED.

ROUTINE 5:
    THIS ROUTINE WILL FORCE ERRORS THAT THE ATTACHMENT CARD SHOULD REJECT. ON EACH TYPE OF ERROR THE RESPONSE IS CHECKED FOR VALIDITY IN ADDITION TO THE CYCLE STEAL RESIDUAL ADDRESS. IF NO ERRORS ARE FOUND, ROUTINE ONE (1) WILL BE STARTED.

ROUTINE 6:
    THIS ROUTINE, ENTERED BY PRESSING THE ATTENTION KEY WHILE EITHER ROUTINE 3 OR 4 IS ACTIVE, WILL ECHO TEST THE DISPLAY. THAT IS TO SAY, ANY CHARACTERS ENTERED FROM THE KEYBOARD TO THE FIRST SCREEN POSITION WILL BE DISPLAYED ON ALL OTHER LINES FOLLOWING THE DEPRESSION OF THE ENTER KEY. IF ANY PROGRAM FUNCTION (PF) KEY IS PRESSED THE SCREEN WILL SHOW THE ISB RECEIVED FROM THAT INTERRUPT, ANY INTERRUPT IS EXPECTED AND THEREFORE ANY ERROR WILL BE INDICATED ON THE SCREEN.

    TERMINATING SEQUENCE:
    (1) RESET
    (2) START I/O - BLANK SCREEN
    (3) PREPARE WITH 'I' BIT OFF
    (4) RESET
    (5) PROGRAM TERMINATE

11.00.00 DISPLAY ROUTINE DESCRIPTION (4978) ---- TYPE 45

WHEN EXECUTING THE DISPLAY SYSTEM TEST PROGRAM, FIVE (5) ROUTINES ARE STARTED AUTOMATICALLY. THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
    THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL ZERO (0) THEN DOES A RESET AND READ ID TO THE DEVICE, THEN A DUMMY WRITE IS GIVEN TO ENSURE THE DEVICE WILL INTERRUPT ON THE PREPARED LEVEL. THIS SAME PROCEDURE IS FOLLOWED FOR LEVELS 1 AND 2. IF NO ERRORS ARE FOUND, ROUTINE TWO (2) IS STARTED.

ROUTINE 2:
    THIS ROUTINE WILL FIRST BLANK THE SCREEN THEN WRITE EACH CHARACTER TO EACH SCREEN LOCATION. THIS IS PERFORMED BY SENDING A WRITE COMMAND CHAINED TO A READ COMMAND. THE WRITTEN DATA IS COMPARED TO THE DATA RECEIVED BY THE READ. IF NO ERRORS ARE FOUND ROUTINE THREE (3) IS STARTED.

ROUTINE 3:
    THIS ROUTINE WILL BLANK THE SCREEN. DATA IS WRITTEN ON THE BOTTOM LINE WITH A SHIFT UP, UNTIL IT IS AT THE TOP. AFTER A SHIFT THE DATA IS COMPARED WITH THE WRITTEN DATA TO CHECK VALIDITY. THIS IS DONE BY EXECUTING A WRITE TO THE BOTTOM LINE WITH A SHIFT UP, THEN A SEPARATE READ IS GIVEN FOR THE TOP LINE. THE DATA IS THEN COMPARED CHARACTER FOR CHARACTER. IF NO ERRORS ARE FOUND, ROUTINE FOUR (4) IS STARTED.

ROUTINE 4:
    THE TEST IS EQUAL TO THAT OF ROUTINE THREE (3) WITH THE EXCEPTION OF WRITING TO THE TOP LINE WITH A DOWNWARD SHIFT. IF NO ERRORS ARE FOUND, ROUTINE FIVE (5) IS STARTED.

ROUTINE 5:
    THIS ROUTINE WILL FORCE ERRORS THAT THE ATTACHMENT CARD SHOULD REJECT. ON EACH TYPE OF ERROR THE RESPONSE IS CHECKED FOR VALIDITY IN ADDITION TO THE CYCLE STEAL RESIDUAL ADDRESS. IF NO ERRORS ARE FOUND, ROUTINE ONE (1) WILL BE STARTED.

    TERMINATING SEQUENCE:
    (1) RESET
    (2) START I/O - BLANK SCREEN
    (3) PREPARE WITH 'I' BIT OFF
    (4) RESET
    (5) PROGRAM TERMINATE

12.00.00 DISKETTE UNIT ROUTINE DESCRIPTION (4962/4964) ---- TYPE 48

WHEN EXECUTING THE DISKETTE UNIT SYSTEM TEST PROGRAM, FIVE (5) ROUTINES ARE STARTED
AUTOMATICALLY. THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

```
*******************************************************************
*                                                                 *
*                                                                 *
*       NOTE:  WHEN AN ERROR OCCURS DEV1 AND DEV2 CONTAIN THE SECTOR ID  *
*              INFORMATION.                                        *
*                                                                 *
*******************************************************************
```

ROUTINE 1:
    THIS ROUTINE FIRST GIVES A RESET AND READ ID TO THE DEVICE, THEN WILL PREPARE THE DEVICE FOR
    LEVELS 0 THROUGH 2. ON EACH LEVEL A DUMMY SEEK IS GIVEN TO ENSURE THAT THE DEVICE WILL INTERRUPT
    ON ALL LEVELS. AFTER THIS IS COMPLETED, THE DEVICE IS PREPARED TO LEVEL ONE AND THE DISKETTE
    UNIT IS RECALIBRATED. IF NO ERRORS ARE FOUND, ROUTINE 2 IS STARTED.

ROUTINE 2:
    THIS ROUTINE, STARTED AFTER A RECALIBRATE (ROUTINE 1), FIRST SEEKS CYLINDER 0 THEN SEEKS 76, 1,
    75, 2, 74 AND 3. ON EACH CYLINDER THE SECTOR ID WILL BE READ FOR BOTH TRACK ZERO AND ONE TO
    CHECK HEAD SELECT. WHEN THE ROUTINE IS COMPLETED, A RECALIBRATE IS PERFORMED. IF NO ERRORS ARE
    FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
    THIS ROUTINE STARTED AFTER A RECALIBRATE (ROUTINE 2), FIRST SEEKS TO CYLINDER ZERO. THEN IN
    SEQUENCE WILL SEEK CYLINDER 76, 1, 75, 2, 74, 3, 73, 4, ----- 40, 37, 39, 38. ON EACH CYLINDER
    THE SECTOR ID FOR TRACK ZERO IS READ AND VERIFIED. IF NO ERRORS ARE FOUND, ROUTINE 4 IS STARTED.

```
*******************************************************************
*                                                                 *
*                                                                 *
*       NOTE:  THE SEEK AND READ ID IS A DCB CHAINED OPERATION.    *
*                                                                 *
*******************************************************************
```

ROUTINE 4:
    THIS ROUTINE WILL FORCE ERRORS THAT THE ATTACHMENT CARD SHOULD REJECT. ON EACH ERROR A READ
    CYCLE STEAL STATUS OPERATION IS PERFORMED AND THE RESIDUAL ADDRESS IS COMPARED TO THE EXPECTED
    VALUE. IF NO ERRORS ARE FOUND, ROUTINE 5 IS STARTED.

ROUTINE 5:
    THIS ROUTINE WILL FIRST SEEK TO TRACK ELEVEN TO ENSURE THAT THE DISKETTE IS A DIAGNOSTIC DISKETTE
    (IF THE DISKETTE IS NOT ROUTINE 1 IS STARTED). AFTER THIS A 128 BYTE RECORD IS FIRST WRITTEN
    THEN READ BACK FOR COMPARISON. THIS IS DONE FOR BOTH HEAD ZERO AND ONE. IF NO ERRORS ARE FOUND,
    ROUTINE 1 IS STARTED.

    TERMINATING SEQUENCE:
    (1) RESET
    (2) RECALIBRATE DEVICE
    (3) PREPARE WITH 'I' BIT OFF
    (4) RESET
    (5) PROGRAM TERMINATE

13.00.00 DISKETTE UNIT ROUTINE DESCRIPTION (4966) ---- TYPE 4A

WHEN EXECUTING THE DISKETTE UNIT SYSTEM TEST PROGRAM, SIX (6) ROUTINES ARE STARTED AUTOMATICALLY.
THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
    THIS ROUTINE FIRST GIVES A RESET AND READ ID TO THE DEVICE, THEN WILL PREPARE THE DEVICE FOR
    LEVELS 0 THROUGH 2. ON EACH LEVEL A DUMMY SEEK IS GIVEN TO ENSURE THAT THE DEVICE WILL INTERRUPT
    ON ALL LEVELS. IF NO ERRORS ARE FOUND, ROUTINE 2 IS STARTED.

ROUTINE 2:
    THIS ROUTINE FIRST SEEKS CYLINDER 0 THEN SEEKS 76, 1, 75, 2, 74 AND 3. ON EACH CYLINDER THE
    SECTOR ID WILL BE READ FOR BOTH TRACK ZERO AND ONE TO CHECK HEAD SELECT. IF NO ERRORS ARE FOUND,
    ROUTINE 3 IS STARTED.

ROUTINE 3:
    THIS ROUTINE FIRST SEEKS TO CYLINDER ZERO. THEN IN SEQUENCE WILL SEEK CYLINDER 76, 1, 75, 2, 74,
    3, 73, 4, ----- 40, 37, 39, 38. ON EACH CYLINDER THE SECTOR ID FOR TRACK ZERO IS READ AND
    VERIFIED. IF NO ERRORS ARE FOUND, ROUTINE 4 IS STARTED.

```
*******************************************************************
*                                                                 *
*                                                                 *
*       NOTE:  THE SEEK AND READ ID IS A DCB CHAINED OPERATION.    *
*                                                                 *
*                                                                 *
*******************************************************************
```

ROUTINE 4:
    THIS ROUTINE WILL FORCE ERRORS THAT THE ATTACHMENT CARD SHOULD REJECT. ON EACH ERROR A READ
    CYCLE STEAL STATUS OPERATION IS PERFORMED AND THE RESIDUAL ADDRESS IS COMPARED TO THE EXPECTED
    VALUE. IF NO ERRORS ARE FOUND, ROUTINE 5 IS STARTED.

ROUTINE 5:
    THIS ROUTINE WILL SEEK TO ALL DISKETTES ATTACHED TO THE DEVICE, AS PER THE QUESTIONS (I.E.
    3,13,23). THIS FIRST SEEK IS DONE IN SEQUENCE STARTING FROM ONE TO N DISKETTES. THEN HALF WAY
    SEEKS ARE TRIED FOLLOWED BY FULL SIDE TO SIDE SEEKS. IF NO ERRORS ARE FOUND, ROUTINE 6 IS
    STARTED.

ROUTINE 6:
    THIS ROUTINE WILL FIRST SEEK TO TRACK ELEVEN TO ENSURE THAT THE DISKETTE IS A DIAGNOSTIC DISKETTE
    (IF THE DISKETTE IS NOT ROUTINE 1 IS STARTED). AFTER THIS A 256 BYTE RECORD IS FIRST WRITTEN
    THEN READ BACK FOR COMPARISON. THIS IS DONE FOR BOTH HEAD ZERO AND ONE. IF NO ERRORS ARE STARTED.
    ROUTINE 1 IS STARTED.

    TERMINATING SEQUENCE:
    (1) RESET
    (2) RECALIBRATE DEVICE
    (3) PREPARE WITH 'I' BIT OFF
    (4) RESET
    (5) PROGRAM TERMINATE

13.01.00   4966 HALT CODES

4AE1   23 DISKETTES LOADED ON DA = XX
       IS DEVICE ADDRESS XX LOADED WITH DISKETTES (I.E. 3 IN THE OPENINGS PLUS TWO LOADED
       CONTAINERS) -- (Y OR N).
       (R3 -> EBCDIC DEVICE ADDRESS).

4AE2   13 DISKETTES LOADED ON DA = XX
       IS DEVICE ADDRESS XX LOADED WITH 13 DISKETTES (I.E. 3 IN THE OPENINGS PLUS ONE LOADED
       CONTAINER) -- (Y OR N).
       (R3 -> EBCDIC DEVICE ADDRESS).

4AE3   3 DISKETTES LOADED ON DA = XX
       IS DEVICE ADDRESS XX LOADED WITH 3 DISKETTES (I.E. 3 IN THE OPENINGS) -- (Y OR N).
       (R3 -> EBCDIC DEVICE ADDRESS).

4AE4   SHOULD THERE BE HARDWARE RETRIES - DA = XX
       DEVICE ADDRESS XX HAS AUTOMATIC HARDWARE RETRY -- SHOULD IT BE USED (Y OR N).
       (R3 -> EBCDIC DEVICE ADDRESS).

4AE5   SHOULD HARDWARE RETRIES BE AN ERROR -- DA = XX
       IF HARDWARE RETRIES ARE SELECTED AS AN OPTION FOR DEVICE ADDRESS XX SHOULD RETRIES, IF THEY
       OCCUR, BE AN ERROR.
       (R3 -> EBCDIC DEVICE ADDRESS).

14.00.00 4952/65 DISKETTE UNIT ROUTINE DESCRIPTION ---- TYPE 4B

WHEN EXECUTING THE DISKETTE UNIT SYSTEM TEST PROGRAM, FIVE (5) ROUTINES ARE STARTED AUTOMATICALLY. THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
THIS ROUTINE FIRST GIVES A RESET AND READ ID TO THE DEVICE, THEN WILL PREPARE THE DEVICE FOR LEVELS 0 THROUGH 2. ON EACH LEVEL A DUMMY SEEK IS GIVEN TO ENSURE THAT THE DEVICE WILL INTERRUPT ON ALL LEVELS. IF NO ERRORS ARE FOUND, ROUTINE 2 IS STARTED.

ROUTINE 2:
THIS ROUTINE FIRST SEEKS CYLINDER 0 THEN SEEKS 76, 1, 75, 2, 74 AND 3. ON EACH CYLINDER THE SECTOR ID WILL BE READ FOR BOTH TRACK ZERO AND ONE TO CHECK HEAD SELECT. IF NO ERRORS ARE FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
THIS ROUTINE FIRST SEEKS TO CYLINDER ZERO. THEN IN SEQUENCE WILL SEEK CYLINDER 76, 1, 75, 2, 74, 3, 73, 4, ----- 40, 37, 39, 38. ON EACH CYLINDER THE SECTOR ID FOR TRACK ZERO IS READ AND VERIFIED. IF NO ERRORS ARE FOUND, ROUTINE 4 IS STARTED.

```
*********************************************************************
*                                                                 *
*                                                                 *
*      NOTE:  THE SEEK AND READ ID IS A DCB CHAINED OPERATION.     *
*                                                                 *
*                                                                 *
*********************************************************************
```

ROUTINE 4:
THIS ROUTINE WILL FORCE ERRORS THAT THE ATTACHMENT CARD SHOULD REJECT. ON EACH ERROR A READ CYCLE STEAL STATUS OPERATION IS PERFORMED AND THE RESIDUAL ADDRESS IS COMPARED TO THE EXPECTED VALUE. IF NO ERRORS ARE FOUND, ROUTINE 5 IS STARTED.

ROUTINE 5:
THIS ROUTINE WILL FIRST SEEK TO TRACK ELEVEN TO ENSURE THAT THE DISKETTE IS A DIAGNOSTIC DISKETTE (IF THE DISKETTE IS NOT ROUTINE 1 IS STARTED). AFTER THIS A 256 BYTE RECORD IS FIRST WRITTEN THEN READ BACK FOR COMPARISON. THIS IS DONE FOR BOTH HEAD ZERO AND ONE. IF NO ERRORS ARE FOUND, ROUTINE 1 IS STARTED.

```
     TERMINATING SEQUENCE:
(1)  RESET
(2)  RECALIBRATE DEVICE
(3)  PREPARE WITH 'I' BIT OFF
(4)  RESET
(5)  PROGRAM TERMINATE
```

14.01.00 4952/65 DISKETTE HALT CODES

4BE4 SHOULD THERE BE HARDWARE RETRIES - DA = XX
DEVICE ADDRESS XX HAS AUTOMATIC HARDWARE RETRY -- SHOULD IT BE USED (Y OR N).
(R3 -> EBCDIC DEVICE ADDRESS).

4BE5 SHOULD HARDWARE RETRIES BE AN ERROR -- DA = XX
IF HARDWARE RETRIES ARE SELECTED AS AN OPTION FOR DEVICE ADDRESS XX SHOULD RETRIES, IF THEY OCCUR, BE AN ERROR.
(R3 -> EBCDIC DEVICE ADDRESS).

15.00.00 TIMER ROUTINE DESCRIPTION --- TYPE 50

WHEN EXECUTING THE TIMER SYSTEM TEST PROGRAM, SIX (6) ROUTINES ARE STARTED AUTOMATICALLY. TO START THE TIMER TEST THE DEVICE ADDRESS TO INDICATE FOR TEST IS THE EVEN-NUMBERED ADDRESS OF THE SET. THIS IS SO FOR BOTH THE SYSTEM TEST (B *EVEN*) AND THE UTILITY U34F8 (A *EVEN*). THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1.
THIS ROUTINE FIRST GIVES A PREPARE TO LEVEL=1 THEN WILL PERFORM A DEVICE READ ID TO DEVICE ZERO AFTER WHICH A READ ID IS PERFORMED FOR DEVICE ONE, BOTH ARE COMPARED TO EXPECTED VALUES. AFTER THIS BOTH THE MODE AND VALUES OF DEVICE ZERO AND ONE ARE READ AND KEPT IN THE FOLLOWING LOCATIONS:

```
                 DCB4 = VALUE FOR ZERO
                 DCB5 = MODE FOR ZERO
                 DCB7 = VALUE FOR ONE
                 DCB8 = MODE FOR ONE
```

IF NO ERRORS ARE FOUND, ROUTINE 2 IS STARTED.

ROUTINE 2:
THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL 1 THEN RESET DEVICE ZERO AND STOP DEVICE ONE AFTER WHICH THE MODE FOR ZERO IS COMPARED TO ZERO AND THE MODE FOR ONE IS CHECKED FOR NO CHANGE. ALSO THE VALUES FOR ZERO AND ONE ARE READ TO ENSURE THAT THE RESET HAS NOT CHANGED THEIR VALUES. THE ABOVE IS REPEATED BY RESETTING DEVICE ONE AND STOPPING DEVICE ZERO. IF NO ERRORS ARE FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL ONE AND SEND ILLEGAL DCB'S TO BOTH DEVICE ZERO AND ONE, TESTING COMMAND REJECT. IF NO ERRORS ARE FOUND, ROUTINE 4 IS STARTED.

ROUTINE 4:
THIS ROUTINE WILL CHECK THAT DIFFERENT VALUES CAN BE WRITTEN AND READ FROM BOTH DEVICE ZERO AND ONE. IF NO ERRORS ARE FOUND, ROUTINE 5 IS STARTED.

ROUTINE 5:
THIS ROUTINE WILL CHECK THAT DIFFERENT MODE(S) CAN BE WRITTEN AND READ FROM BOTH DEVICE ZERO AND ONE. IF NO ERRORS ARE FOUND, ROUTINE 6 IS STARTED.

ROUTINE 6:
THIS ROUTINE WILL CHECK THAT ALL MODE(S) WILL INTERRUPT ON ALL LEVELS FOR BOTH DEVICE ZERO AND ONE. THAT IS, A MODE IS SELECTED AND IS CHECKED ON EACH LEVEL THEN THE MODE IS CHANGED AND THE LEVEL TEST IS REPEATED. THIS PROCEDURE IS FOLLOWED THROUGH ALL MODE(S). IF NO ERRORS ARE FOUND, ROUTINE 1 IS STARTED.

```
     TERMINATING SEQUENCE:
(1)  PREPARE WITH 'I' BIT OFF (DEVICE ZERO AND ONE)
(2)  RESET (DEVICE ZERO AND ONE)
(3)  PROGRAM TERMINATE
```

16.00.00 TAPE UNIT ROUTINE DESCRIPTION (4969) ---- TYPE 58

CAUTION: IF TWO OR MORE DEVICES ARE INSTALLED AND BEING TESTED ON THE SAME ATTACHMENT CARD THE BASE ADDRESS MUST BE ONE OF THE DEVICES BEING TESTED.

WHEN EXECUTING THE TAPE UNIT SYSTEM TEST PROGRAM, SEVEN (7) ROUTINES ARE STARTED AUTOMATICALLY. THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
THIS ROUTINE GIVES A READ ID TO THE DEVICE, THEN WILL PREPARE THE DEVICE FOR LEVEL 2. IF NO ERRORS ARE FOUND, ROUTINE 2 IS STARTED.

ROUTINE 2:
THIS ROUTINE WILL WRITE 256 RECORDS . THE FIRST RECORD IS ONE (1) BYTE. THE BYTE COUNT IS INCREASED BY ONE AND THE NEXT RECORD IS WRITTEN. THIS CONTINUES FOR THE 256 RECORDS. A SPACE TAPE MARK BACKWARD COMMAND AND A SPACE TAPE MAPK FORWARD COMMAND IS ISSUED. THE TAPE SHOULD BE POSITIONED BEFORE THE FIRST RECORD. IF NO ERRORS ARE FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
THIS ROUTINE WILL READ THE 256 RECORDS WRITTEN BY ROUTINE 2. EACH RECORD IS DATA COMPARED. A SPACE TAPE MARK BACKWARD COMMAND AND A SPACE TAPE MARK FORWARD COMMAND IS ISSUED. THE TAPE SHOULD BE POSITIONED BEFORE THE FIRST RECORD. IF NO ERRORS ARE FOUND, ROUTINE 4 IS STARTED.

ROUTINE 4:
THIS ROUTINE WILL SKIP MANY RECORDS, READ A RECORD, DATA COMPARE THE RECORD. THE MANY RECORD SKIPS WILL BE BOTH FORWARD AND BACKWARD. THE ROUTINE WILL END WITH THE TAPE POSITIONED BEFORE THE FIRST RECORD. IF NO ERRORS ARE FOUND, ROUTINE 5 IS STARTED.

ROUTINE 5:
THIS ROUTINE IS AN ERASE TAPE TEST. THE FOLLOWING IS THE COMMAND SEQUENCE.
1) WRITE A RECORD.
2) BACK SPACE A RECORD.
3) READ A RECORD.
4) BACK SPACE A TAPE MARK.
5) SPACE TAPE MARK FORWARD.
6) SPACE A RECORD FORWARD.
7) WRITE A TAPE MARK.
8) WRITE A RECORD.
9) BACK SPACE A RECORD.
10) ERASE.
11) WRITE A RECORD.
12) BACK SPACE A TAPE MARK.
13) SPACE A TAPE MARK FORWARD.
14) READ A RECORD.
15) BACK SPACE A TAPE MARK.
16) SPACE TAPE MARK FORWARD.
THE ABOVE SEQUENCE IS REPEATED 8 TIMES. IF NO ERRORS ARE FOUND, ROUTINE 6 IS STARTED.

ROUTINE 6:
THIS ROUTINE WILL WRITE LONG RECORDS. THE FIRST RECORD IS HEXADECIMAL 1000 BYTES. THE BYTE COUNT IS INCREASED BY HEXADECIMAL 1000 BYTES UNTIL THE BYTE COUNT EQUALS THE STORAGE SIZE. IF NO ERRORS ARE FOUND, ROUTINE 7 IS STARTED.

ROUTINE 7:
THIS ROUTINE WILL CHANGE THE DCB'S FROM 800 BPI TO PE MODE IF THE DRIVE IS DOUBLE DENSITY. THEN ROUTINE 1 IS STARTED.

TERMINATING SEQUENCE:
(1) REWIND THE TAPE TO LOAD POINT
(2) PREPARE WITH 'I' BIT OFF
(3) RESET
(4) PROGRAM TERMINATE

17.00.00 PRINTER <MATRIX> ROUTINE DESCRIPTION (4974) ---- TYPE 64

WHEN EXECUTING THE PRINTER SYSTEM TEST PROGRAM, EIGHT (8) ROUTINES ARE STARTED AUTOMATICALLY. THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

```
***********************************************************************
*                                                                     *
*                                                                     *
* NOTE: THE FORMS WIDTH USED DURING THIS ROUTINE IS THE WIDTH         *
* GIVEN BY THE OPERATOR.                                              *
*                                                                     *
*                                                                     *
***********************************************************************
```

ROUTINE 1:
THIS ROUTINE FIRST GIVES A PREPARE TO LEVEL=0 THEN WILL PERFORM A DEVICE RESET AND READ ID AFTER WHICH A DUMMY WRITE IS GIVEN TO ENSURE THAT AN INTERRUPT IS RECEIVED. THE SAME PROCEDURE IS THEN FOLLOWED FOR BOTH LEVELS 1 AND 2. THEN THE DEVICE IS PREPARED FOR LEVEL 1 AND A DIAGNOSTIC READ IS GIVEN TO OBTAIN AND VERIFY THE CHECKSUM VALUES. IF NO ERRORS ARE FOUND, ROUTINE 2 IS STARTED.

ROUTINE 2:
THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL 1. IT WILL THEN LOAD THE NEEDED PRINT TABLE TO FORCE EIGHT PRINT LINES PER INCH, THEN PRINT SIXTEEN (16) LINES OF 'HH' OVERPRINTED WITH 'II'. FROM THIS THE OPERATOR CAN DETERMINE THE ALIGNMENT INTEGRITY OF THE HEAD. IF NO ERRORS ARE FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
THIS ROUTINE WILL PRINT EACH CHARACTER, IN THE STANDARD CHARACTER SET, TO EACH PRINT LOCATION. IF NO ERRORS ARE FOUND, ROUTINE 4 IS STARTED.

ROUTINE 4:
THIS ROUTINE WILL TEST THE VARIABLE SPACE OPTION OF THE DEVICE. THE ROUTINE WILL SKIP 1 LINE TO WRITE A LINE THEN SKIP 2 LINES TO WRITE A LINE, THEN 3, 4---UP THROUGH AND INCLUDING 8 LINES. IF NO ERRORS ARE FOUND, ROUTINE 5 IS STARTED.

ROUTINE 5:
THIS ROUTINE WRITES A LINE OF DATA THEN GIVES A READ CYCLE STEAL STATUS TO CHECK THE RESIDUAL ADDRESS. IF CORRECT, A 2ND READ CYCLE STEAL STATUS IS GIVEN TO ENSURE THAT THE FIRST READ DID NOT DESTROY THE RESIDUAL ADDRESS. IF NO ERRORS ARE FOUND, ROUTINE 6 IS STARTED.

ROUTINE 6:
THIS ROUTINE ATTEMPTS TO WRITE A LINE OF DATA WITH AN ILLEGAL BYTE NUMBER. THEREFORE, AN ERROR IS EXPECTED AND THE MESSAGE SHOULD NOT BE PRINTED. IF THE DEVICE DOES NOT REJECT THE MESSAGE, AN ERROR WILL BE PRINTED AND THE MESSAGE 'BYTE NUMBER IN ERROR TEST' WILL APPEAR AT THE DEVICE. IF NO ERRORS ARE FOUND, ROUTINE 7 IS STARTED.

ROUTINE 7:
THIS ROUTINE WRITES THE 'ROM' WITH EXECUTABLE CODE, READS IT, THEN WILL COMPARE THE WRITTEN VALUE WITH THE READ VALUE. IF NO ERRORS ARE FOUND, ROUTINE 8 IS STARTED.

ROUTINE 8:
THIS ROUTINE WILL CHANGE THE PRINT LOCATION OF A FIXED, 8 CHARACTER DATA BUFFER TO TEST THE DEVICE ON CHANGED LENGTH LINES. IF NO ERRORS ARE FOUND ROUTINE 1 IS STARTED.

TERMINATING SEQUENCE:
(1) RESET
(2) ISSUE DIAGNOSTIC TO DELETE 8 LINE PER INCH CODE
(3) PREPARE WITH 'I' BIT OFF
(4) RESET
(5) PROGRAM TERMINATE

17.01.00   4974 PRINTER <MATRIX> HALT CODES

64E1 FORMS WIDTH FOR THE 4974 PRINTER D.A. = XX
      (ENTER PRINT POSITIONS I.E. F0132 - AND SO ON.)

      THE PRINT POSITIONS SHOULD BE A DECIMAL NUMBER.
      THE QUESTION SHOULD BE ANSWERED AS DESCRIBED REMEMBERING THAT MULTIPART PAPER SHOULD NEVER BE USED DURING TEST.
      (R3 -> EBCDIC DEVICE ADDRESS)

18.00.00 PRINTER <CHAIN> ROUTINE DESCRIPTION (4973) ---- TYPE 68

WHEN EXECUTING THE PRINTER SYSTEM TEST PROGRAM, NINE (9) ROUTINES ARE STARTED AUTOMATICALLY. THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
THIS ROUTINE FIRST GIVES A PREPARE TO LEVEL=0 THEN WILL PERFORM A DEVICE RESET AND READ ID AFTER WHICH A DUMMY WRITE IS GIVEN TO ENSURE THAT AN INTERRUPT IS RECEIVED. THE SAME PROCEDURE IS THEN FOLLOWED FOR BOTH LEVELS 1 AND 2. AFTER, THE ABOVE THE DEVICE IS PREPARED FOR LEVEL 1 AND A DIAGNOSTIC READ IS GIVEN TO OBTAIN AND VERIFY THE CHECKSUM VALUES. IF NO ERRORS ARE FOUND, ROUTINE 2 IS STARTED.

ROUTINE 2:
THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL 1 THEN WILL PRINT (USING THE OPTION OF EIGHT LINES PER INCH) SIXTEEN (16) LINES OF 'HH' OVERPRINTED WITH 'II'. FROM THIS THE OPERATOR CAN DETERMINE THE ALIGNMENT INTEGRITY OF THE HEAD. IF NO ERRORS ARE FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
THIS ROUTINE WRITES A LINE OF DATA THEN GIVES A READ CYCLE STEAL STATUS TO CHECK THE RESIDUAL ADDRESS. IF CORRECT, A 2ND READ CYCLE STEAL STATUS IS GIVEN TO ENSURE THAT THE FIRST READ DID NOT DESTROY THE RESIDUAL ADDRESS. IF NO ERRORS ARE FOUND, ROUTINE 4 IS STARTED.

ROUTINE 4:
THIS ROUTINE WILL TEST THE VARIABLE SPACE OPTION OF THE DEVICE. THE ROUTINE WILL SKIP 1 LINE TO WRITE A LINE THEN SKIP 2 LINES TO WRITE A LINE, THEN 3, 4---UP THROUGH AND INCLUDING 8 LINES. IF NO ERRORS ARE FOUND, ROUTINE 5 IS STARTED.

ROUTINE 5:
THIS ROUTINE WILL PRINT EACH CHARACTER, IN THE CHARACTER SET (96 MAXIMUM), TO EACH PRINT LOCATION. IF NO ERRORS ARE FOUND, ROUTINE 6 IS STARTED.

ROUTINE 6:
THIS ROUTINE ATTEMPTS TO WRITE A LINE OF DATA WITH AN ILLEGAL BYTE NUMBER. THEREFORE, AN ERROR IS EXPECTED AND THE MESSAGE SHOULD NOT BE PRINTED. IF THE DEVICE DOES NOT REJECT THE MESSAGE, AN ERROR HAS OCCURRED. IF NO ERRORS ARE FOUND, ROUTINE 7 IS STARTED.

ROUTINE 7:
THIS ROUTINE WRITES THE 'ROM' WITH EXECUTABLE CODE, READS IT AND WILL COMPARE THE WRITTEN VALUE WITH THE READ VALUE. THIS CODE IS WRITTEN TO END ON BOTH ODD-NUMBERED AND EVEN-NUMBERED STORAGE ADDRESSES AND THEREFORE THE CODE WILL AND WILL NOT BE EXECUTED RESPECTIVELY. IF NO ERRORS ARE FOUND, ROUTINE 8 IS STARTED.

ROUTINE 8:
THIS ROUTINE GIVES A MAXIMUM STRESS PRINT PATTERN TO THE PRINT TYPEBELT, TESTING THE TYPEBELT MECHANICALLY FOR EITHER A WEAK OR A WORN AREA. IF NO ERRORS ARE FOUND ROUTINE 9 IS STARTED.

ROUTINE 9:
THIS ROUTINE WRITES A LINE OF 'A' CHARACTERS, ONE PER COMMAND, TO TEST IF EACH PRINT LOCATION WILL FIRE. IF NO ERRORS ARE FOUND, ROUTINE 1 IS STARTED.

     TERMINATING SEQUENCE:
(1) RESET
(2) I/O START TO CHANGE TO 6 LINE PER INCH CODE
(3) PREPARE WITH 'I' BIT OFF
(4) RESET
(5) PROGRAM TERMINATE

19.00.00 DISK ROUTINE DESCRIPTION (4962) ---- TYPE 78

WHEN EXECUTING THE DISK SYSTEM TEST PROGRAM, THE QUESTION OF WRITING ON THE DISK WILL BE DISPLAYED TO THE OPERATOR. IF THE ANSWER TO THE QUESTION IS YES, ROUTINE 3 WILL BE EXECUTED. IF NO ONLY ROUTINES 1, 2 AND 4 WILL BE EXECUTED.

```
***********************************************************************
*                                                                   *
*   NOTE:   (1) SYSTEM TEST WILL BE TERMINATED UNTIL THE QUESTION    *
*               IS ANSWERED (ONE PER DISK DEVICE ADDRESS).           *
*           (2) WHEN AN ERROR OCCURS DEV1, DEV2 AND DEV3 CONTAIN     *
*               THE READ SECTOR ID INFORMATION.                      *
*                                                                   *
***********************************************************************
```

ROUTINE 1:
THIS ROUTINE FIRST GIVES A RESET AND READ ID TO THE DEVICE. THEN WILL PREPARE THE DEVICE FOR LEVEL 0 THROUGH 2. ON EACH LEVEL A DUMMY SEEK IS PERFORMED TO ENSURE THAT ALL LEVELS WILL INTERRUPT CORRECTLY. THE DEVICE ID THAT IS VALID IS TAKEN TO BE THE ID PRESENT IN THE CONFIGURATION TABLE. IF NO ERRORS ARE FOUND, ROUTINE 2 IS STARTED.

ROUTINE 2:
THIS ROUTINE RECALIBRATES THE DISK THEN SEEKS TO CYLINDER 0, 302, 1, 301, 2, 300, 3, --- , 152, 151. EACH SEEK IS CHAINED TO A READ SECTOR ID AND THE SEEK IS THEN CHECKED FOR VALIDITY. HEAD SELECT FOR EACH SEEK IS:

     1) FOR TWO HEAD DISK --- 0,1,0,1,0,1,0,1 ----
     2) FOR THREE HEAD DISK --- 0,1,0,2,0,1,0,2,0,1,0,2 ----

```
***********************************************************************
*                                                                   *
*   NOTE: AN ERROR IS INDICATED FOR THE FOLLOWING THREE CONDITIONS. *
*         1) A FAILING SECTOR FOUND ON THE IPL TRACK.               *
*         2) A SECTOR ON CYLINDER ONE HAVING AN ALTERNATE.          *
*         3) A TRACK FOUND TO HAVE NO GOOD SECTORS.                 *
*            IF NO ERRORS ARE FOUND, ROUTINE 3 IS STARTED.          *
*                                                                   *
***********************************************************************
```

ROUTINE 3:
THIS ROUTINE WILL VERIFY THAT THE DISK CAN BE WRITTEN. IF YES CONTINUE, IF NO ROUTINE 4 IS STARTED. IN CONTINUING THE ROUTINE WILL RECALIBRATE THEN SEEK TO TRACK 302 (CE TRACK). AFTER THE SEEK THE SECTOR ID IS READ AND TESTED, IF GOOD A 256 BYTE SECTOR IS WRITTEN, READ BACK AND COMPARED. THIS IS PERFORMED ON ALL BUT FIXED HEAD(S).

```
***********************************************************************
*                                                                   *
*   NOTE: AN ERROR IS INDICATED IF THERE IS NOT A GOOD SECTOR ON    *
*         THE CE TRACK WHEN A WRITE IS INDICATED.                   *
*         IF NO ERRORS ARE FOUND, ROUTINE 4 IS STARTED.            *
*                                                                   *
***********************************************************************
```

ROUTINE 4:
THIS ROUTINE WILL FORCE ERRORS THAT THE ATTACHMENT CARD SHOULD REJECT. ON EACH ERROR A READ CYCLE STEAL STATUS OPERATION IS PERFORMED AND THE RESIDUAL ADDRESS IS COMPARED TO AN EXPECTED VALUE. IF NO ERRORS ARE FOUND, ROUTINE 1 IS STARTED.

     TERMINATING SEQUENCE:
(1) PREPARE WITH THE 'I' BIT OFF
(2) RESET
(3) PROGRAM TERMINATE

19.01.00 DISK HALT CODES

78E1 CAN THE 4962 C.E. TRACK BE WRITTEN ON DA = XX
      CAN A 256 BYTE SECTOR BE WRITTEN AT DEVICE ADDRESS XX CYLINDER (DECIMAL) 302.
      (R3 -> EBCDIC DEVICE ADDRESS)

20.00.00 DISK ROUTINE DESCRIPTION (4963) ---- TYPE 7A

CAUTION: IF TWO OR MORE DEVICES ARE INSTALLED AND BEING TESTED ON THE SAME ATTACHMENT CARD THE.
BASE ADDRESS MUST BE ONE OF THE DEVICES BEING TESTED.

WHEN EXECUTING THE DISK SYSTEM TEST PROGRAM, THE QUESTION OF WRITING ON THE DISK WILL BE
DISPLAYED TO THE OPERATOR. IF THE ANSWER TO THE QUESTION IS YES, ROUTINE 4 WILL BE EXECUTED. IF
NO ONLY ROUTINES 1, 2, 3 AND 5 WILL BE EXECUTED.

```
********************************************************************************
*                                                                            *
*          NOTE (1) SYSTEM TEST WILL BE TERMINATED UNTIL THE QUESTION IS      *
*                   ANSWERED (ONE PER DISK DEVICE ADDRESS).                   *
*              (2) WHEN AN ERROR OCCURS, DEV1 AND DEV2 WILL CONTAIN THE       *
*                   READ SECTOR ID INFORMATION.                               *
*                                                                            *
********************************************************************************
```

ROUTINE 1:
THIS ROUTINE FIRST GIVES A RESET AND READ ID TO THE DEVICE. THEN WILL PREPARE THE DEVICE FOR
LEVEL 0 THROUGH 2. ON EACH LEVEL A DUMMY SEEK IS PERFORMED TO ENSURE THAT ALL LEVELS WILL
INTERRUPT CORRECTLY. THEN A START CYCLE STEAL STATUS IS GIVEN TO OBTAIN THE NUMBER OF HEAD(S)
AND SIZE OF THE UNIT. IF NO ERRORS ARE FOUND, ROUTINE 2 IS STARTED.

ROUTINE 2:
THIS ROUTINE RECALIBRATES THE DISK THEN SEEKS TO CYLINDER 0, 302, 1, 301, 2, 300, 3, ---, 152,
151. EACH SEEK IS CHAINED TO A READ SECTOR ID AND THE SEEK IS THEN CHECKED FOR VALIDITY. ON
EACH CYLINDER THE FIRST GOOD SECTOR IS LOCATED AND A READ AND VERIFY IS ISSUED FOR THAT SECTOR.
A GOOD SECTOR IS VERIFIED FOR EACH TRACK OF EACH CYLINDER. IF NO ERRORS ARE FOUND, ROUTINE 3 IS
STARTED.

ROUTINE 3:
THIS ROUTINE RECALIBRATES THE DISK THEN SEEKS TO CYLINDER 0, 359, 1, 358, 2, 357, 3, --- 180,
179. EACH SEEK IS CHAINED TO A READ SECTOR ID AND THE SEEK IS THEN CHECKED FOR VALIDITY. IF NO
ERRORS ARE FOUND, ROUTINE 4 IS STARTED.

ROUTINE 4:
THIS ROUTINE WILL VERIFY THAT THE DISK CAN BE WRITTEN. IF YES CONTINUE, IF NO ROUTINE 5 IS
STARTED. IN CONTINUING THE ROUTINE WILL RECALIBRATE THEN SEEK TO TRACK 359 (CE TRACK). AFTER
THE SEEK THE SECTOR ID IS READ AND TESTED, IF GOOD A 256 BYTE SECTOR IS WRITTEN, READ BACK AND
COMPARED. THIS IS PERFORMED ON ALL BUT FIXED HEAD(S). ROUTINE 5 IS STARTED.

ROUTINE 5:
THIS ROUTINE WILL FORCE ERRORS THAT THE ATTACHMENT CARD SHOULD REJECT. ON EACH ERROR A READ
CYCLE STEAL STATUS OPERATION IS PERFORMED AND THE RESIDUAL ADDRESS IS COMPARED TO AN EXPECTED
VALUE. IF NO ERRORS ARE FOUND. ROUTINE 1 IS STARTED.

```
********************************************************************************
*                                                                            *
*          NOTE: AN ERROR IS INDICATED IF THERE IS NOT A GOOD SECTOR          *
*                FOUND ON THE CE TRACK WHEN A WRITE IS INDICATED.             *
*                                                                            *
********************************************************************************
```

        TERMINATING SEQUENCE:
(1)   PREPARE WITH THE 'I' BIT OFF
(2)   RESET
(3)   PROGRAM TERMINATE

20.01.00 DISK HALT CODES

7AE1 CAN THE 4963 C.E. TRACK BE WRITTEN ON DA = XX
      CAN A 256 BYTE SECTOR BE WRITTEN AT DEVICE ADDRESS XX ON THE C.E. CYLINDER.
      (R3 -> EBCDIC DEVICE ADDRESS)

7AE2 DO YOU WANT 4963 HARDWARE RETRIES ON DA = XX
      DEVICE ADDRESS XX HAS AUTOMATIC HARDWARE RETRY -- SHOULD IT BE USED (Y OR N).
      (R3 -> EBCDIC DEVICE ADDRESS).

7AE3 IS A 4963 HARDWARE RETRY AN ERROR ON DA = XX
      IF HARDWARE RETRIES ARE SELECTED AS AN OPTION FOR DEVICE ADDRESS XX SHOULD RETRIES, IF THEY
      OCCUR, BE AN ERROR.
      (R3 -> EBCDIC DEVICE ADDRESS).

21.00.00 IDIDO ROUTINE DESCRIPTION --- TYPE A0

WHEN EXECUTING THE IDIDO SYSTEM TEST PROGRAM, THE QUESTION IS THE DEVICE WRAPPED OR NOT WILL BE
DISPLAYED TO THE OPERATOR. IF THE ANSWER TO THE QUESTION IS YES THEN BOTH ROUTINES 3 AND 6 WILL
BE EXECUTED. IF NOT WRAPPED BOTH OF THESE ROUTINES WILL NOT BE ACTIVE.

```
********************************************************************************
*                                                                            *
*          NOTE:  SYSTEM TEST WILL BE TERMINATED UNTIL THE QUESTION IS        *
*                 ANSWERED. (ONE PER IDIDO DEVICE).                           *
*                                                                            *
********************************************************************************
```

ROUTINE 1:
THIS ROUTINE GIVES A RESET THEN READS THE ID OF ALL FOUR DEVICE ADDRESSES ASSOCIATED WITH THIS
ATTACHMENT CARD. AFTER WHICH THE DEVICE IS THEN PREPARED ON LEVELS 0 THROUGH 2. ON EACH
INTERRUPT LEVEL A ARM PI AND SET TEST 1 IS GIVEN TO ENSURE THAT THE DEVICE WILL INTERRUPT ON ALL
LEVELS. IF NO ERRORS ARE FOUND ROUTINE 2 IS STARTED

ROUTINE 2:
THIS ROUTINE ENSURES THAT THE TWO DI'S WILL GIVE A COMMAND REJECT TO ALL ILLEGAL DCB'S. AFTER
THIS THE DI'S ARE RESET AND IF NO ERRORS ARE FOUND ROUTINE 3 IS STARTED.

ROUTINE 3:
THIS ROUTINE WILL FIRST DETERMINE IF THE CARD IS WRAPPED, IF NOT ROUTINE 4 IS STARTED. IF THE
CARD IS WRAPPED THEN THIS ROUTINE GIVES THE SAME DCB'S AS DOES ROUTINE 2 BUT ONLY TO THE TWO DO'S
ASSOCIATED WITH THE CARD. IF NO ERRORS ARE FOUND ROUTINE 4 IS STARTED

ROUTINE 4:
THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL ONE, THEN RESET BOTH DI'S. AFTER THIS BOTH DI'S
ARE GIVEN A SET TEST 1 THEN THE STATUS AND DI REGISTERS ARE READ AND COMPARED TO EXPECTED DATA.
IF NO ERRORS ARE FOUND ROUTINE 5 IS STARTED.

ROUTINE 5:
THIS ROUTINE FIRST WILL PREPARE (WITH THE 'I' BIT OFF) THE DEVICE AND THEN GIVES A RESET TO BOTH
DI'S. THE 'ARM PI' AND 'SET TEST 0' DCB'S ARE GIVEN TO BOTH DI'S. A READ STATUS IS THEN GIVEN
AND CHECKED AGAINST EXPECTED VALUES. IF NO ERRORS ARE FOUND ROUTINE 6 IS STARTED

ROUTINE 6:
THIS ROUTINE WILL FIRST DETERMINE IF THE ATTACHMENT CARD IS WRAPPED, IF NOT ROUTINE 1 IS STARTED.
IF THE CARD IS WRAPPED A RESET IS GIVEN TO ALL ADDRESSES AND THE CARD IS PREPARED TO LEVEL 1.
DATA IS THEN WRITTEN TO BOTH DO'S AND READ THROUGH BOTH DI'S TO BE CHECKED. THE DATA PATTERN
WRITTEN IS HEXADECIMAL '1111', '2222', '3333' ---- THROUGH ----- 'FFFF'. IF NO ERRORS ARE FOUND
ROUTINE 1 IS STARTED.

        TERMINATING SEQUENCE:
(1)   PREPARE WITH 'I' BIT OFF (ALL FOUR)
(2)   RESET (ALL FOUR)
(3)   PROGRAM TERMINATE

21.01.00 IDIDO HALT CODE

A0E1 IS THERE A WRAP CABLE CONNECTED TO DA = XX
      DOES THE DEVICE ADDRESS XX HAVE A WRAP CABLE CONNECTED (Y OR N)
      (R3 -> EBCDIC DEVICE ADDRESS)

22.00.00 OEMIA ROUTINE DESCRIPTION ---- TYPE A3

WHEN EXECUTING THIS SYSTEM TEST PROGRAM, FOUR (4) ROUTINES WILL BE EXECUTED AUTOMATICALLY.   THE
DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
    THIS ROUTINE GIVES A RESET THEN READS THE ID ASSOCIATED WITH THIS ATTACHMENT CARD. AFTER WHICH
    THE DEVICE IS THEN PREPARED ON LEVELS 0 THROUGH 2. ON EACH INTERRUPT LEVEL A ARM PI IS PERFORMED
    TO ENSURE THAT THE DEVICE WILL INTERRUPT ON ALL LEVELS. IF NO ERRORS ARE FOUND ROUTINE 2 IS
    STARTED

ROUTINE 2:
    THIS ROUTINE ENSURES THAT THE CONFIGURATION TABLE IS CORRECT. THEN WRITES ALL VALUES FROM '0000'
    TO 'FFFF' THROUGH THE WRITE REGISTER, THEN READ AND COMPARE THESE VALUES. IF NO ERRORS ARE
    FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
    THIS ROUTINE FIRST DOES A DIAGNOSTIC RESET THEN A SET DIAGNOSTIC MODE 1. ALL VALUES ARE COMPARED
    TO WHAT IS IN THE CONFIGURATION TABLE. IF NO ERRORS ARE FOUND ROUTINE 4 IS STARTED.

ROUTINE 4:
    THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL ONE THEN SET MODE 2 AND SET MODE 3 ARE TESTED TO
    ENSURE THERE CORRECT OPERATION. IF NO ERRORS ARE FOUND ROUTINE 1 IS STARTED.

        TERMINATING SEQUENCE:
    (1)   CHANGE FROM DIAGNOSTIC MODE TO NORMAL MODE
    (2)   PREPARE WITH 'I' BIT OFF
    (3)   RESET
    (4)   PROGRAM TERMINATE

23.00.00 SENSOR I/O ROUTINE DESCRIPTION (4982) ---- TYPE A4

WHEN EXECUTING THE SENSOR I/O SYSTEM TEST PROGRAM, FOUR (4) ROUTINES WILL BE EXECUTED
AUTOMATICALLY. THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
    THIS ROUTINE GIVES A RESET THEN READS THE ID ASSOCIATED WITH THIS ATTACHMENT CARD.   AFTER WHICH
    THE DEVICE IS THEN PREPARED ON LEVELS 0 THROUGH 2. ON EACH INTERRUPT LEVEL A ARM PI IS PERFORMED
    TO ENSURE THAT THE DEVICE WILL INTERRUPT ON ALL LEVELS. IF NO ERRORS ARE FOUND ROUTINE 2 IS
    STARTED

ROUTINE 2:
    THIS ROUTINE ENSURES THAT THE CONFIGURATION TABLE IS CORRECT. THEN WRITES ALL VALUES FROM '0000'
    TO 'FFFF' THROUGH THE WRITE REGISTER. THEN READ AND COMPARE THESE VALUES.   IF NO ERRORS ARE
    FOUND, ROUTINE 3 IS STARTED.

ROUTINE 3:
    THIS ROUTINE FIRST DOES A DIAGNOSTIC RESET THEN A SET DIAGNOSTIC MODE 1. ALL VALUES ARE COMPARED
    TO WHAT IS IN THE CONFIGURATION TABLE. IF NO ERRORS ARE FOUND ROUTINE 4 IS STARTED.

ROUTINE 4:
    THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL ONE THEN SET MODE 2 AND SET MODE 3 ARE TESTED TO
    ENSURE THERE CORRECT OPERATION. IF NO ERRORS ARE FOUND ROUTINE 1 IS STARTED.

        TERMINATING SEQUENCE:
    (1)   CHANGE FROM DIAGNOSTIC MODE TO NORMAL MODE
    (2)   PREPARE WITH 'I' BIT OFF
    (3)   RESET
    (4)   PROGRAM TERMINATE

24.00.00 PROGRAMMABLE COMMUNICATIONS SUBSYSTEM ---- TYPE E0

WHEN EXECUTING THE PROGRAMMABLE COMMUNICATIONS SUBSYSTEM TEST PROGRAM, FIVE (5) ROUTINES WILL BE EXECUTED AUTOMATICALLY. THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
THIS ROUTINE GIVES A RESET THEN READS THE ID ASSOCIATED WITH THIS ATTACHMENT CARD. AFTER WHICH THE DEVICE IS THEN PREPARED ON LEVELS 0, ON THIS INTERRUPT LEVEL A POWER ON RESET TEST IS EXECUTED TO ENSURE THAT THE DEVICE WILL INTERRUPT. THIS TEST IS THEN DUPLICATED ON LEVELS ONE AND TWO. IF NO ERRORS ARE FOUND A READ POWER ON RESET RESULTS IS ISSUED AND THE CHECKSUM IS CHECKED. IF NO ERRORS ARE FOUND ROUTINE 2 IS STARTED

ROUTINE 2:
THIS ROUTINE ISSUES FOUR TEST ATTACHMENT TEST IN THE FOLLOWING ORDER:
1) CHANNEL TEST
2) CONTROLLER TEST
3) SCANNER TEST
4) READ SENSE TEST
THE RESULTS ARE THEN COMPARED TO EXPECTED VALUES. IF NO ERRORS ARE FOUND ROUTINE 3 IS STARTED.

ROUTINE 3:
THIS ROUTINE DOES A DIAGNOSTIC MODE WRITE SCAN TABLE COMMAND. THE VALUES WRITTEN ARE HEXADECIMAL '00' THROUGH 'IF'. IF NO ERRORS ARE FOUND ROUTINE 4 IS STARTED.

ROUTINE 4:
THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL ONE THEN WRITE A MICROCODE LOAD TABLE TO THE DEVICE, READ THE TABLE BACK AND COMPARE THE WRITTEN DATA WITH THE RECEIVED DATA. IF NO ERRORS ARE FOUND ROUTINE 5 IS STARTED.

ROUTINE 5:
THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL ONE THEN WRITE A MICROCODE LOAD TABLE TO THE DEVICE. AFTER THIS THE PARAMETER IS PASSED TO THE ATTACHMENT CARD TO SET UP FOR A CHECK TEST. WHEN THIS IS COMPLETE THE 8, 7, 6 AND 5 BIT TESTS ARE DONE. AFTER EACH TEST IS COMPLETE THE RECEIVED DATA IS COMPARED TO EXPECTED VALUES. IF NO ERRORS ARE FOUND ROUTINE 1 IS STARTED.

TERMINATING SEQUENCE:
(1) PREPARE WITH 'I' BIT OFF
(2) RESET
(3) PROGRAM TERMINATE

25.00.00 5250 ATTACHMENT ---------------------- TYPE E4

NOTE - BEFORE A 5251 DISPLAY CAN BE USED AS AN ALTERNATE CONSOLE, WRITE THE DATA SET(S) 'E4D0' AND 'E4D1'. (OPTIONAL) FROM DISKETTE PART NUMBER 6826590 TO THE SYSTEM TEST DISKETTE PART NUMBER 1635003. USE THE PROGRAMMER OR C E CONSOLE AND THE UTILITY PROGRAM 38F9 TO DISPLAY THE VTOC FOR THE SYSTEM TEST DISKETTE. SEE IF DATA SET(S) 'E4D0' AND 'E4D1' ARE ON THE DISKETTE.

DATA SET 'E4D0' MUST BE WRITTEN ON THE SYSTEM TEST DISKETTE.
DATA SET 'E4D1' IS OPTIONAL. IT IS NOT NECESSARY TO WRITE THIS DATA SET TO THE SYSTEM TEST DISKETTE. IF YOU HAVE DATA SET E4D1 ON DISKETTE 6826590, WRITE IT. IF YOU DO NOT HAVE DATA SET 'E4D1' ON DISKETTE 6826590, IT IS NOT NEEDED BY YOUR SYSTEM.

WHEN EXECUTING THE WORK STATION UNDER SYSTEM TEST EIGHT (8) ROUTINES ARE STARTED AUTOMATICALLY (BUT ONLY ONE STATION ADDRESS OF EACH TYPE MAY BE TESTED AT ANY ONE TIME.) THE DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
THIS ROUTINE FIRST WILL PREPARE THE DEVICE TO LEVEL ZERO (0) THEN DOES A RESET AND READ ID TO THE DEVICE AFTER WHICH A START CYCLE STEAL STATUS IS GIVEN TO ENSURE THE DEVICE WILL INTERRUPT ON THE PREPARED LEVEL. THIS SAME PROCEDURE IS FOLLOWED FOR LEVELS 1 AND 2. IF NO ERRORS ARE FOUND, ROUTINE TWO (2) IS STARTED.

ROUTINE 2:
THIS ROUTINE WILL FIRST BLANK THE SCREEN THEN WRITE EACH CHARACTER TO EACH SCREEN LOCATION. THIS IS PERFORMED BY FILLING THE SCREEN WITH EACH CHARACTER. IF NO ERRORS ARE FOUND ROUTINE THREE (3) IS STARTED.

ROUTINE 3:
THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL 1, PRINT SIXTEEN (16) LINES OF 'HH' OVERPRINTED WITH 'II'. THE OPERATOR CAN DETERMINE THE ALIGNMENT INTEGRITY OF THE HEAD. IF NO ERRORS ARE FOUND ROUTINE FOUR (4) IS STARTED.

ROUTINE 4:
THIS ROUTINE WILL FIRST BLANK THE SCREEN. THEN DATA IS WRITTEN ON THE BOTTOM LINE WITH A SHIFT UP, UNTIL IT IS AT THE TOP. THIS IS DONE BY EXECUTING A WRITE TO THE BOTTOM LINE WITH A SHIFT UP. IF NO ERRORS ARE FOUND, ROUTINE FIVE (5) IS STARTED.

ROUTINE 5:
THIS ROUTINE WILL PRINT EACH CHARACTER, IN A DEFAULT CHARACTER SET, TO EACH PRINT LOCATION. IF NO ERRORS ARE FOUND, ROUTINE SIX (6) IS STARTED.

ROUTINE 6:
THE TEST IS EQUAL TO THAT OF ROUTINE FOUR (4) WITH THE EXCEPTION OF WRITING TO THE TOP LINE WITH A DOWNWARD SHIFT. IF NO ERRORS ARE FOUND, ROUTINE SEVEN (7) IS STARTED.

ROUTINE 7:
THIS ROUTINE WILL CHANGE THE PRINT LOCATION OF A FIXED, 8 CHARACTER DATA BUFFER TO TEST THE DEVICE ON CHANGED LENGTH LINES. IF NO ERRORS ARE FOUND ROUTINE 8 IS STARTED.

ROUTINE 8:
THIS ROUTINE WILL ENSURE THAT ALL ILLEGAL DCB'S WILL GIVE A COMMAND REJECT. AFTER THIS A RESET IS GIVEN TO THE ATTACHMENT CARD. IF NO ERRORS ARE FOUND ROUTINE 1 IS STARTED.

TERMINATING SEQUENCE:
(1) PREPARE WITH 'I' BIT OFF
(2) RESET
(3) PROGRAM TERMINATE

25.01.00   5250 ATTACHMENT HALT CODES

E4E1   ENTER STATION ADDRESS FOR DISPLAY (FF = DO NOT TEST) DA = XX

FOR DEVICE ADDRESS XX ENTER THE STATION ADDRESS OF THE DISPLAY STATION TO BE TESTED. IF NO STATION IS DESIRED ENTER FF AS THE STATION ADDRESS.
(R3 -> EBCDIC DEVICE ADDRESS)

E4E2   ENTER STATION ADDRESS FOR PRINTER (FF = DO NOT TEST) DA = XX

FOR DEVICE ADDRESS XX ENTER THE STATION ADDRESS OF THE DISPLAY STATION TO BE TESTED. IF NO STATION IS DESIRED ENTER FF AS THE STATION ADDRESS.
(R3 -> EBCDIC DEVICE ADDRESS)

E4E3   WHAT FORMS WIDTH FOR THE PRINTER D.A. = XX
(ENTER PRINT POSITIONS I.E. F0132 - AND SO ON)

THE PRINT POSITIONS SHOULD BE A DECIMAL NUMBER. THE QUESTION SHOULD BE ANSWERED AS DESCRIBED. REMEMBER THAT MULTIPART PAPER SHOULD NEVER BE USED DURING TEST.
(R3 -> EBCDIC DEVICE ADDRESS)

26.00.00 MULTIFUNCTION ROUTINE DESCRIPTION ---- TYPE E6

WHEN EXECUTING THE MULTIFUNCTION SYSTEM TEST PROGRAM, TWO (2) ROUTINES ARE STARTED AUTOMATICALLY.
A DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
THIS ROUTINE WILL PREPARE THE DEVICE TO LEVEL ZERO (0) THEN A RESET AND READ ID COMMAND IS ISSUED
TO THE DEVICE. IF NO ERRORS ARE FOUND, ROUTINE TWO (2) IS STARTED. THE NEXT PASS THE LEVEL IS
CHANGED AND TESTING CONTINUES. ALL LEVELS ARE TESTED EXCEPT LEVEL THREE (3).

ROUTINE 2:
THIS ROUTINE WILL ENSURE THE FOLLOWING CONTROLLER COMMANDS WILL RESPOND.
        1. CONTROLLER STATUS COMMAND.
        2. INITIALIZE CONTROLLER COMMAND.
        3. CONTROLLER READ STORAGE.
        4. CONTROLLER LOAD STORAGE.

DATA WILL CYCLE STEAL INTO AND OUT OF STORAGE.
IF NO ERRORS ARE FOUND ROUTINE 1 IS STARTED.

        TERMINATING SEQUENCE:
(1)   PREPARE WITH 'I' BIT OFF
(2)   RESET
(3)   PROGRAM TERMINATE

27.00.00 ACCA SL ROUTINE DESCRIPTION ---- TYPE E8

WHEN EXECUTING THE ACCA SL SYSTEM TEST PROGRAM, FOUR (4) ROUTINES ARE STARTED AUTOMATICALLY. A
DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS:

ROUTINE 1:
THIS ROUTINE GIVES A RESET THEN READS THE DEVICE ID ON LEVELS 0 THROUGH 2, ON EACH LEVEL A DTR
COMMAND IS GIVEN TO OBTAIN AN INTERRUPT. WHEN THIS HAS BEEN DONE CORRECTLY, A DIAGNOSTIC TWO
COMMAND IS GIVEN AND A CHECKSUM CHECK IS PERFORMED. IF NO ERRORS ARE FOUND ROUTINE 2 IS STARTED.

ROUTINE 2:
THIS ROUTINE ENSURES THAT THE CYCLE STEAL STATUS RESIDUAL ADDRESS IS CORRECT. IF NO ERRORS ARE
FOUND ROUTINE 3 IS STARTED.

ROUTINE 3:
THIS ROUTINE FIRST GIVES A DIAGNOSTIC TWO COMMAND. WILL THEN TEST THE RECEIVED DATA FOR VALIDITY
WITH THE LAST DCB AND THE INFORMATION PASSED THROUGH THE CONFIGURATION TABLE. THIS CHECK ONLY
INCLUDES DIAGNOSTIC READ DATA WORD 4 THROUGH WORD 17. IF NO ERRORS ARE FOUND ROUTINE 4 IS
STARTED.

ROUTINE 4:
THIS ROUTINE GIVES THE DCB'S NECESSARY TO OBTAIN A COMMAND REJECT AND A DCB SPECIFICATION CHECK.
IF NO ERRORS ARE FOUND ROUTINE 1 IS STARTED.

        TERMINATING SEQUENCE:
(1)   PREPARE WITH 'I' BIT OFF
(2)   RESET
(3)   PROGRAM TERMINATE

28.00.00 ACCA ML ROUTINE DESCRIPTION ---- TYPE E9

WHEN EXECUTING THE ACCA ML SYSTEM TEST PROGRAM THE SAME FOUR (4) ROUTINES ARE EXECUTED AS WITH THE ACCA SL (SEE SECTION 23.00.00 ABOVE). THE DIFFERENCE IS THAT ROUTINE ONE WILL BE EXECUTED FOR DA ONE THEN TWO, THREE, FOUR --> EIGHT THEN ROUTINE TWO IS STARTED FOR DEVICE ADDRESS ONE, TWO --- AND SO ON. EXCEPT FOR THIS ALL TESTING IS THE SAME AS THE ACCA SL ATTACHMENT CARD.

ROUTINE 1:
THIS ROUTINE GIVES A RESET THEN READS THE DEVICE ID ON LEVELS 0, 1 AND 2. ON EACH LEVEL A DTR COMMAND IS GIVEN TO OBTAIN AN INTERRUPT. WHEN THIS HAS BEEN DONE CORRECTLY, A DIAGNOSTIC TWO COMMAND IS GIVEN AND A CHECKSUM CHECK IS PERFORMED. IF NO ERRORS ARE FOUND ROUTINE TWO (2) IS STARTED.

ROUTINE 2:
THIS ROUTINE ENSURES THAT THE CYCLE STEAL STATUS RESIDUAL ADDRESS IS CORRECT. IF NO ERRORS ARE FOUND ROUTINE THREE (3) IS STARTED.

ROUTINE 3:
THIS ROUTINE FIRST GIVES A DIAGNOSTIC TWO COMMAND, THEN TEST THE RECEIVED DATA FOR VALIDITY WITH THE LAST DCB AND THE INFORMATION PASSED THROUGH THE CONFIGURATION TABLE. THIS CHECK ONLY INCLUDES DIAGNOSTIC READ DATA WORD 12. IF NO ERRORS ARE FOUND ROUTINE FOUR (4) IS STARTED.

ROUTINE 4:
THIS ROUTINE GIVES THE DCB'S NECESSARY TO OBTAIN A COMMAND REJECT AND A DCB SPECIFICATION CHECK. IF NO ERRORS ARE FOUND ROUTINE ONE (1) IS STARTED.

TERMINATING SEQUENCE:
(1)   PREPARE WITH 'I' BIT OFF
(2)   RESET
(3)   PROGRAM TERMINATE

29.00.00 FPMLC ROUTINE DESCRIPTION ---- TYPE EA

WHEN EXECUTING THE FEATURE PROGRAMMABLE MULTILINE COMMUNICATIONS ATTACHMENT SYSTEM TEST PROGRAM THE SAME FOUR (4) ROUTINES ARE EXECUTED AS WITH THE ACCA SL (SEE SECTION 23.00.00 ABOVE). THE DIFFERENCE IS THAT ROUTINE ONE WILL BE EXECUTED FOR DA ONE (1), TWO (2), THREE (3) AND FOUR (4) --> EIGHT (8), THEN ROUTINE TWO IS STARTED FOR DA ONE (1), TWO (2), THREE (3) AND FOUR (4) --> EIGHT (8). EXCEPT FOR THIS ALL TESTING IS THE SAME AS THE ACCA SL ATTACHMENT CARD. (WITH THE ADDITION OF A FIFTH (5TH) ROUTINE.)

ROUTINE 1:
THIS ROUTINE GIVES A RESET THEN READS THE DEVICE ID ON LEVELS 0, 1 AND 2. ON EACH LEVEL A RESET COMMAND IS GIVEN TO OBTAIN AN INTERRUPT. WHEN THIS HAS BEEN DONE CORRECTLY, A DIAGNOSTIC ONE COMMAND IS GIVEN AND A CHECKSUM CHECK IS PERFORMED. IF NO ERRORS ARE FOUND ROUTINE TWO (2) IS STARTED.

ROUTINE 2:
THIS ROUTINE ENSURES THAT THE CYCLE STEAL STATUS RESIDUAL ADDRESS IS CORRECT. IF NO ERRORS ARE FOUND ROUTINE THREE (3) IS STARTED.

ROUTINE 3:
THIS ROUTINE FIRST GIVES A DIAGNOSTIC TWO COMMAND, THEN TEST THE RECEIVED DATA FOR VALIDITY WITH THE LAST DCB AND THE INFORMATION PASSED THROUGH THE CONFIGURATION TABLE. THIS CHECK INCLUDES ALL DIAGNOSTIC DATA. IF NO ERRORS ARE FOUND ROUTINE FOUR (4) IS STARTED.

ROUTINE 4:
THIS ROUTINE GIVES THE DCB'S NECESSARY TO OBTAIN A COMMAND REJECT AND A DCB SPECIFICATION CHECK. IF NO ERRORS ARE FOUND ROUTINE FIVE (5) IS STARTED.

ROUTINE 5:
THIS ROUTINE WILL ENSURE THAT ALL ILLEGAL DCB'S WILL GIVE A COMMAND REJECT. AFTER THIS A RESET IS GIVEN TO THE ATTACHMENT CARD. IF NO ERRORS ARE FOUND ROUTINE ONE (1) IS STARTED.

TERMINATING SEQUENCE:
(1)   PREPARE WITH 'I' BIT OFF
(2)   RESET
(3)   PROGRAM TERMINATE

30.00.00 BSCA SL ROUTINE DESCRIPTION ---- TYPE F0

WHEN EXECUTING THE BSCA SL SYSTEM TEST PROGRAM, FOUR (4) ROUTINES ARE STARTED AUTOMATICALLY. THE
DESCRIPTION OF EACH TEST (ROUTINE) IS AS FOLLOWS.

ROUTINE 1:
THIS ROUTINE GIVES A RESET THEN READS THE DEVICE ID ON LEVELS 0, 1 AND 2. ON EACH LEVEL A DTR
COMMAND IS GIVEN TO OBTAIN AN INTERRUPT. WHEN THIS HAS BEEN DONE CORRECTLY, A DIAGNOSTIC COMMAND
IS GIVEN AND A CHECKSUM CHECK IS PERFORMED. IF NO ERRORS ARE FOUND ROUTINE TWO (2) IS STARTED.

ROUTINE 2:
THIS ROUTINE ENSURES THAT THE CYCLE STEAL STATUS RESIDUAL ADDRESS IS CORRECT. IF NO ERRORS ARE
FOUND ROUTINE THREE (3) IS STARTED.

ROUTINE 3:
THIS ROUTINE FIRST GIVES A CYCLE STEAL STATUS COMMAND, THEN TEST THE RECEIVED DATA FOR VALIDITY
WITH THE INFORMATION PASSED THROUGH THE CONFIGURATION TABLE. IF NO ERRORS ARE FOUND ROUTINE FOUR
(4) IS STARTED.

ROUTINE 4:
THIS ROUTINE GIVES THE DCB'S NECESSARY TO OBTAIN A COMMAND REJECT AND A DCB SPECIFICATION CHECK.
IF NO ERRORS ARE FOUND ROUTINE ONE (1) IS STARTED.

TERMINATING SEQUENCE:
(1)   RESET
(2)   PREPARE WITH 'I' BIT OFF
(3)   PROGRAM TERMINATE

31.00.00 BSCA ML ROUTINE DESCRIPTION ---- TYPE F1

WHEN EXECUTING THE BSCA ML SYSTEM TEST PROGRAM THE SAME FOUR (4) ROUTINES ARE EXECUTED AS WITH
THE BSCA SL (SEE SECTION 26.00.00). THE DIFFERENCE IS THAT ROUTINE ONE WILL BE EXECUTED FOR DA
ONE THEN TWO, THREE, FOUR --> EIGHT THEN ROUTINE TWO IS STARTED FOR DEVICE ADDRESS ONE, TWO ---
AND SO ON. EXCEPT FOR THIS ALL TESTING IS THE SAME AS WITH THE BSCA SL ATTACHMENT CARD.

ROUTINE 1:
THIS ROUTINE GIVES A RESET THEN READS THE DEVICE ID ON LEVELS 0, 1 AND 2. ON EACH LEVEL A DTR
COMMAND IS GIVEN TO OBTAIN AN INTERRUPT. WHEN THIS HAS BEEN DONE CORRECTLY, A DIAGNOSTIC COMMAND
IS GIVEN AND A CHECKSUM CHECK IS PERFORMED. IF NO ERRORS ARE FOUND ROUTINE TWO (2) IS STARTED.

ROUTINE 2:
THIS ROUTINE ENSURES THAT THE CYCLE STEAL STATUS RESIDUAL ADDRESS IS CORRECT. IF NO ERRORS ARE
FOUND ROUTINE THREE (3) IS STARTED.

ROUTINE 3:
THIS ROUTINE FIRST GIVES A CYCLE STEAL STATUS COMMAND. THEN TESTS THE RECEIVED DATA FOR VALIDITY
WITH THE INFORMATION PASSED THROUGH THE CONFIGURATION TABLE. IF NO ERRORS ARE FOUND ROUTINE FOUR
(4) IS STARTED.

ROUTINE 4:
THIS ROUTINE GIVES THE DCB'S NECESSARY TO OBTAIN A COMMAND REJECT AND A DCB SPECIFICATION CHECK.
IF NO ERRORS ARE FOUND ROUTINE ONE (1) IS STARTED.

TERMINATING SEQUENCE:
(1)   PREPARE WITH 'I' BIT OFF
(2)   RESET
(3)   PROGRAM TERMINATE

32.00.00 SDLC ROUTINE DESCRIPTION ---- TYPE F8

WHEN EXECUTING THE SDLC SYSTEM TEST PROGRAM, THE QUESTION IS THE DEVICE WRAPPED WILL BE DISPLAYED TO THE OPERATOR. IF THE ANSWER TO THE QUESTION IS YES THEN BOTH ROUTINES 3 AND 4 WILL EXPECT DIFFERENT STATUS DATA. IN THIS PROGRAM FOUR (4) ROUTINES ARE STARTED AUTOMATICALLY.

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**********************************************************************
*                                                                  *
*                                                                  *
*    NOTE:  SYSTEM TEST WILL BE TERMINATED UNTIL THE QUESTION IS ANSWERED.  *
*           (ONE PER SDLC DEVICE).                                  *
*                                                                  *
*                                                                  *
**********************************************************************
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ROUTINE 1:
   THIS ROUTINE GIVES A RESET THEN READS THE DEVICE ID ON LEVELS 0 THROUGH 2, ON EACH LEVEL A DTR COMMAND IS GIVEN TO OBTAIN AN INTERRUPT. WHEN THIS HAS BEEN DONE CORRECTLY, A DIAGNOSTIC COMMAND IS GIVEN AND A CHECKSUM CHECK IS PERFORMED. IF NO ERRORS ARE FOUND ROUTINE 2 IS STARTED.

ROUTINE 2:
   THIS ROUTINE ENSURES THAT THE CYCLE STEAL STATUS RESIDUAL ADDRESS IS CORRECT. THEN GIVES ANOTHER CYCLE STEAL STATUS READ TO ENSURE THAT FIRST CYCLE STEAL READ DID NOT CHANGE THE RESIDUAL ADDRESS. IF NO ERRORS ARE FOUND ROUTINE 3 IS STARTED.

ROUTINE 3:
   THIS ROUTINE FIRST GIVES A DIAGNOSTIC TWO COMMAND THEN CHECKS THE STATUS WORDS TO ENSURE THAT THEY ARE CORRECT WITH THE CONFIGURATION TABLE AND THE ATTACHMENT CARD IF WRAPPED. IF NO ERRORS ARE FOUND ROUTINE 4 IS STARTED.

ROUTINE 4:
   THIS ROUTINE GIVES THE DCB'S NECESSARY TO OBTAIN A COMMAND REJECT AND A DCB SPECIFICATION CHECK, THEN A DISABLE FOLLOWED BY AN ENABLE. IF NO ERRORS ARE FOUND ROUTINE 1 IS STARTED.

   (1)   TERMINATING SEQUENCE:
   (1)   PREPARE WITH 'I' BIT OFF
   (2)   RESET
   (3)   PROGRAM TERMINATE

32.01.00 SDLC HALT CODE

F8E1   IS THERE A WRAP CONNECTED TO DA = XX
       DOES THE DEVICE ADDRESS XX HAVE A WRAP CABLE CONNECTED (Y OR N)
       (R3 -> EBCDIC DEVICE ADDRESS)

33.00.00 SYNC COM SL C/HS ROUTINE DESCRIPTION ---- TYPE FC

WHEN EXECUTING THE SYNC COM SL C/HS SYSTEM TEST PROGRAM, THE QUESTION IS THE DEVICE WRAPPED WILL BE DISPLAYED TO THE OPERATOR. IF THE ANSWER TO THE QUESTION IS YES THEN ROUTINE 4 WILL EXECUTE IF THE ANSWER IS NO ROUTINE 4 WILL NOT EXECUTE. IN THIS PROGRAM SIX (6) ROUTINES ARE STARTED AUTOMATICALLY.

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**********************************************************************
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*                                                                  *
*    NOTE:  SYSTEM TEST WILL BE TERMINATED UNTIL THE QUESTION IS ANSWERED.  *
*           (ONE PER SYNC COM SL C/HS ATTACHMENT).                  *
*                                                                  *
*                                                                  *
**********************************************************************
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ROUTINE 1:
   THIS ROUTINE GIVES A RESET THEN PREPARES THE DEVICE FOR LEVEL 0 AND THEN THE NEXT ROUTINE (2) STARTS. WHEN ROUTINE 1 STARTS AGAIN THE DEVICE IS PREPARED FOR LEVEL 1. LEVELS 0,1,2 ARE USED IN THIS PROGRAM. IF NO ERRORS ARE FOUND ROUTINE 2 IS STARTED.

ROUTINE 2:
   THIS ROUTINE ENSURES THAT THE CYCLE STEAL STATUS RESIDUAL ADDRESS IS CORRECT. THEN GIVES ANOTHER CYCLE STEAL STATUS READ TO ENSURE THAT THE FIRST CYCLE STEAL READ DID NOT CHANGE THE RESIDUAL ADDRESS. IF NO ERRORS ARE FOUND ROUTINE 3 IS STARTED.

ROUTINE 3:
   THIS ROUTINE FIRST GIVES A DIAGNOSTIC ONE COMMAND THEN CHECKS THE CHECKSUM WORDS TO ENSURE THAT THEY ARE CORRECT. IF NO ERRORS ARE FOUND ROUTINE 4 IS STARTED.

ROUTINE 4:
   THIS ROUTINE FIRST GIVES A DIAGNOSTIC TWO COMMAND THEN CHECKS THE STATUS WORDS TO ENSURE THAT THEY ARE CORRECT WITH THE CONFIGURATION TABLE. IF NO ERRORS ARE FOUND ROUTINE 5 IS STARTED.

ROUTINE 5:
   THIS ROUTINE GIVES THE DCB'S NECESSARY TO OBTAIN A COMMAND REJECT AND A DCB SPECIFICATION CHECK, THEN A DISABLE FOLLOWED BY AN ENABLE. IF NO ERRORS ARE FOUND ROUTINE 6 IS STARTED.

ROUTINE 6:
   THIS ROUTINE WILL ENSURE THAT ALL NOT LEGAL DCB'S WILL GIVE A COMMAND REJECT. AFTER THIS A RESET IS GIVEN TO THE ATTACHMENT CARD. IF NO ERRORS ARE FOUND ROUTINE ONE (1) IS STARTED.

   (1)   TERMINATING SEQUENCE:
   (1)   PREPARE WITH 'I' BIT OFF
   (2)   RESET
   (3)   PROGRAM TERMINATE

33.01.00 SYNC COM SL C/HS HALT CODE

FCE1   IS THERE A WRAP CONNECTED TO DA = XX
       DOES THE DEVICE ADDRESS XX HAVE A WRAP CABLE CONNECTED (Y OR N)
       (R3 -> EBCDIC DEVICE ADDRESS)