IDENTIFICATION

PRODUCT CODE: MAINDEC-08-DHRKA-E-D

PRODUCT NAME: RK8E DISKLESS CONTROL TEST

DATE RELEASED: JANUARY, 1977

MAINTAINER: DIAGNOSTIC ENGINEERING

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1. ABSTRACT

THE RK8E DISKLESS CONTROL TEST IS DESIGNED FOR
THE PURPOSE OF CHECKOUT OF THE RK8E DISK CONTROL
LOGIC NOT REQUIRING THE USE OF THE DISK DRIVE.
THIS TEST SHOULD BE RUN WITH ALL EXISTING DRIVES
SET TO THE LOAD POSITION.

2. REQUIREMENTS

2.1 HARDWARE

PDP-8/E, 8/M, OR 8/F COMPUTER OR OTHER
FAMILY OF 8 COMPATIBLE COMPUTER WITH
NECESSARY DW8E BUS ADAPTER.

AT LEAST 4K OF READ/WRITE MEMORY. AT LEAST 8K OF MEMORY IS
NEEDED FOR OPERATION OF THE CONSOLE PACKAGE.

ASR-33 TELETYPE OR EQUIVALENT
RK8E DISK CONTROL
RK05J OR RK05F DISK DRIVE(S)

2.2 SPECIAL

THE DISKLESS TEST CAN BE RUN WITH ALL DRIVES
AVAILABLE CABLED TO THE RK8E CONTROL. HOWEVER,
THE POWER MUST BE SUPPLIED TO THE DRIVES, AND
ALL THE DRIVES MUST BE SET TO THE LOAD POSITION.

THE DISKLESS TEST CAN ALSO BE RUN WITH THE
CABLES TO THE DRIVES DISCONNECTED FROM THE
RK8E CONTROL.

2.3 STORAGE

THE PROGRAM UTILIZES OR OCCUPIES LOCATIONS 0000 TO
7377 OF FIELD 0 AND LOCATIONS 0200 TO 1377 OF FIELD 1.

THE PROGRAM WILL ALSO TEST DATA BREAK TRANSFER TO
ALL EXISTING EXTENDED FIELDS AS INDICATED BY SWR9-11
IF THE CONSOLE PACKAGE IS NOT ENABLED.

3. PRELIMINARY PROGRAMS

ALL BASIC AND EXTENDED MEMORY DIAGNOSTICS SHOULD
BE RUN PRIOR TO THIS TEST.

4. SWITCH REGISTER SETTINGS

SWR0=1   ENTER SCOPE LOOP. AFTER AN ERROR HALT
              AT LOCATION "ERHLT9" RAISING THIS
              SWITCH AND PRESSING KEY CONTINUE
              WILL CAUSE A SCOPE LOOP ON THE
              CURRENT TEST. IF SWR2≠0 AND THE
              TEST IS STILL FAILING, THE ERROR
              BELL SHOULD RING INDICATING AN
              ERROR.

SWR1=1   INHIBIT END OF TEST HALT. AT THE COM-
              PLETION OF THE TEST THE PROGRAM
              SHOULD HALT AT LOCATION "ENDHLT".
              RAISING THIS SWITCH WILL INHIBIT
              THE END OF TEST HALT.

SWR2=1   INHIBIT ERROR BELL ON SCOPE LOOP.

SWR3=1   GET ALL REGISTERS AFTER "ERHLT9".
              AFTER AN ERROR HALT AT LOCATION
              "ERHLT9", RAISING THIS SWITCH AND
              PRESSING KEY CONTINUE WILL RESULT
              IN THE TYPEOUT OF THE ABSOLUTE CON-
              TENTS OF THE STATUS, COMMAND, CPC,
              LOWER DATA, AND SURFACE AND SECTOR
              REGISTERS. ONCE THIS SWITCH IS USED
              IT IS NECESSARY TO RESART THA DIAGNOSTIC
              AT THE START (LOCATION 0200).

SWR4=1   STOP PROGRAM OR TEST HALT. RAISING THIS
              SWITCH WILL HALT THE PROGRAM AT
              THE COMPLETION OF THE CURRENT TEST.
              IF POSSIBLE THIS SWITCH SHOULD
              ALWAYS BE USED TO STOP THE PROGRAM.

SWR9-11   AMOUNT OF EXTENDED BANKS OF MEMORY.
              AT INITIAL START OF THE PROGRAM,
              SWR9-11 INDICATES THE AMOUNT OF
              EXISTING EXTENDED MEMORY FIELDS
              AVAILABLE TO TEST.

5. OPERATOR AND/OR PROGRAM ACTION

5.1 STANDARD TEST PROCEDURE

A. START AS SPECIFIED THROUGHOUT THIS DOCUMENTATION IS KEY
   CLEAR AND THEN KEY CONTINUE ON A PDP8/E, PDP8/F, OR
   PDP8/M COMPUTER.

B. LOAD THE PROGRAM INTO FIELD 0 USING THE
   STANDARD BINARY LOADER TECHNIQUE.

C. IF IT IS DESIRED TO CHANGE THE IOT CODES WITHIN THE
PROGRAM, FOLLOW THE PROCEDURE IN SECTION 5.4.

D. RUN THE DISKLESS CONTROL TEST PORTION BY FOLLOWING
THE PROCEDURE IN SECTION 5.2.

E. RUN THE MANUAL SCOPE TEST BY FOLLOWING THE PROCEDURE IN
SECTION 5.3.

5.2   DISKLESS CONTROL TEST

A. SET THE SWITCH LABELED "RUN/LOAD" TO THE "LOAD" POSITION ON
ALL DRIVES, OR DISCONNECT DRIVES FROM RK8E CONTROL.

B. IF DRIVES ARE CABLED TO THE RK8E CONTROL, VERIFY
AC POWER IN THE DRIVE(S) IS ON.

C. SET THE SWITCH REGISTER TO 0200 AND PRESS LOAD ADDRESS.

D. SET THE SWITCH REGISTER TO 0000.

E. SET SWR9-11 TO THE AMOUNT OF AVAILABLE EXTENDED R/W
MEMORY BANKS AND START THE COMPUTER RUNNING.

F. SET SWR1=1 IF THE OPERATOR DESIRES TO INHIBIT THE END
OF TEST HALT AT LOCATION "ENDHLT".

G. SWR4=1 SHOULD ALWAYS BE USED TO STOP THE PROGRAM.

H. THE PROGRAM SHOULD PRINT THE FOLLOWING MESSAGE AT
THE COMPLETION OF EACH SUCCESSFUL PASS APROX. EVERY 3.5
MINUTES.

        "RK8E DISKLESS PASS COMPLETE"

I. ANY HALTS OR TYPEOUTS OTHER THAN THE PASS COMPLETE
TYPEOUT AND THE END OF TEST HALT MENTIONED ABOVE
WILL BE CONCIDERED AN ERROR CONDITION. IN ALL CASES
ACCESS "ERRORS" SECTION 6 IN THIS DOCUMENTATION.

J. FOR ABSOLUTE LOCATIONS OF ALL KNOWN HALTS ACCESS PAGE 1
OF THE PROGRAM LISTING.

5.3   MANUAL SCOPE TEST FOR 16 BIT COUNTER

THIS TEST ENABLES THE OPERATOR TO TEST THE 16 BIT COUNTER
WHICH CANNOT BE TESTED UNDER PROGRAM CONTROL IN THE REGULAR
DISKLESS TEST. TO RUN THIS TEST, SIMPLY FOLLOW THE
FOLLOWING INSTRUCTIONS.

A. RUN THE DISKLESS CONTROL TEST PORTION PRIOR TO THIS
MANUAL TEST.

B. SET THE SWITCH REGISTER TO 0204 AND PRESS LOAD ADDRESS.

C. SET THE SWITCH REGISTER TO 0000 AND PRESS START.

D. SCOPE THE 16TH CARRY OUTPUT, TEST POINT 1 (T1), ON THE
   M7106 MODULE IN THE RKRE CONTROL LOGIC, FOR A POSITIVE
   GOING SIGNAL.

E. THE APROX. SIGNAL SHOULD BE A GROUND TO + 3 VOLT PULSE,
   9 MICRO-SECONDS WIDE, OCCURRING AT A 140 MICRO-SECOND RATE.

F. ALL THAT THE PROGRAM DOES IN THIS SCOPE TEST IS TO CON-
   SISTANTLY ISSUE HI MAIN SHIFT PULSES TO THE 16 BIT
   COUNTER ON THE M7106 MODULE.

5.4   CHANGE PROGRAM DEVICE IOT CODES
         ••••••••••••••••••••••••••••••••••

         THE PROGRAM NORMALLY RECOGNIZES PROGRAM DEVICE IOT CODE
         X74X. TO CHANGE THE PROGRAM DEVICE IOT CODE:

         A. SET THE SWITCH REGISTER TO 0205 AND PRESS LOAD ADDRESS.

         B. SET THE SWITCH REGISTER TO 0000, SET SWITCH REGISTER BITS
            3-8 TO THE DESIRED DEVICE IOT CODE, AND PRESS START.

         C. THE PROGRAM WILL CHANGE THE DEVICE IOT CODES WITHIN
            THE PROGRAM AND THEN HALT.

         D. PRESSING KEY CONTINUE WILL RESULT IN A START OF THE
            PROGRAM AT LOCATION 0200 (SEE SECTION 5.2 FOR
            OPERATION INSTRUCTIONS).

6.   ERRORS
         ••••••

6.1   USEFUL ERROR INFORMATION
         ••••••••••••••••••••••••••••

         THE LOCATION OF ALL KNOWN HALTS CAN BE FOUND BY
         ACCESSING PAGE 1 OF THE PROGRAM LISTING.

         ALL ERRORS FOUND WHEN RUNNING THIS TEST SHOULD BE
         CORRECTED BEFORE PROCEEDING ON IN THE TEST.

         WHEN AN OPERATOR ENCOUNTERS AN ERROR WHEN RUNNING THIS
         TEST HE SHOULD, IN ALL CASES, READ THE ERROR TYPEOUT
         INFORMATION, NOTE THE LOCATION OF THE FAILURE, READ
         ALL THE INFORMATION UNDER ERRORS IN THIS DOCUMENTATION,
         AND THEN ACCESS THE PROGRAM LISTING FOR FURTHER
         INFORMATION.

6.2 NON-RECOVERABLE ERROR HALTS

NON-RECOVERABLE ERROR HALTS FOR WHICH THERE ARE NO
TYPEOUTS OR SCOPE LOOPS ARE LISTED AND DEFINED AS FOLLOWS:

ERHLT1   UNDEFINED INTERRUPT

ERHLT2   SKIP TRAP FOR IOT "DCLR"

ERHLT3   SKIP TRAP FOR IOT "DLAG"

ERHLT4   SKIP TRAP FOR IOT "DLCA"

ERHLT5   SKIP TRAP FOR IOT "DRST"

ERHLT6   SKIP TRAP FOR IOT "DLDC"

ERHLT7   SKIP TRAP FOR IOT "DMAN"

6.3 RECOVERABLE ERROR HALT

ALL RECOVERABLE ERRORS, FOR WHICH THERE ARE SCOPE LOOPS
AND ERROR TYPEOUTS, SHOULD RESULT IN AN ERROR HALT AT
"ERHLT9".

ERHLT9   RECOVERABLE ERROR HALT. READ INFORMATION
                TYPEOUT ON TTY AND ACCESS LISTNG.

6.4 ERROR TYPEOUTS

WHEN A RECOVERABLE ERROR OCCURS THE PROGRAM WILL
PRINT AN "ERROR HEADER" WHICH WILL SPECIFY THE
PARTICULAR REGISTER IN ERROR OR TYPE OF ERROR FOUND
AT THE TIME OF THE FAILURE.

POSSIBLE "ERROR HEADERS" ARE AS FOLLOWS.

AC REGISTER ERROR
STATUS REGISTER ERROR
COMMAND REGISTER ERROR
DISK ADDRESS REGISTER ERROR
DATA BREAK ERROR
CRC REGISTER ERROR
DATA REGISTER ERROR
DISK SKIP ERROR
DISK INTERRUPT ERROR

AFTER THE "ERROR HEADER" MENTIONED ABOVE IS TYPED, THE
PROGRAM WILL PRINT THE FOLLOWING ERROR INFORMATION
FOUND AT THE TIME OF THE FAILURE, PERTAINING TO THE
FAILURE. POSSIBLE TYPEOUTS ARE AS FOLLOWS.

PC: PROGRAM LOCATION OF THE ACTUAL FAILURE.

GD: REFERS TO THE DATA EXPECTED IN THE REGISTER
        OR TYPE OF TEST SPECIFIED IN THE "ERROR HEADER".

CR: CONTENTS OF THE CRC REGISTER.

ST: CONTENTS OF THE STATUS REGISTER.

DB: CONTENTS OF THE LOWER DATA REGISTER.

CM: CONTENTS OF THE COMMAND REGISTER.

DA: CONTENTS OF THE DISK ADDRESS REGISTER OF
        THE CYLINDER, SURFACE, AND SECTOR BITS.

AD: BREAK ADDRESS OF DATA BREAK.

DT: DATA FOUND DURING DATA BREAK.

AC: CONTENTS OF THE AC REGISTER.

THE "GD:" INFORMATION TYPED OUT POINTS TO THE DATA
EXPECTED IN THE REGISTER IN ERROR OR TYPE OF ERROR TYPED
OUT IN THE "ERROR HEADER".

THE ERROR INFORMATION INDICATOR SUGGESTED BY THE "ERROR
HEADER" (I.E. DA: FOR DISK ADDRESS ERROR, CM: FOR COMMAND
REGISTER ERROR, CR: FOR CRC REGISTER ERROR, ETC.), IS THE
ACTUAL CONTENTS OF THAT PARTICULAR REGISTER. ERROR INFORMA-
TION OTHER THAN THAT SUGGESTED BY THE "ERROR HEADER" IS THE
SOFTWARE INFORMATION LOADED INTO THAT REGISTER PRIOR TO
THE FAILURE.(NOTE: "ST:" STATUS ALWAYS INDICATES THE ACTUAL
CONTENTS.)

TO TYPEOUT THE ACTUAL CONTENTS OF THE CRC, STATUS,
LOWER DATA, COMMAND, AND SURFACE AND SECTOR REGISTERS,
AFTER AN ERROR HALT AT LOCATION "ERHLT9", SET SWR3=1
AND PRESS KEY CONTINUE.

6.5   SCOPE LOOPS

THERE ARE SCOPE LOOPS AVAILABLE FOR ALL ERRORS
RESULTING IN AN ERROR HALT AT "ERHLT9".

TO ENTER SCOPE LOOP, INHIBIT ERROR TYPEOUT, AND INHIBIT
ERROR HALT, AFTER AN ERROR HALT AT "ERHLT9", SET SWR0=1
AND PRESS KEY CONTINUE.

IF THE SCOPE LOOP IS WORKING CORRECTLY AND IF THE TEST
IS STILL FAILING THE TTY BELL SHOULD RING. SET SWR2=1
TO INHIBIT THE TTY BELL.

6.6   TYPICAL ERROR TYPEOUTS

THE FOLLOWING IS A TYPICAL EXAMPLE OF AN "ERROR HEADER"
AND TYPEOUT THAT COULD HAVE OCCURRED IF A DISK IOT
FAILED TO CLEAR THE AC REGISTER.

AC REGISTER ERROR
PC:1541 GD:0000 AC:0100

THE FOLLOWING IS AN EXAMPLE OF AN "ERROR HEADER" AND
TYPEOUT THAT COULD HAVE OCCURRED WHEN READING THE
COMMAND REGISTER.

COMMAND REGISTER ERROR
PC:2100 GD:0222 CM:0200

THE FOLLOWING IS AN EXAMPLE OF AN "ERROR HEADER" AND
TYPEOUT THAT COULD HAVE OCCURRED IF THE DISK
SKIP IOT FAILED TO SKIP.

DISK SKIP ERROR
PC:3332

THE FOLLOWING IS AN EXAMPLE OF AN "ERROR HEADER" AND
TYPEOUT THAT COULD HAVE OCCURRED ON A WRITE DATA BREAK.

DATA BREAK ERROR
PC:4453 GD:5252 CM:4000 AD:7777 DT:5250

7.   RESTRICTIONS

THE PROGRAM IS ONLY OPERATIONAL IN FIELD 0.

IF THE DRIVES ARE CABLED TO THE RK8E CONTROL LOGIC,
THE AC POWER TO THE DRIVES MUST BE ON AND THE DRIVES
MUST BE SET TO THE LOAD POSITION.

8. TROUBLE SHOOTING INFORMATION

        IOT   FUNCTION
        ---   --------

        6741 DSKP   "SKIP" SKIP IF TRANSFFR DONE FLAG
                                OR ERROR FLAG IS SET.

        6742 DCLR   "CLEAR" FUNCTION IS REGULATED BY
                                AC BITS 10 AND 11. THE AC IS THEN
                                CLEARED.

        AC10   AC11
        ----   ----

        0   0   CLEAR THE AC AND STATUS REGISTER.

        0   1   CLEAR THE AC, CONTROL, AND MAJOR
                                REGISTERS. THIS INSTRUCTION WILL
                                STOP THE CONTROL EVEN IF IT IS
                                WRITING A HEADER. THIS IS THE ONLY
                                INSTRUCTION THAT WILL CLEAR
                                MAINTENANCE MODE.

        1   0   CLEAR AC, RECALIBRATE DISK DRIVE,
                                AND CLEAR STATUS REGISTER.

        6743 DLAG   "LOAD DISK ADDRESS AND GO" LOAD THE
                                DISK CYLINDER, SURFACE, AND SECTOR
                                FROM THE AC, CLEAR THE AC, AND DO
                                THE COMMAND IN THE COMMAND REGISTER.

        AC
        --

        0-6   CYLINDER

         7   SURFACE (1= UPPER) (0= LOWER)

        8-11   SECTOR

        6744 DLCA   "LOAD CURRENT ADDRESS" LOAD THE
                                CURRENT ADDRESS FROM AC. THE AC
                                IS THEN CLEARED.

        AC
        --

        0-11   CURRENT ADDRESS

        6745 DRST   "READ STATUS" CLEAR THE AC AND
                                READ THE CONTENTS OF THE STATUS
                                REGISTER INTO THE AC.

AC
--

0	TRANSFER DONE
1	READY TO SEEK, READ, OR WRITE.
2	NOT USED
3	SEEK FAIL
4	DISK FILE READY
5	CONTROL BUSY ERROR
6	TIME OUT ERROR
7	WRITE LOCK ERROR
8	CRC ERROR
9	DATA RATE ERROR
10	DRIVE STATUS ERROR
11	CYLINDER ADDRESS ERROR

6746 DLDC   "LOAD COMMAND" LOAD THE COMMAND
                   REGISTER FROM AC, CLEAR THE AC,
                   AND CLEAR THE STATUS REGISTER.

AC
--

0-2=0	READ DATA
0-2=1	READ ALL
0-2=2	WRITE LOCK
0-2=3	SEEK ONLY
0-2=4	WRITE DATA
0-2=5	WRITE ALL
0-2=6	NOT USED
0-2=7	NOT USED
3	ENABLE INTERRUPT
4	ENABLE SET TRANSFER DONE ON SEEK DONE
5	HALF BLOCK 128 WORDS
6	EXTENDED MEMORY ADDRESS
7	EXTENDED MEMORY ADDRESS
8	EXTENDED MEMORY ADDRESS
9	UNIT SELECT
10	UNIT SELECT
11	EXTENDED CYLINDER ADDRESS

6747 DMAN   "MAINTENANCE IOT" LOAD THE
                   MAINTENANCE REGISTER FROM THE AC, THE
                   FUNCTION IS REGULATED BY THE AC BITS.
                   MAINTENANCE MODE CAN ONLY BE CLEARED
                   BY DCLR "CLEAR CONTROL".

```
AC
--

0                         ENTER MAINTENANCE MODE
1                         ENABLE SHIFT TO LOWER BUFFER
2                         AC BIT 10, CRC REGISTER, AND THE
                          LOWER DATA BUFFER ARE CONNECTED AS
                          A SHIFT REGISTER. AC BIT 10 DATA
                          SHIFTS TO THE CRC, THE CRC SHIFTS
                          TO THE LOWER DATA BUFFER.
3                         SHIFT COMMAND REGISTER TO THE LOWER
                          DATA BUFFER.
4                         SHIFT THE SURFACE AND SECTOR REGISTER
                          TO THE LOWER DATA BUFFER.
5                         SHIFT AC 10 DATA TO THE UPPER
                          DATA BUFFER. THE UPPER BUFFER
                          SHOULD SINK IN THE SILO WHEN
                          FULL.
6                         ONE SINGLE CYCLE BREAK REQUEST.
                          DIRECTION IS REGULATED BY FUNCTION
                          IN THE COMMAND REGISTER.
7                         CLEAR AC THEN READ THE LOWER
                          DATA BUFFER TO THE AC.
8                         NOT USED.
9                         NOT USED.
10                        USED AS DATA WITH OTHER BITS IN
                          THE MAINTENANCE MODE.
11                        NOT USED.
```

9.   PROGRAM DESCRIPTION

THE RK8E DISKLESS CONTROL TEST IS BASICALLY A STATIC
REGISTER AND IOT TEST ON THE RK8E DISK CONTROL LOGIC NOT
REQUIRING THE USE OF THE DISK DRIVE. SINGLE CYCLE BREAKS
ARE ALSO EXECUTED TO AND FROM THE CONTROL LOGIC.

THE PROGRAM IS DIVIDED INTO MANY SEPARATE INDIVIDUAL
SUBTESTS, WHICH WILL TEST DIFFERENT PARTS OF THE CONTROL
LOGIC. THE SUBTESTS ARE ARRANGED IN SUCH A MANNER TO TEST
THE EASIEST FUNCTIONS FIRST. PRECEEDING EACH SUBTEST, IN
THE LISTING, IS A SHORT EXPLANATION OF THE TEST AND LOGIC
TESTED.

A BRIEF EXPLANATION OF SUBTESTS AND PROGRAM FLOW IS
AS FOLLOWS:

A. SETUP

   SETUP POINTERS AND RETURNS FOR CURRENT FIELD, AMOUNT
   OF EXTENDED FIELDS, AND INTERRUPT SERVICE.

B. TST0-TST3

   VERIFY REGISTERS AND CONTROL FLIP-FLOPS WERE CLEARED
   BY "CLR ALL" AT START OF TEST. (NOTE: "CLR ALL" GENERATED
   BY KEY START ON MOST PDP-8'S OR KEYS CLEAR AND THEN
   CONTINUE ON A PDP-8/E, 8/F OR 8/M.)

C. TST4

   VERIFY ALL DRIVES ARE SET TO "LOAD" OR WERE
   DISCONNECTED FROM CONTROL AT START OF TEST.

D. TST5

   VERIFY "DSKP" DISK SKIP IOT DOESN'T AFFECT AC REGISTER.

E. TST6-TST9

   VERIFY THAT IOTS "DLCA LOAD CURRENT ADDRESS", "DLDC LOAD
   COMMAND", "DLAG LOAD DISK ADDRESS", AND "DCLR CLEAR CONTROL
   FUNCTION" DO CLEAR THE AC REGISTER AFTER THEIR EXECUTION.

F. TST10-TST14

   VERIFY LOADING, CLEARING, AND READING THE COMMAND REGISTER
   USING VARIOUS DATA PATTERNS

G. TST15-TST28

   VERIFY LOADING, CLEARING, AND READING THE DISK ADDRESS
   REGISTER USING VARIOUS DATA PATTERNS.

H. TST29-TST30

   VERIFY LOADING, CLEARING, AND READING THE COMMAND REGISTER
   USING VARIOUS DATA PATTERNS

I. TST31

VERIFY LOADING, CLEARING, AND READING THE DISK ADDRESS
REGISTER.

J. TST32-TST33

VERIFY "DMAN MAINTENANCE IOT" DOES NOT EFFECT AC REGISTER.

K. TST34-TST35

VERIFY MAINTENANCE MODE CAN BE SET AND CLEARED CORRECTLY.

L. TST36-TST40

VERIFY LOADING, READING, AND CLEARING THE CRC REGISTER
USING VARIOUS DATA PATTERNS.

M. TST41-TST48

VERIFY LOADING, READING, AND CLEARING THE BUFFER REGISTERS
USING VARIOUS DATA PATTERNS

N. TST49-TST76

VERIFY SETTING AND CLEARING VARIOUS STATUS REGISTER
BITS, ERROR FLAGS, SKIP FUNCTIONS, AND INTERRUPT
FUNCTIONS.

O. TST77-TST100

VERIFY READ AND WRITE MAINTENANCE DATA BREAKS TO AND
FROM CONTROL USING VARIOUS DATA PATTERNS IN CURRENT FIELD.

P. TST101-TST105

VERIFY READ AND WRITE MAINTENANCE DATA BREAKS TO AND
FROM CONTROL USING VARIOUS DATA PATTERNS IN ALL EXISTING
EXTENDED R/W MEMORY FIELDS.

Q. TYPE PASS COMPLETE AND LOOP TO TST4.

10.   CONSOLE PACKAGE ADDENDUM

10.1.   DESCRIPTION

THE CONSOLE PACKAGE HAS BEEN ADDED TO THIS DIAGNOSTIC TO ALLOW
THE PROGRAM TO RUN WITH NO HARDWARE SWITCH REGISTER AND TO
HAVE COMMUNICATIONS WITH THE DIAGNOSTIC VIA A TERMINAL. THE
DIAGNOSTIC CAN BE RUN IN TWO MODES WITH THE CONSOLE
PACKAGE .   1) RUNNING WITH THE CONSOLE PACKAGE ACTIVE -
THIS ALLOWS THE OPERATOR CONTROL OF THE DIAGNOSTIC THROUGH
THE TERMINAL. THE DIAGNOSTIC WILL ASK FOR THE VALUE OF THE PSEUDO
SWITCH REGISTER,BEFORE CONTINUING WITH EXECUTION OF THE
DIAGNOSTIC. ALL ERRORS AND PASS COMPLETES WILL BE PRINTED AT
THE TERMINAL. NO HALTS WILL BE EXECUTED.
2) CONSOLE PACKAGE NOT ACTIVE-THIS WILL RESULT IN THE
NORMAL STANDALONE OPERATION OF THE PROGRAM AS DISCRIBED IN
SECTIONS 1 THROUGH 9 OF THIS DOCUMENT.

10.2   RESTRICTIONS
----

1)   RUNNING THE CONSOLE PACKAGE REQUIRES THAT THE
PSEUDO SWITCH REGISTER BE USED.

2)   ONCE RUNNING THE CONSOLE PACKAGE NONACTIVE AND
NOW DESIRE TO RUN IT ACTIVE. ONE MUST RELOAD THE DIAGNOSTIC
AND INITILIZE FOR A ACTIVE CONSOLE PACKAGE.

10.3   INITIALIZATION

FOR A ACTIVE CONSOLE PACKAGE

1.)   SET LOCATION 21 BIT0=0 TO INDICATE USE PSEUDO SWITCH
           REGISTER.

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

FOR A NON ACTIVE CONSOLE PACKAGE

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

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

10.4   CONTROL CHARACTERS

CONTROL CHARACTERS ARE USED TO GIVE THE OPERATOR THE
ABILITY TO PERFORM THE FOLLOWING FUNCTIONS.
NOTE: THE PROGRAM WILL RESPOND TO THE CONTROL
CHARACTER IN FIVE (5) SECONDS OR LESS.

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

CONTROL R
----------   THIS WILL RESTART THE PROGRAM AND
                         REASK THE SWITCH REGISTER QUESTION AS
                         DESCRIBED IN SETION 10.2.

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

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

CONTROL D
---------   THIS WILL ALLOW THE ABILITY TO CHANGE
                         THE SWITCH REGISTER DURING PROGRAM
                         OPERATION. TYPING THIS CHARACTER WILL RESULT
                         IN AN INTERIGATION OF THE SWITCH REGISTER
                         QUESTION AS DESCRIBED IN SECTION 10.6.

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

CONTROL Q
---------   THIS IS TO CONTINUE A PROGRAM AFTER A CONTROL
                         S IS TYPED.THIS IS A NONPRINTING CHARACTER.

10.5   WAITING MESSAGE

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

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

10.6   SWITCH REGISTER MESSAGE

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

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*****************************************************************
SR=0000 4000
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UNDER SCORING INDICATES OPERATOR RESPONCE

10.7   END OF PASS

AN INDICATION WILL BE GIVEN WHEN THE DIAGNOSTIC HAS MADE A
SUCESSFULL PASS. THE PRINT OUT WILL INDICATE THE DIAGNOSTIC
MAINDEC NUMBER THE WORD PASS AND A FOUR DIGIT PASS NUMBER.
A PASS WILL BE A TIME PERIOD RATHER THAN A PROGRAM PASS
OF THE DIAGNOSTIC. THE TIME PERIOD WILL BE IN THE RANGE OF
ONE (1) TO FIVE (5) MINUTES. IF THE DIAGNOSTIC MAKES A PROGRAM
PASS IN THE 1 TO 5 MINUTE RANGE THEN THE PASS COUNT WILL BE THE
SAME AS THE NUMBER OF PROGRAM PASSES.IF THE PROGRAM MAKES A
PROGRAM PASS IN LESS THEN ONE MINUTE THEN THE PASS COUNT WILL
NOT BE THE SAME AS THE PASS COUNTER THE PASS COUNTER WILL
REFLECT MORE THEN ON PROGRAM PASS.
THE NUMBER OF PROGRAM PASSES REQUIRED FOR ^A PASS MESSAGE
CAN BE FOUND IN LOCATION 0246.

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

****

NAME PASS 0001

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10.8   ERRORS

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

10.9   SWITCH REGISTER SETTINGS

THE STANDARD SWITCH SETTINGS AS DESCRIBED IN SECTION 4
OF THIS DOCUMENT WILL BE USED.

10.10   PARAMETER CONTROL WORDS

THE CONSOLE PACKAGE USES THE LOCATIONS 20 21 22 FOR THE
FOLLOWING PURPOSES.

LOCATION 20
PSEUDO SWITCH REGISTER

LOCATION 21
HARDWARE IDENTIFIER 1

LOCATION 22
HARDWARE IDENTIFIER 2

LOCATION 0021

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

LOCATION 0022

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

10.11 LOCATION CHANGES

THE FOLLOWING FIELD 1 LOCATIONS CAN BE CHANGED TO MEET THE
SPECIFIC NEED FOR MODIFICATION OF THE DIAGNOSTIC.

0246	IS THE LOCATION FOR THE VALUE OF THE NUMBER OF PROGRAM PASSES NEED TO PRINT THE END OF PASS MESSAGE.
1037	IS THE LOCATION SET FOR THE NUMBER OF FILLER CHARACTERS AFTER A CRLF SET TO FOUR (4)

11. APT-8 HOOKS

11.1 DESCRIPTION.

TWO INTERFACES HAVE BEEN PROVIDED WHICH ALLOW THIS DIAGNOSTIC
TO RUN UNDER THE STANDARD APT-8 SYSTEM. THESE CONSIDERATIONS ARE:

1. ERROR INTERFACE

2. TIMING INTERFACE

EACH WILL BE EXPLAINED IN MORE DETAIL.

11.2 SET-UP

ONLY HARDWARE CONFIGURATION WORD 2 NEED BE ESTABLISHED
AT PROGRAM START UP. BIT ZERO (0) MUST BE SET TO A ONE (1)
TO INDICATE THAT THE PROGRAM IS TO RUN UNDER APT-8.

11.3 APT-8 INTERFACES

11.3.1. TIMING

APT-8 IS NOTIFIIED OF PROGRAM RUN WITHIN A .2 SEC TO
2.0 SEC WINDOW WHEN USED WITH A 1.2 MICROSECOND MEMORY CYCLE
TIME. THIS WINDOW WAS ESTABLISHED SO THAT IF RUN ON THE SLOWER
MOS MEMORY THE DIAGNOSTIC WOULD NOT CAUSE A TIMEOUT ERROR ON
THE APT-8 SYSTEM.

11.3.2 ERRORS

WHEN ON APT-8 ALL ERRORS ARE CONSIDERED FATAL. WHEN
REPORTING AN ERROR ONLY THE ERROR PC IS REPORTED TO APT. ERRORS
WHICH CAUSE A SYSTEM HALT ARE NOT REPORTED. THESE ERRORS ARE
INDICATED BY A TIMEOUT ERROR ON APT. THE ACTUAL ERROR CAN BE
DETERMINED BY EXAMINING THE AC AT THE TIME OF THE HALT.

PROGRAMED HALTS ARE EXPLAINED EARLIER IS THIS
DOCUMENT.

12.   PROGRAM LISTING

```
    1                              /RK8E DISKLESS CONTROL TEST
    2                              /
    3                              /MAINDEC-08-DHRKA-E-L
    4                              /
    5                              /
    6                              /COPYRIGHT (C) 1972, 1975 DIGITAL EQUIP. CORP.
    7                              /
    8                              /MAYNARD, MASS. 01754.
    9                              /
   10          0001                     FIELD    1
   11                              /
   12
   13                              /CONSOL SRC -V2-R0- CONSOLE PACKAGE
   14
   15
   16                              /LAS= CALL C8CKSW OR JMS XC8SW
   17                              /THIS WILL READ THE SWITCH REGISTER FROM THE PLACE SPECIFIED
   18                              /BY LOCATION 20 BIT 0.
   19
   20
   21                              /THE PROGRAM SHOULD CHECK FOR A CONTROL CHARACTER FROM THE TERMINAL
   22                              /EVERY FIVE(5) SECONDS OR SOONER.
   23
   24                              /LOCATIONS THAT NEED TO BE SET UP FOR USING THE CONSOLE PACKAGE.
   25
   26                              /CNTVAL IN XC8PASS    THIS LOCATION DETERMINDS THE NUMBER OF
   27                              /PROGRAM COMPLETIONS THAT ARE NEEDED BEFORE THE PASS MESSAGE IS TYPED
   28                              /THE VALUE SHOULD PUT THE PASS MESSAGE OUT IN THE RANGE OF 1 TO 5 MINUTES.
   29                              /THIS SHOULD BE A POSITIVE NUMBER.
   30
   31                              /C8STRT    THIS IS FOUND IN CNTRL ROUTINE CONTROL R PART
   32                              /IT IS THE RETURN WHEN CONTROL R IS ENTERED (RESTART PROGRAM)
   33                              /THE RETURN JUMPS TO XDOSW WHICH CONTAINS C8STRT SO PUT THE LABEL C8STRT
   34                              /WHERE YOU WANT TO RESTART THE PROGRAM.
   35
   36
   37                              /SETUP1 IN XC8ERR    THIS IS THE MASK BIT FOR HALT ON ERROR
   38                              /PLACE THE CORRECT BIT IN THIS LOCATION FOR HALTING ON ERRORS.
   39
   40                              /SETUP2 IN XC8PASS    THIS IS THE MASK FOR HALT A END OF PASS.
   41
   42                              /THE CALL TABLE IS A CONDITIONAL ASSEMBLY.
   43                              /TO ASSEMBLE THE CALL REMOVE THE / BEFORE CONSOL=0.
   44                              /IN COMBINING THE CONSOL PACKAGE TO A DIAGNOSTIC.
   45                              /THE CALL TABLE IS TO BE AT THE BEGINNING OF A PROGRAM.
   46
   47
   48          0000               CONSOL=0
   49          6661                     PSKF=    6661
   50          6662                     PCLF=    6662
   51          6663                     PSKE=    6663
   52          6664                     PSTB=    6664
   53          6665                     PSIE=    6665
   54          6004                     GTF=     6004
   55          7701                     ACL=     7701
```

```
   56          6007                     CAF=     6007
   57          7421                     MQL=     7421.
   58          7501                     MQA=     7501
   59                              /
   60          0020               *20
   61                              /
   62    0020  0000               F1SWR,   0                         /PSEUDO SWITCH REGISTER
   63    0021  0000               F1OP1,   0                         /CONTROL 1
   64    0022  0000               F1OP2,   0                         /CONTROL 2
   65                              /
   66                              /
   67                              IFDEF CONSOL <
   68
   69
   70          0024               *24
   71
   72          4424                     C8PASS= JMS I  .
   73    0024  0200                     XC8PAS                        /C8 PASS COMPLETION ROUTINE
   74          4425                     C8CKSW= JMS I  .
   75    0025  0262                     XC8SW                         /CHECK SW REG SETTING
   76          4426                     C8TTYI= JMS I  .
   77    0026  0272                     XC8TTY                        /FETCH CONSOL CHAR
   78          4427                     C8CNTR= JMS I  .
   79    0027  0400                     XC8CNT                        /CHECK FOR CONTROL CHAR
   80          4430                     C8PRNT= JMS I  .
   81    0030  0303                     XC8PNT                        /C8 PRINT A BUFFER
   82          4431                     C8SWIT= JMS I  .
   83    0031  0656                     XC8PSW                        /SET UP PSEUDO SW. REG
   84          4432                     C8OCTA= JMS I  .
   85    0032  1000                     XC8OCT                        /CONVERT TO ASCII AND PRINT
   86          4433                     C8CRLF= JMS I  .
   87    0033  1023                     XC8CRL                        /DO A CARRIGE RETUR + LINE FEED
   88          4434                     C8ECHO= JMS I  .
   89    0034  1063                     XC8ECH                        /CHECK INPUT CHAR
   90          4435                     C8TYPE= JMS I  .
   91    0035  1077                     XC8TYP                        /C8 PRINT ONE CHAR
   92          4436                     C8ERR=  JMS I  .
   93    0036  1207                     XC8ERR                        /C8 ERROR  HANDLER
   94          4437                     C8INQU= JMS I  .
   95    0037  0635                     XC8INQ                        /LOOK FOR OPERATOR INTERVENTION
   96          4440                     C8CKPA= JMS I  .
   97    0040  1041                     XC8CKP                        /CHECK IF CONTROL CHAR
   98          4441                     C8PAUS= JMS I  .
   99    0041  0337                     XC8PAU                        /IF CONSOL PACKAGE RETURN CALL PLUS ONE
  100                                                                 /IF NOT USING CONSOL REPLACE CALL WITH
  101                                                                 /A HLT AND THEN GO TO THE HALT
  102
  103                              /*************************************************************
  104                                                                 /*20                  /PSEUDO SWITCH REGISTER
  105
  106                                                                 /*21                  /HARDWARE INDICATORS
  107                                                                 /4000=USE FRONT PANEL SWITCH REGISTER
  108                                                                 /0000=USE THE PSEUDO SWITCH REGISTER LOC.20
  109
  110                                                                 /*22                  /SYSTEM CONFIGURATION
```

```
111                                                  /400=CONSOL PACKAGE SET ACTIVE
112                                                  /0000=CONSOLE PACKAGE SET DEACTIVE
113
114                                                  /*23                          /RESERVED FOR FUTURE USE
115                              >
116          0200        *200
117                      /***********************************************************************
118                      /C8PASS
119                      /THIS IS CALLED AT THE END OF EACH PROGRAM COMPLETION
120                      /THE VALUE OF** CNTVAL** WILL BE DETERMINED BY THE TIME IT TAKES
121                      /THE PROGRAM TO COMPLETE THIS MANY C8PASS TO BE IN THE 1 TO 4 MINUTE
122                      /RANGE
123                      /       C8PASS=JMS     XC8PAS
124                      /EX, OF CALL          C8PASS
125                      /                              HLT              /HALT IF NON CONSOL PACKAGE
126                      /             JMP      START1         /CONTINUE RUNNING THIS PROGRAM
127
128
129                      /RETURN TO LOCATION CALL PLUS ONE WITH THE AC=0 IF NON CONSOL PACKAGE AND HLT
130                      /IF CONTINUE TO RUN THEN RETURN TO CALL PLUS2 AC=0
131                      /THE LOCATION SETUP2 IS THE MASK BIT FOR THE HALT AT END OF PASS
132                      /CHECK THAT IT IS CORRECT FOR THE CURRENT PROGRAM
133
134                      /CALLS USED BY XC8PAS ARE   CHKCLA=XC8CRLF=XC8OCTA=XC8SW=XC8PNT=XC8INQ=
135
136
137    0200   0000       XC8PAS, 0
138    0201   7200               CLA
139    0202   4777'              JMS      CHKCLA         /IS WORD 22 BIT 3 ACTIVE CONSOLE?
140    0203   5212               JMP      DOPACK         /IS CLASSIC
141    0204   4776'              JMS      C8GET          /GET ALL REGISTERS,
142    0205   4262               JMS      XC8SW          /DEACTIVE CONSOL CHECK SR SETTING
143    0206   0375               AND      (400           /FOR HALT ON END OF C8PASS
144    0207   7640               SZA CLA                 /1= HALT 0 CONTINUE
145    0210   5600               JMP I    XC8PAS         /GO TO HALT
146    0211   5230               JMP      C8BY1          /CONTINUE ON RUNNING PROGRAM
147    0212   4232       DOPACK, JMS      CKCOUT         /CLASS CHECK C8PASS COUNT
148    0213   5230               JMP      C8BY1          /C8PASS COUNT NOT DONE REDO PROGRAM
149    0214   2250               ISZ      PASCNT         /C8PASS COUNT DONE SET C8PASS COUNT
150    0215   4774'              JMS      XC8CRLF
151    0216   4303               JMS      XC8PNT         /C8PRNT BUFFER
152    0217   0253               MESPAS                  /
153    0220   1250               TAD      PASCNT         /GET NUMBER
154    0221   4773'              JMS      XC8OCTA        /CONVERT IT TO ASCII
155    0222   4774'              JMS      XC8CRLF        /DO A CARRIAGE RETURN
156    0223   4776'              JMS      C8GET          /GET ALL REGISTERS,
157    0224   4262               JMS      XC8SW          /CHECK A HALT AT END OF C8PASS
158    0225   0375       SETUP2, AND      (400           /MASK BIT
159    0226   7640               SZA CLA                 /HALT =1 NO SKIP CONTINUE =0
160    0227   4772'              JMS      XC8INQ         /STOP PROGRAM EXECUTION=LOOK FOR INPUT
161    0230   2200       C8BY1,  ISZ      XC8PAS         /BUMP RETURN
162    0231   5600               JMP I    XC8PAS
163    0232   0000       CKCOUT, 0
164    0233   1251               TAD      DOSET          /CHECK IF SET UP NEEDED
165    0234   7640               SZA CLA                 /0=SET UP C8PASS COUNT VALUE
```

```
166                                                  /1=C8PASS COUNT VALUE OK
167    0235   5242               JMP      NOSET          /C8PASS COUNT VALUE ON
168    0236   1252               TAD      CNTVAL         /GET COUNT VALUE FOR THIS PROG
169    0237   7040               CMA                     /SET TO NEGATIVE
170    0240   3247               DCA      DOCNT          /STORE IN HERE
171    0241   2251               ISZ      DOSET          /INDICATE VALUE SET UP
172    0242   2247       NOSET,  ISZ      DOCNT          /COUNT THE NUMBER OF PASSES
173    0243   5230               JMP      C8BY1          /EXIT FOR ANOTHER PASS
174    0244   3251               DCA      DOSET          /SET TO C8PRNT C8PASS
175    0245   2232               ISZ      CKCOUT         /BUMP RETURN FOR
176    0246   5632               JMP I    CKCOUT         /C8PASS C8TYPE OUT
177    0247   0000       DOCNT,  0000
178    0250   0000       PASCNT, 0                       /
179    0251   0000       DOSET,  0
180    0252   0000       CNTVAL, 0
181    0253   0410       MESPAS, TEXT     "DHRKAE  PASS "
       0254   2213
       0255   0105
       0256   4040
       0257   2001
       0260   2323
       0261   4000
182
183
184
185                      /***********************************************************************
186
187                      /C8CKSW
188
189                      /THIS ROUTINE CAN BE USED INPLACE OF A READ THE SWITCHES LAS.
190                      /ROUTINE THAT WILL CHECK WHERE TO READ THE
191                      /C8 SWITCHES FROM IE. FROM PANEL OR PSEUDO SWITCH REGISTER
192                      /THE SELECTION IS DETERMINED BY THE STATE OF BIT 0 IN LOCATION 21.
193
194                                                  /CRCKSW=       JMS XC8SW
195                      /EX,     JMS      XC8SW          /READ THE C8SWIT REGISTER
196                                                  /RETURN WITH THE CONTENTS OF SWITCH REGISTER
197
198                      /RETURN TO NEXT LOCATION FOLLOWING CALL WITH THE AC= TO VALUE OF C8SWIT SETTING
199
200                      /CALLS USED ARE=XC8CKPA=
201
202
203
204    0262   0000       XC8SW,  0
205    0263   4771'              JMS      XC8CKPA        /GO CHECK THE IF ANY CONTRL
206    0264   7000               NOP
207    0265   1021               TAD      21             /GET WD FOR INDICATOR
208    0266   7710               SPA CLA                 /CHECK IF FROM PANEL 4000
209    0267   7614               7614                    /DO LAS AND SKIP GET FROM PANEL WITH LAS
210    0270   1020               TAD      20             /PSEUDO SWITCH
211    0271   5662               JMP I    XC8SW          /EXIT WITH STATUS BIT IN AC,
212
213
214                      /***********************************************************************
```

```
215
216                         /C8TTYI
217                         /THIS ROUTINE WILL LOOK FOR A INPUT FROM THE TERMINAL
218                         /AND REMOVE ANY PARITY BITS, THEN MAKE IT 8 BIT ASCI.
219                         /        C8TTYI= JMS XC8TTY
220                         /EX.     JMS     XC8TTYI          /READ CHAR FROM THE CONSOL DEVICE
221                         /                                 /RETURN TO CALL PLUS ONE AC CONTAINS THE CHAR
222
223
224                         /CALLS USED -NONE- BUT C8CHAR IS OFF PAGE AND IN ROUTINE CALLED XC8ECHO
225
226                         /
227                         /
228     0272  0000   XC8TTY, 0
229     0273  6031           KSF                      /LOOK FOR KEYBOARD FLAG
230     0274  5273           JMP     .-1
231     0275  6036           KRB                      /GET CHAR
232     0276  0370           AND     (177             /MASK FOR 7 BITS
233     0277  1367           TAD     (200             /ADD THE EIGTH BIT
234     0300  3766'          DCA     C8CHAR           /STORE IT
235     0301  1766'          TAD     C8CHAR
236     0302  5672           JMP  I  XC8TTY           /EXIT
237
238
239
240                         /***********************************************************
241
242                         /C8PRNT
243
244                         /THIS ROUTINE WILL TYPE THE CONTENTS OF THE C8 PRINT BUFFER, THE LOCATION
245                         /OF THE BUFFER WILL BE IN THE ADDRS FOLLOWING THE CALL.   PRINTING OF THE BUFFER
246                         /WILL STOP WHEN A 00 CHAR IS DETECTED. CHARACTERS ARE PACKED 2 PER WORD.
247
248                         /        C8PRNT= JMS XC8PNT
249
250
251                         /EX.     JMS     XC8PNT                   /C8PRNT THE CONTENTS OF THE FOLLOWING BUFFER
252                         /        MESS77                           /LOCATION OF C8PRNT BUFFER
253
254                         /C8PRNT WILL USE THE LOCATION FOLLOWING THE CALL AS THE POINTER FOR THE
255                         /C8PRNT ROUTINE,RETURN TO CALL PLUS TWO WITH AC= 0
256
257                         /CALLS USED ARE-XC8TYPE-XC8PNT
258
259
260
261     0303  0000   XC8PNT, 0
262     0304  7300           CLA CLL
263     0305  1703           TAD  I  XC8PNT           /GET C8PRNT BUFFERS STARTING LOCATION
264     0306  3336           DCA     PTSTOR           /STORE IN PTSTOR
265     0307  2303           ISZ     XC8PNT           /BUMP RETURN
266     0310  1736   C8DO1,  TAD  I  PTSTOR           /GET DATA WORD
267     0311  0365           AND     (7700            /MASK FOR LEFT BYTE
268     0312  7450           SNA                      /CHECK IF 00 TERMINATE
269     0313  5703           JMP  I  XC8PNT           /EXIT
```

```
270     0314  7500           SMA                      /IS AC MINUS
271     0315  7020           CML                      /MAKE CHAR A 300 AFTER ROTATE
272     0316  7001           IAC                      /MAKE CHAR A 200 AFTER ROTATE
273     0317  7012           RTR
274     0320  7012           RTR
275     0321  7012           RTR                      /PUT CHAR IN BITS 4-11 MAKE IT 8 BIT ASCII
276     0322  4764'          JMS     XC8TYPE          /C8PRNT IT ON CONSOLE
277     0323  1736           TAD  I  PTSTOR           /GET DATA WORD
278     0324  0363           AND     (0077            /MASK FOR RIGHT BYTE
279     0325  7450           SNA                      /CHECK IF 00 TERMINATOR
280     0326  5703           JMP  I  XC8PNT           //EXIT
281     0327  1362           TAD     (3740            /ADD FUDGE FACTOR TO DETERMINE IF 200
282     0330  7500           SMA                      /OR 300 IS TO BE ADD TO CHAR
283     0331  1361           TAD     (100             /ADD 100
284     0332  1360           TAD     (240             /ADD 200
285     0333  4764'          JMS     XC8TYPE          /C8TYPE ONLY BITS 4-11
286     0334  2336           ISZ     PTSTOR           /BUMP POINTER FOR NEXT WORD
287     0335  5310           JMP     C8DO1            /DO AGAIN
288     0336  0000   PTSTOR, 0                        /STOR FOR C8PRNT BUFFER
289                         /***********************************************************
290
291
292                         /C8PAUS
293                         /THIS ROUTINE WILL CHECK IF THE CONSOL PACKAGE IS ACTIVE,IF ACTIVE
294                         /IT WILL RETURN TO CALL PLUS ONE AC= 0, AND DO THAT INSTRUCTION.
295                         /IF THE CONSOL PACKAGE IS NOT ACTIVE THE CALL WILL BE REPLACED
296                         /WITH A 7402 HALT AND THEN RETURN TO THE HALT.
297
298                         /        C8PAUS= JMS XC8PAU
299                         /
300                         /
301                         /EX.             JMS     XC8PAUS          /CHECK IF ON ACTIVE CONSOL IF NOT HALT HERE
302                         /                ANYTHING                 /RETURN HERE IF ON ACTIVE CONSOL
303                         /
304                         /
305
306                         /CALLS USED ARE -CHKCLA-
307
308
309
310     0337  0000   XC8PAU, 0
311     0340  7300           CLA CLL
312     0341  4777'          JMS     CHKCLA           /CHECK LOC 22 BIT 3 CONSOLE BIT
313     0342  5350           JMP     C8DO3            /GO DO CONSOL PART RETURN CALL +1
314     0343  7040           CMA                      /DEACTIVE CONSOLE PACKAGE PUT HLT IN CALL
315     0344  1337           TAD     XC8PAU           /GET CORRECT RETURN ADDRS
316     0345  3337           DCA     XC8PAU           /SET UP RETURN
317     0346  1357           TAD     (7402            /GET CODE FOR HLT
318     0347  3737           DCA  I  XC8PAU           /PUT HALT IN CALL LOCATION
319     0350  5737   C8DO3,  JMP  I  XC8PAU           /GO TO HALT OR RETURN TO NEXT LOCATION
320
321
322     0357  7402
323     0360  0240
324     0361  0100
```

```
325    0362  3740
326    0363  0077
327    0364  1077
328    0365  7700
329    0366  1075
330    0367  0200
331    0370  0177
332    0371  1041
333    0372  0635
334    0373  1000
335    0374  1023
336    0375  0400
337    0376  0624
338    0377  1200
       0400                 PAGE
339                         /******************************************************************
340
341
342                         /C8CNTR
343                         /THIS ROUTINE WILL CHECK FOR THE PRESENCE OF CONTROL CHARACTERS
344                         /IT WILL CHECK FOR THE FOLLOWING CHAR C=R=Q=L=S
345                         /          C8CNTR= JMS XC8CNT
346
347                         /EX,   JMS     XC8CNTR            /CHECK FOR CONTROL CHARACTER
348                         /      JMP     ANYTHING           /LOC FOLLOWING CALL IS FOR CONTINUING THE PROGRAM
349                         /      JMP     ANYTHING           /LOC. IS FOR RETURN IF INMODE SET AND NOT CNTRL CHAR
350                         /
351
352                         /RETURN IS TO CALL PLUS ONE IF CONTINUE
353                         /RETURN IS TO CALL PLUS TWO IF INMODE SET AND NOT CONTROL CHAR
354                         /RETURN IS TO CALL PLUS TWO IF INMODE IS NOT SET AND NO
355                         /CONTROL CHAR ..THIS WILL PRINT THE CHARACTER AND A ?
356                         /CLEAR THE AC AND RETURN CALL+2.
357
358                         /CALLS USED ARE=CHKCLA=XC8TYPE=XC8CRLF=C8GET=UPAROW=XC8TYI=XC8PSW=
359                         /
360                         /
361                         /
362    0400  0000  XC8CNT,  0
363    0401  3777*                  DCA     ACSAVE             /SAVE THE AC
364    0402  4776*                  JMS     CHKCLA             /CHECK LOC.22 BIT3 FOR CONSOLE BIT
365    0403  5206                    JMP     .+3                /ON ACTIVE CONSOLE
366    0404  1777*                  TAD     ACSAVE             /DEACTIVE CONSOLEGET AC FOR RETURN
367    0405  5600                    JMP I   XC8CNT            /EXIT NOT ON ACTIVE CONSOLE
368    0406  6004                    GTF
369    0407  3775*                  DCA     FLSAVE
370    0410  7501                    MQA
371    0411  3774*                  DCA     MQSAVE             /SAVE THE MQ
372    0412  3255                    DCA     INDEXA             /SET DISPLACEMENT INTO TABLE B
373    0413  1257                    TAD     XTABLA             /GET ADDRS OF TABLE A
374    0414  3256                    DCA     GETDAT             /CONTAINS POINTER TO CONTROL CHAR
375    0415  1656  REDOA,   TAD I   GETDAT             /GET CONTROL CHAR FROM TABLE
376    0416  7450                    SNA                        /CHECK FOR A 0 END OF TABLE
377    0417  5226                    JMP     DONEA              /END OF TABLE NO CONTROL CHAR
378    0420  1773*                  TAD     C8CHAR             /COMPARE CHAR TO CONTROL CHAR
```

```
379    0421  7650                    SNA CLA                    /0 IF MATCH
380    0422  5243                    JMP     GOITA              /MATCH
381    0423  2255                    ISZ     INDEXA             /NO MATCH NOT END OF TABLE REDO
382    0424  2256                    ISZ     GETDAT             /BUMP INDEX FOR EXIT WHEN CONTROL FOUND
383    0425  5215                    JMP     REDOA              /BUMP GETDAT FOR COMPARE OF NEXT CNTRL CHAR.
384    0426  1772*  DONEA,   TAD     INMODE             /CHECK IF PROGRAM EXPECTS CHAR
385    0427  7640                    SZA CLA                    /1=CHAR EXPECTED  0= NO CHAR EXPECTED
386    0430  5240                    JMP     EXITA              /CHAR EXPECTED
387    0431  1773*                  TAD     C8CHAR             /GET CHAR = NOT CONTROL + NOT EXPECTED
388    0432  4771*                  JMS     XC8TYPE            /C8PRNT CHAR
389    0433  1370                    TAD     (277               /GET CODE FOR "?"
390    0434  4771*                  JMS     XC8TYPE
391    0435  4767*                  JMS     XC8CRLF
392    0436  2200                    ISZ     XC8CNT             /BUMP RETURN
393    0437  5600                    JMP I   XC8CNT             /EXIT CALL+2
394    0440  2200  EXITA,   ISZ     XC8CNT             /BUMP RETURN FOR MAIN PROGRAM CHECK OF CHAR
395    0441  1773*                  TAD     C8CHAR             /PUT CHAR IN AC.
396    0442  5600                    JMP I   XC8CNT             /EXIT
397    0443  1773*  GOITA,   TAD     C8CHAR             /GET THE CONTENTS OF CHAR
398    0444  1366                    TAD     (100               /ADD 100 TO FORM A GOOD ASCII CHARACTER
399    0445  3773*                  DCA     C8CHAR             /RESTORE COFFECT CHAR
400    0446  1260                    TAD     XTABLB             /GET START OF TABLE B
401    0447  1255                    TAD     INDEXA             /GET NOW FAR INTO TABLE
402    0450  3254                    DCA     GOTOA              /STORE IT
403    0451  1654                    TAD I   GOTOA              /GET THE ROUTINE STARTTING ADDRESS
404    0452  3254                    DCA     GOTOA              /STORE IT IN HERE
405    0453  5654                    JMP I   GOTOA              /GOTO CONTROL CHAR ROUTINE
406    0454  0000  GOTOA,   0000               /ADD OF CNTRL ROUTINE TO EXECUTE
407    0455  0000  INDEXA,  0000               /DISPLACEMENT INTO CNTRL TABLE
408    0456  0000  GETDAT,  0000               /LOCATION OF ADDRS OF CONTROL CHAR.
409    0457  0461  XTABLA,  TABLA              /ADDRS OF TABLEA
410    0460  0471  XTABLB,  TABLB              /ADDRS OF TABLEB
411    0461  7575  TABLA,   7575               /CNTRL C BACK TO MONITOR 203
412    0462  7564           7564               /CNTRL L SWITCH ERROR PRINTING DEVICE 214
413    0463  7557           7557               /CNTRL O START DISPLAYING CHAR. AGAIN 221
414    0464  7556           7556               /CNTRL R BACK TO REGINNING OF PROGRAM 222
415    0465  7555           7555               /CNTRL S STOP SENDING CHAR TO DISPLAY WAIT FOR CNTRL Q 223
416    0466  7573           7573               /CNTRL E CONTINUE WITH PROGRAM 205
417    0467  7574           7574               /CONTROL D CHANGE SWITCH REGISTER ON FLY
418    0470  0000           0000
419
420    0471  0551  TABLB,   CNTRLC
421    0472  0537           CNTRLL
422    0473  0500           CNTRLQ
423    0474  0511           CNTRLR
424    0475  0521           CNTRLS
425    0476  0545           CNTRLE
426    0477  0600           CNTRLD
427                         /
428                         /CONTROL Q
429                         /START SENDING CHAR. TO THE DISPLAY
430                         /THIS WILL RETURN CONTROL TO CALL THAT WAS SET BY
431                         /THE CALL FOR CONTROL S.
432                         /
433    0500  3772*  CNTRLQ, DCA     INMODE             /SET SOFT FLAG FOR UNEXPECTED CHAR
```

```
434    0501  1335              TAD      C8SETS       /CHECK IF CONTROL S TYPED IN
435    0502  7640              SZA CLA
436    0503  5306              JMP      BYRETR       /CONTROL S TYPED IN
437    0504  4765*             JMS      C8GET        /NO CONTROL S TYPED PREVIOUSLY
438    0505  5600              JMP I    XC8CNTR      /LEAVE VIA CNTR ENTRY ADDRESS
439    0506  3335     BYRETR, DCA      C8SETS       /CLEAR THE SOFT FLAG
440    0507  4765*             JMS      C8GET        /RESTORE REGISTERS
441    0510  5736              JMP I    C8RETR       /EXIT TO ADDRESS SET BY CONTROL S
442                   /
443                   /
444                   /CONTROL R
445                   /GO TO THE QUESTION C8SWIT
446    0511  3764*    CNTRLR, DCA      TTYLPT       /CLEAR THE TYPE FLAG SET TO TTY
447    0512  3335              DCA      C8SETS       /CLEAR SOFT FLAG FOR CNTRL S
448    0513  3772*             DCA      INMODF
449    0514  4763*             JMS      UPAROW       /PRINT THE ^ AND C8CHAR
450    0515  3762*    C8BY4,  DCA      C8SWST       /CLEAR FLAG FOR CNTRL D OR R
451    0516  6203              CDF CIF
452    0517  5720              JMP I    XDOSW        /GO TO ADDRS OF C8SWIT
453    0520  0203     XDOSW,  BGN                   /DOSW IS LABEL FOR C8SWIT QUESTION
454                   /
455                   /
456                   /CONTROL S
457                   /STOP SENDING CHAR. TO DISPLAY UNTIL A ^Q IS RECEIVED
458                   /
459                   /
460    0521  1335     CNTRLS, TAD      C8SETS       /IF1 DO NOT STORE IN C8RETR
461    0522  7640              SZA CLA
462    0523  5327              JMP      C8D07        /DONT SET UP C8RETR
463    0524  7001              IAC                   /MAKE RETURN CALL PLUS 2
464    0525  1200              TAD      XC8CNT       /GET RETURN FOR THIS CALL
465    0526  3336              DCA      C8RETR       /STORE IT HERE FOR USE BE CNTROL Q
466    0527  2335     C8D07,  ISZ      C8SETS       /SET FLAG TO SAVE CALL
467    0530  4761*             JMS      XC8TTYI      /LOOK FOR THE INPUT
468    0531  4765*             JMS      C8GET        /GET REGISTERS
469    0532  4200              JMS      XC8CNTR      /CHECK FOR THE CONTROL CHAR
470    0533  7200              CLA
471    0534  5321              JMP      CNTRLS       /IF NOT A CNTRL Q R C REASK
472    0535  0000     C8SETS, 0
473    0536  0000     C8RETR, 0
474                   /
475                   /SWITCH OUTPUT FROM ONE OUTPUT DEVICE TO ANOTHER - THE TWO OUTPUTS ARE THE
476                   /CONSOLE AND THE PRINTER WITH DEVICE CDOE 66.
477                   /
478                   /
479    0537  1764*    CNTRLL, TAD      TTYLPT       /GET PRESENT C8SWIT INDICATOR
480    0540  7040              CMA                   /COMPLEMENT IT
481    0541  3764*             DCA      TTYLPT       /STOR NEW C8SWIT
482    0542  4763*             JMS      UPAROW       /C8PRNT ^ AND CHAR ON NEW DEVICE
483    0543  4765*             JMS      C8GET        /RESTORE THE REGISTERS
484    0544  5600              JMP I    XC8CNT       /EXIT
485                   /
486                   /CONTROL E
487                   /CONTINUE RUNNING FROM A INQUIRE OR ERROR
488                   /
```

```
489                   /
490    0545  4763*    CNTRLE, JMS      UPAROW       /PRINT THE CONTROL CHAR
491    0546  3762*             DCA      C8SWST       /CLEAR FLAG.
492    0547  4765*             JMS      C8GET        /GET THE REGISTERS
493    0550  5600              JMP I    XC8CNT       /RETURN TO CALL PLUS ONE
494                   /
495                   
496                   /CONTROL C
497                   /RETURN TO MONITOR CONTROL C
498    0551  3764*    CNTRLC, DCA      TTYLPT       /CLEAR THE LPT FLAG TO PRINT ON DISPLAY
499    0552  3762*             DCA      C8SWST       /CLEAR FLAG.
500    0553  4763*             JMS      UPAROW       /C8PRNT A^ AND LETTER IN CHAR
501    0554  6203              CDF CIF               /GO TO 0 FLD
502    0555  6007              CAF                   /CLEAR THE WORLD
503    0556  5760              JMP I    (7600        /GO TO DIAGNOSTIC MONITOR
504                   /******************************************************************
505                   /
506                   /
507                   /
508    0560  7600
509    0561  0272
510    0562  0745
511    0563  0615
512    0564  1121
513    0565  0624
514    0566  0100
515    0567  1023
516    0570  0277
517    0571  1077
518    0572  1076
519    0573  1075
520    0574  1346
521    0575  1347
522    0576  1200
523    0577  1345
             0600     PAGE
524
525                   /
526                                     /CONTROL D
527                                     /CHANGE THE SWITCH REGISTER ANYTIME CNTRL D AND RETURN TO
528                                     /THE PROGRAM RUNNING.
529
530
531    0600  4215     CNTRLD, JMS      UPAROW
532    0601  1213              TAD      C8SETD       /CHECK IF THE RETURN ADDRS IS SAFE
533    0602  7640              SZA CLA
534    0603  5207              JMP      C8D011       /DO NOT CHANGE THE RETURN ADDRS
535    0604  1777*             TAD      XC8CNT       /GET THE RETURN ADDRS AND SAVE IT
536    0605  3214              DCA      C8RETD       /SAVE THE RETURN HERE
537    0606  2213              ISZ      C8SETD       /INDICATE RETURN SAVED DONT DISTROY
538    0607  4256     C8D011, JMS      XC8PSW       /GO CHANGE THE SWITCH REGISTER
539    0610  3213              DCA      C8SETD       /CLEAR THE FLAG
540    0611  4224              JMS      C8GET        /RESTORE THE AC MQ LINK ETC
541    0612  5614              JMP I    C8RETD       /RETURN TO THE PROGRAM
542                   /
```

```
543    0613  0000    C8SETD, 0
544    0614  0000    C8RETD, 0
545
546
547
548                  /THIS WILL TYPE A UP ARROW AND THE CHAR IN C8CHAR.
549
550    0615  0000    UPAROW, 0                              /C8PRNT THE "^" AND THE CHAR C8TYPED IN
551    0616  1376             TAD     (336                  /CODE FOR ^
552    0617  4775'            JMS     XC8TYPE
553    0620  1774'            TAD     C8CHAR               /C8TYPE THE CHAR
554    0621  4775'            JMS     XC8TYPE
555    0622  4773'            JMS     XC8CRLF
556    0623  5615             JMP I   UPAROW               /EXIT
557
558
559
560                  /***************************************************************
561
562    0624  0000    C8GET,  0
563    0625  7200             CLA
564    0626  1772'            TAD     MQSAVE
565    0627  7421             MQL                          /RESTORE MQ
566    0630  1771'            TAD     FLSAVE
567    0631  7004             RAL                          /RESTORE THE LINK
568    0632  7200             CLA
569    0633  1770'            TAD     ACSAVE               /RESTORE THE AC
570    0634  5624             JMP I   C8GET                /GET THE REGISTERS
571
572
573
574                  /***************************************************************
575
576                  /C8INQU
577                  /C8INQU ROUTINE WILL PRINT A WAITING
578                  /AND THE PROGRAM IS EXPECTING A CONTROL CHAR INPUT
579                  /IF CONTINUE FROM CONTROL CHAR RETURN IS CALL PLUS ONE
580                  /IF NO CONTROL CHAR ENTERED THEN WAITING IS REPRINTED
581                  /AND PROGRAM WAITS FOR A CONTROL CHAR AGAIN.
582
583                  /       C8INQU =        JMS XC8INQ
584
585                  /EX.    JMS     XC8INQ                 /C8 WILL PRINT A WAITINGAND WAIT FOR INPUT
586                  /       DO ANYTHING                    /RETURN IS CALL PLUS ONE AC =0 CONTINUE
587
588                  /CALLS USED ARE -CHKCLA-XC8PNT-XC8TYI-C8GET-XC8CNTR-
589
590
591    0635  0000    XC8INQ, 0
592    0636  7300             CLA CLL
593    0637  4767'            JMS     CHKCLA               /CHECK LOC 22 BIT 3 CONSOLE BIT
594    0640  7410             SKP                          /ACTIVE CONSOLE PACKAGE
595    0641  5635             JMP I   XC8INQ               /NOT CONSOLE LEAVE
596    0642  4766'            JMS     XC8PNT
597    0643  0651             WATMES                       /INQUIR WAITTING
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```
598    0644  4765'            JMS     XC8TTYI              /GET CHARACTER
599    0645  4224             JMS     C8GET
600    0646  4777'            JMS     XC8CNTR              /CHECK IF CONTROL CHARACTER
601    0647  5635             JMP I   XC8INQ               /EXIT AND CONTINUE
602    0650  5236             JMP     XC8INQ+1             /REASK
603    0651  2701    WATMES, TEXT    "WAITING "
       0652  1124
       0653  1116
       0654  0740
       0655  0000
604
605
606                  /***************************************************************
607
608                  /C8SWIT
609
610                  /ROUTINE WILL CHECK IF CONSOL IS ACTIVE IF IT IS ACTIVE DISPLAY
611                  /SW QUESTION . IN NOT ACTIVE IT WILL NOT PRINT THE SW QUESTION BUT
612                  /RETURN TO CALL PLUS ONE AC=0.
613                  /C8SWIT WILL SET UP THE PSEUDO SWITCH
614                  /REGISTER WITH THE NEW DATA ENTERED
615                  /
616                  /       C8SWIT =        JMS XC8PSW
617
618                  /EX.            JMS     XC8PSW         /SET UP PSEUDO C8SWIT REGISTER IF
619                  /                                      /ON THE CONSOL PACKAGE. RETURN IS CALL PLUS ONE AC = 0
620
621                  /CALLS USED ARE -CHKCLA-XC8PSW-XC8PNT-XC8OCTA-XC8TYPE-
622
623
624    0656  0000    XC8PSW, 0
625    0657  4767'            JMS     CHKCLA               /CHECK LOC 22 BIT 3 CONSOLE BIT
626    0660  7410             SKP                          /ACTIVE CONSOLE
627    0661  5656             JMP I   XC8PSW               /DEACTIVE CONSOLE PACKAGE
628                                                        /RETURN WITHOUT ASKING PSEUDO SWITCH
629    0662  1345             TAD     C8SWST               /IS THE SOFT FLAG SET FOR SWITCH?
630    0663  7640             SZA CLA                      /SKIP IF ONE ENTRY AT ATIME OK
631    0664  5764'            JMP     C8BY4                /SECOND ENTRY WITH OUT A EXIT GO TO SW QUESTION
632    0665  2345             ISZ     C8SWST               /FIRST ENTRY SET FLAG
633    0666  4766'    C8RDPS, JMS     XC8PNT               /C8PRNT SP=
634    0667  0747             MESA
635    0670  1020             TAD     20                   /GET CONTENTS OF SW
636    0671  4763'            JMS     XC8OCTA              /CONVERT IT TO ASC11
637    0672  1362             TAD     (40                  /GET SPACE
638    0673  4775'            JMS     XC8TYPE
639    0674  2761'            ISZ     INMODE               /SET FLAG FOR CHAR EXECTED
640    0675  4760'            JMS     XC8ECHO              /LOOK FOR INPUT
641    0676  4315             JMS     TSTCHA               /NOT CONTROL TEST IT IS LEGAL
642    0677  1774'            TAD     C8CHAR               /STORE NEW CHAR IN SW REG
643    0700  3020             DCA     20
644
645    0701  1357             TAD     (-3                  /GET A MINUS 3
646    0702  3346             DCA     TMPCNT               /STORE IN TEMP COUNT
647    0703  4760'    GETCH1, JMS     XC8ECHO              /GET NEXT CHAR
648    0704  4315             JMS     TSTCHA               /CHECK IF CR + GOOD CHAR
```

```
649   0705  1020          TAD     20              /GET C8SWIT REGISTER
650   0706  7106          RTL CLL                 /ROTATE IT LEFT 3 PLACES
651   0707  7004          RAL
652   0710  1774'         TAD     C8CHAR          /GET CHAR + ADD IT TO PREVIOUS CONTENTS
653   0711  3020          DCA     20              /SAVE NEW CONTENTS
654   0712  2346          ISZ     TMPCNT          /BUMP COUNT
655   0713  5303          JMP     GETCH1          /JMP BACK + GET NEXT CHAR
656   0714  5342          JMP     ENDIT           /END 4 CHAR CRTYPED IN
657   0715  0000  TSTCHA, 0
658   0716  7041          CIA                     /CMPL CHAR IN AC
659   0717  1356          TAD     (215            /TEST IF IT IS A CARRIAGE RETURN
660   0720  7650          SNA CLA                 /SKIP IN NOT CR.
661   0721  5342          JMP     ENDIT           /WAS CARRIAGE RETURN
662   0722  1774'         TAD     C8CHAR          /NOT CR. GET CHAR
663   0723  1355          TAD     (-260           /CHECK IF IT IS IN RANGE
664   0724  7710          SPA CLA                 /IF NOT POSITVE C8ERR CHAR SMALLER THEN 260
665   0725  5336          JMP     ERR1            /C8ERR - CHAR TOO SMALL
666   0726  1774'         TAD     C8CHAR          /GET CHAR
667   0727  1354          TAD     (-270           /GET A -270 + CHECK IF IT IS LARGER THEN 7
668   0730  7700          SMA CLA                 /SKIP IF LESS THEN 7
669   0731  5336          JMP     ERR1            /C8ERR ON CHAR NOT IN RANGE
670   0732  1774'         TAD     C8CHAR          /GET CHAR
671   0733  0353          AND     (7              /MASK FOR RIGHT BYTE
672   0734  3774'         DCA     C8CHAR          /STORE IN CHAR
673                                               /GET CHAR IN AC
674   0735  5715          JMP I   TSTCHA          /EXIT
675   0736  1352  ERR1,   TAD     (277            /C8PRNT
676   0737  4775'         JMS     XC8TYPE         /?
677   0740  4773'         JMS     XC8CRLF         /
678   0741  5266          JMP     C8RDPS          /EXIT + ASK AGAIN
679   0742  4773'  ENDIT, JMS     XC8CRLF         /DO A CR LF
680   0743  3345          DCA     C8SWST          /CLEAR THE PSW ENTRY FLAG
681   0744  5656          JMP I   XC8PSW          /EXIT ROUTINE
682   0745  0000  C8SWST, 0
683
684   0746  0000  TMPCNT, 0
685   0747  2322  MESA,   TEXT    "SR= "
      0750  7540
      0751  0000
686
687
688   0752  0277
689   0753  0007
690   0754  7510
691   0755  7520
692   0756  0215
693   0757  7775
694   0760  1063
695   0761  1076
696   0762  0040
697   0763  1000
698   0764  0515
699   0765  0272
700   0766  0303
701   0767  1200
```

```
702   0770  1345
703   0771  1347
704   0772  1346
705   0773  1023
706   0774  1075
707   0775  1077
708   0776  0336
709   0777  0400
      1000          PAGE
710
711                 /C8OCTA
712
713                 /OCTAL TO ASCII CONVERSION
714                 /THIS ROUTINE WILL TAKE THE OCTAL NUMBER IN THE AC AND CONVERT IT TO ASCII
715                 /THE RESULT WILL BE PRINTED ON THE CONSOL TERMINAL
716                 /       C8OCTA= JMS XC8OCT
717                 /
718                 /EX.    JMS     XC8OCTA         /AC CONTAINS NUMBER TO BE CHANGE
719                 /       RETURN IS TO CALL PLUS ONE AC=0
720                 /
721                 /CALLS USED ARE -XC8TYPE-
722
723
724   1000  0000  XC8OCT, 0
725   1001  7106          CLL RTL
726   1002  7006          RTL                     /POSITION THE FIRST CHAR FOR PRINTING
727   1003  3221          DCA     C8TMP1          /SAVE CORRECT POSITIONED WORD HERE
728   1004  1377          TAD     (-4
729   1005  3222          DCA     C8CKP           /STORE COUNTER IN HERE
730   1006  1221  C8DO4,  TAD     C8TMP1          /GET FIRST NUMBER
731   1007  0376          AND     (0007           /MASK
732   1010  1375          TAD     (260            /ADD THE PRINT CONSTANT
733   1011  4277          JMS     XC8TYPE         /TYPE THE NUMBER
734   1012  1221          TAD     C8TMP1          /
735   1013  7006          RTL
736   1014  7004          RAL                     /PUT NEXT NUMBER IN POSITION
737   1015  3221          DCA     C8TMP1          /STORE IT
738   1016  2222          ISZ     C8CKP           /DONE YET WITH FOUR NUMBERS
739   1017  5206          JMP     C8DO4           /NOT YET DO MORE
740   1020  5600          JMP I   XC8OCT          /DONE WITH FOUR
741   1021  0000  C8TMP1, 0
742   1022  0000  C8CKP,  0
743
744
745                 /******************************************************************
746
747                 /C8CRLF
748                 /C8TYPE CR AND LF WITH FILLERS FOLLOWING EACH LF AND CR
749                 /
750                 /       C8CRLF= JMS XC8CRL
751                 /
752                 /EX.    JMS     XC8CRLF         /C8PRNT A CR AND LF WITH FILL
753                 /                               /RETURN TO CALL PLUS ONE AC =0
754                 /CALLS USED ARE -XC8TYPE-
755
```

```
756
757    1023  0000    XC8CRLF,0
758    1024  7300            CLA CLL
759    1025  1374            TAD     (215            /GET CODE FOR CR
760    1026  4277            JMS     XC8TYPE
761    1027  1237            TAD     FILLER
762    1030  7040            CMA
763    1031  3240            DCA     FILCNT          /STORE FILLER IN HERE
764    1032  1373            TAD     (212            /GET CODE FOR LF
765    1033  4277    C8DO2,  JMS     XC8TYPE
766    1034  2240            ISZ     FILCNT          /CHECK ON FILLER CHAR
767    1035  5233            JMP     C8DO2           /TYPE A NON PRINTING CHAR
768    1036  5623            JMP I   XC8CRL          /EXIT
769    1037  0004    FILLER, 0004                    /FILLER SET FOR 4 CHAR
770    1040  0000    FILCNT, 0                       /COUNTER FOR FILL
771
772
773
774            //***********************************************************
775            /C8CKPA
776            /THIS ROUTINE WILL CHECK IF A CHARACTER WAS ENTERED FROM THE
777            /TERMINAL. IFTHE FLAG IS SET AND THE CONSOLE PACKAGE IS
778            /ACTIVE A CHECK IS MADE TO DETERMIND IF IT IS A CONTROL CHAR.
779            /IF IT WAS A CONTROL CHAR THEN ITS CONTROL FUNCTION IS PERFORMED.
780            /IF NOT A CONTROL CHARACTER OR A CONTROL E-D-L-O- IT WILL DO
781            /THE CONTROL FUNCTION AND RETURN TO CALL PLUS 2.
782            /A NON CONTROL CHARACTER WILL BE PRINTEDAND A "?" IT WILL RETURN TO
783            /CALL PLUS 2.
784            /IF NO FLAG IS SET OR THE CONSOL IS NOT ACTIVE THE RETURN IS TO
785            /CALL PLUS 1.
786
787
788            /       C8CKPA= JMS     XC8CKP
789
790
791            /EX.    JMS     XC8CKPA                 /CALL TO CHECK IF CONTROL CHAR SET
792            /               ANYTHING(SKIP)          /RETURN IF NOT FLAG OR NOT CONSOLE ACTIVE
793            /               ANYTHING(JMP EXIT SKIP CHAIN)   /RETURN IF NOT CONTROL OR CONTINUE CONTROL
794
795
796            /CALLS USED ARE =XC8TTYI=XC8CNTR=C8GET=
797
798
799    1041  0000    XC8CKP, 0
800    1042  3772'           DCA     ACSAVE          /SAVE THE AC
801    1043  6004            GTF                     /SAVE THE FLAGS
802    1044  3771'           DCA     FLSAVE          /SAVE THE FLAGS
803    1045  7501            MQA                     /PUT MQ IN AC
804    1046  3770'           DCA     MQSAVE          /SACE THE MQ
805    1047  6031            KSF                     /CHECK THE KEYBOARD FLAG
806    1050  5261            JMP     C8BY3           /EXIT TO CALL PLUS 1
807    1051  4767'           JMS     CHKCLA          /CHECK LOC 22 BIT 3 CONSOLE BIT
808    1052  7410            SKP                     /ACTIVE CONSOLE PACKAGE
809    1053  5261            JMP     C8BY3           /EXIT TO CALL PLUS 1
810    1054  4766'           JMS     XC8TTYI         /GET THE CHAR
```

```
811    1055  4765'           JMS     C8GET           /GET THE FLAGS
812    1056  4764'           JMS     XC8CNTR         /CHECK IF CONTROL  CHAR.
813    1057  7000            NOP                     /RETURN IF A CONTINUE CHAR.
814    1060  2241            ISZ     XC8CKP          /BUMP RETURN FOR CALL PLUS 2
815    1061  4765'   C8BY3,  JMS     C8GET           /GET REGISTERS
816    1062  5641            JMP I   XC8CKP          /SAY GOOD BY
817
818            //***************************************************************
819
820            /C8ECHO
821            /THIS ROUTINE WILL LOOK FOR A CHAR FROM THE KEYBOARD. STORE IT IN LOCATION CHAR
822            /CHECK IF IT WAS A CONTROL CHARACTER - SET INMODE - PRINT CHARACTER
823
824            /       C8ECHO =        JMS XC8ECH
825            /EX.    JMS     XC8ECHO         /LOOK FOR CONSOL CHAR C8PRNT IT
826                                            /RETURN CALL PLUS ONE AC = CHAR C8TYPED IN
827
828            /CALLS USED ARE =XC8TTYI=XC8CNTR=C8GET=XC8ECH=XC8TTYPE
829
830            /
831    1063  0000    XC8ECH, 0
832    1064  4766'           JMS     XC8TTYI         /WAIT FOR CHAR FROM KEYBOARD
833    1065  4765'           JMS     C8GET           /RESTORE THE REGISTERS
834    1066  2276            ISZ     INMODE          /SET INMODE IDENTIFING THIS AS A EXPECTED CHAR
835    1067  4764'           JMS     XC8CNTR         /GO CHECK IF IT IS A CONTROL CHAR
836    1070  5663            JMP I   XC8ECH          /WAS A CONTROL CHAR - CONTINUE RUNNING
837    1071  4277            JMS     XC8TYPE         /NOT A CONTROL CHAR C8PRNT IT
838    1072  3276            DCA     INMODE          /CLEAR FLAG THAT CHAR EXPECTED
839    1073  1275            TAD     C8CHAR          /GET CHAR IN AC
840    1074  5663            JMP I   XC8ECH          /EXIT
841    1075  0000    C8CHAR, 0
842    1076  0000    INMODE, 0
843
844            /***************************************************************
845
846            /C8TYPE
847            /THIS ROUTINE WILL C8PRNT ON THE CONSOLE OR THE LPT WITH DEVICE CODE 66.
848            /
849            /       C8TYPE= JMS XC8TYP
850
851            /EX.    JMS     XC8TYPE         /C8PRNT THE CHAR IN THE AC.
852            /                               /RETURN CALL PLUS ONE AC =0000
853                                            /DO NOT CLEAR THE LINK IN THIS ROUTINE NEEDED BYC8OCT
854
855            /CALLS USED ARE =C8HANG=XC8CNTR=XC8PNT=XC8CRLF=XC8INQU=
856
857
858    1077  0000    XC8TYP, 0
859    1100  3320            DCA     PNTBUF          /STORE CHAR
860    1101  1321            TAD     TTYLPT          /CHECK 0=TTY 7777=LPT
861    1102  7640            SZA CLA
862    1103  5312            JMP     XDOLPT          /DO OUT PUT ON LPT
863    1104  1320            TAD     PNTBUF
864    1105  6046            TLS
865    1106  6041            TSF
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866    1107 5306              JMP      ,-1
867    1110 6042              TCF
868    1111 5316              JMP      C8BY5
869    1112 1320    XDOLPT,   TAD      PNTBUF          /GET CHAR
870    1113 6666              PSTB     PCLF            /C8PRNT IT
871    1114 4322              JMS      C8HANG          /CHECK KEYBOARD IF HUNG
872    1115 6662              PCLF                     /CLEAR THE FLAG
873    1116 7600    C8BY5,    7600                     /CLEAR THE AC
874    1117 5677              JMP I    XC8TYP          /EXIT
875    1120 0000    PNTBUF,   0
876    1121 0000    TTYLPT,   0
877
878
879    1122 0000    C8HANG,   0
880    1123 7200              CLA                      /
881    1124 1316              TAD      C8BY5           /GET CONSTANT 7600
882    1125 3320              DCA      PNTBUF          /PNTBUF IS NOW A COUNTER
883    1126 6661              PSKF                     /SKIP ON PRINTER DONE
884    1127 7410              SKP                      /NOT DONE YET
885    1130 5722              JMP I    C8HANG          /SAW FLAG DONE
886    1131 2345              ISZ      C8CONT          /FIRST COUNTER FAST ONE
887    1132 5326              JMP      ,-4             /CHECK IF FLAG SET YET
888    1133 2320              ISZ      PNTBUF          /MADE 4096 COUNTS ON FAST COUNTER
889    1134 5331              JMP      ,-3             /KEEP IT UP FOR 5 SEC
890    1135 1764'             TAD      XC8CNTR         /GET THE RETURN ADDRESS IN CONTROL
891    1136 3322              DCA      C8HANG          /SAVE IT IN HANG
892    1137 3321              DCA      TTYLPT          /ALLOW PRINTING ON TTY
893    1140 4763'             JMS      XC8PNT
894    1141 1146              MESHANG                  /LPT ERROR
895    1142 4223              JMS      XC8CRLF
896    1143 4762'             JMS      XC8INQU         /PRINT WAITING
897    1144 5722              JMP I    C8HANG          /CONTINUE TO SAVE ADDRESS
898    1145 0000    C8CONT,   0                        /COUNTER FOR TIMER
899    1146 1420    MESHANG,TEXT       "LPT ERROR"
       1147 2440
       1150 0522
       1151 2217
       1152 2200
900
901    1162 0635
902    1163 0303
903    1164 0400
904    1165 0624
905    1166 0272
906    1167 1200
907    1170 1346
908    1171 1347
909    1172 1345
910    1173 0212
911    1174 0215
912    1175 0260
913    1176 0007
914    1177 7774
       1200              PAGE
915                      /******************************************************************
```

```
916                      /******************************************************************
917
918                      /THIS ROUTINE WILL CHECK LOCATION 22 THE HARD WARE CONFIG WORD,
919                      /TO SEE IF THE CONSOLE BIT 3 )400) IS SET IF SET THEN RETURN
920                      /TO CALL PLUS TWO FO A ACTIVE CONSOLR PACKAGE AC=0
921                      /IF NOT SET THEN TO CALL PLUS ONE FOR A DEACTIVE CONSOLE PACKAGE.
922
923
924    1200 0000    CHKCLA,  0
925    1201 7200              CLA
926    1202 1022              TAD      22              /GET THE COTENTA OF LOCATION 22
927    1203 0377              AND      (400            /MASK FOR BIT 3 (400
928    1204 7650              SNA CLA                   /
929    1205 2200              ISZ      CHKCLA          /ACTIVE CONSOLE PACKAGE RETURN
930                                                    /CALL PLUS ONE (1) FOR ACTIVE
931    1206 5600              JMP I    CHKCLA          /DEACTIVE CONSOLE PACKAGE RETURN
932                                                    /CALL PLUS TWO (2)
933
934                      /C8ERR
935                      /THIS ROUTINE WILL DETERMINE WHAT TO DO WHEN A C8ERR IS ENCOUNTERED
936                      /WILL CHECK IF CLASSIC SYSTEM, WILL CHECK C8SWIT REGISTERS.
937                      /         C8ERR=   JMS XC8ERR
938                      /EX,      JMS      XC8ERR           /GO TO C8ERR CALL IF NOT CONSOL
939                      /                                  /RETURN IS CALL PLUS ONE AC =0000
940
941                      /CALLS USED ARE -CHKCLA-XC8CRLF-XC8SW-XC8INQU-XC8PNT-XC8OCTA-
942
943
944    1207 0000    XC8ERR,  0
945    1210 6002              IOF
946    1211 3345              DCA      ACSAVE          /SAVE AC
947    1212 6004              GTF
948    1213 3347              DCA      FLSAVE          /SAVE THE FLAGS
949    1214 7501              MQA
950    1215 3346              DCA      MQSAVE          /SAVE THE MQ
951    1216 7340              CLA CLL CMA              /SUBTRACT A 1 FOR TRUE LOCATION
952    1217 1207              TAD      XC8ERR          /GET RETTURN LOCATION
953    1220 3344              DCA      PCSAVE          /SAVE ADD OF C8ERR CALL
954    1221 6201              CDF
955    1222 7340              CLA CLL CMA
956    1223 1776              TAD I    (CLASIK)
957    1224 3316              DCA      REALPC          /SAVE REAL PC.
958    1225 6211              CDF      10
959    1226 4200              JMS      CHKCLA          /CHECK LOC,22 BIT 3 CONSOL BIT
960    1227 7410              SKP                      /ACTIVE CONSOLE PACKAGE
961    1230 5270              JMP      NTCLAS          /NOT CLASSIC SYSTEM
962    1231 4775'             JMS      C8GET           /GET ALL REGISTERS.
963    1232 4774'             JMS      XC8SW           /CHECK SWITCH REG FOR BIT THAT INDICATES
964                                                    /NO ERROR MESSAGE
965    1233 0373    SETUP1,   AND      (0000           /MASK FOR BIT FOR NO ERROR PRINTING
966                                                    /IF THIS ERROR MESSAGE IS TO ALWAYS
967                                                    /BE PRINTED LEAVE AND VALUE AT 0000
968    1234 7640              SZA CLA                   /SKIP IF BIT IS 0 PRINT ERROR MESSAGE
969    1235 5262'             JMP      C8DO10          /DO NOT PRINT
970    1236 4772'             JMS      XC8CRLF
```

```
971    1237   4771'              JMS     XC8PNT
972    1240   1320              EPRMES               /PRINT THE ERROR MESSAGE
973    1241   4771'              JMS     XC8PNT
974    1242   1330              MESPC                /PRINT THE PC STSTEMENT
975    1243   1316              TAD     REALPC
976    1244   4770'              JMS     XC8OCTA      /CONVERT 4 DIGIT PC TO ASCII
977    1245   4771'              JMS     XC8PNT
978    1246   1333              MESAC                /PRINT THE AC MESS
979    1247   1345              TAD     ACSAVE
980    1250   4770'              JMS     XC8OCTA
981    1251   4771'              JMS     XC8PNT
982    1252   1336              MESMQ                /PRINT MQ
983    1253   1346              TAD     MQSAVE
984    1254   4770'              JMS     XC8OCTA
985    1255   4771'              JMS     XC8PNT
986    1256   1341              MESFL                /PRINT FL
987    1257   1347              TAD     FLSAVE
988    1260   4770'              JMS     XC8OCTA
989    1261   4772'              JMS     XC8CRLF
990    1262   4775'   C8D010,    JMS     C8GET        /GET ALL REGISTERS.
991    1263   4774'              JMS     XC8SW        /CHECK SWITCH REGISTER
992    1264   7610              SKP CLA              /SKIP IF BIT 0 SET
993    1265   5300              JMP     C8BY2        /LEAVE
994    1266   4767'              JMS     XC8INQ       /GO TO THE INQUIRE ROUTINE
995    1267   5300              JMP     C8BY2        /LEAVE
996    1270   4775'   NTCLAS,    JMS     C8GET        /GET ALL REGISTERS.
997    1271   4774'              JMS     XC8SW        /CHECK PSEUDO SWITCH REGISTER
998                                                   /CHECK THE C8SWIT REGISTER
999    1272   7610              SKP CLA              /SKIP IF HALT
1000   1273   5607              JMP I   XC8ERR       /NO HALT CONTINUE
1001   1274   1366              TAD     (7402        /CODE FOR HLT
1002   1275   3744              DCA I   PCSAVE       /PUT IT IN CALL LOC.
1003   1276   4775'              JMS     C8GET
1004   1277   5744              JMP I   PCSAVE       /EXIT  TO CALL AND HALT
1005   1300   4775'   C8BY2,     JMS     C8GET        /GET THE REGISTERS
1006   1301   5607              JMP I   XC8ERR
1007                  /
1008   1302   7402   ROUIN8,    HLT                  /PUT INSTRUCTION TO EXECUTE HEHE!!!!
1009   1303   7000              NOP
1010   1304   3317              DCA     MYAC         /SAVE AC.
1011   1305   6201              CDF     0
1012   1306   1020              TAD     SWR
1013   1307   3765              DCA I   (SWR)        /MOVE SWITCHES DOWN.
1014   1310   1776              TAD I   (CLASIK)
1015   1311   3315              DCA     CLRTRN
1016   1312   1317              TAD     MYAC
1017   1313   6202              CIF     0
1018   1314   5715              JMP I   CLRTRN       /RETURN TO FIELD 0.
1019                  /
1020   1315   0000   CLRTRN, 0
1021   1316   0000   REALPC, 0
1022   1317   0000   MYAC,   0
1023                  /
1024   1320   0410   ERRMES, TEXT    "DHRKAE  FAILED "
       1321   2213
```

```
       1322   0105
       1323   4040
       1324   0601
       1325   1114
       1326   0504
       1327   4000
1025   1330   4040   MESPC,  TEXT    "  PC:"
       1331   2003
       1332   7200
1026   1333   4040   MESAC,  TEXT    "  AC:"
       1334   0103
       1335   7200
1027   1336   4040   MESMQ,  TEXT    "  MQ:"
       1337   1521
       1340   7200
1028   1341   4040   MESFL,  TEXT    "  FL:"
       1342   0614
       1343   7200
1029   1344   7777   PCSAVE, 7777
1030   1345   7777   ACSAVE, 7777
1031   1346   7777   MQSAVE, 7777
1032   1347   7777   FLSAVE, 7777
1033                  /
1034   1365   0020
1035   1366   7402
1036   1367   0635
1037   1370   1000
1038   1371   0303
1039   1372   1023
1040   1373   0000
1041   1374   0262
1042   1375   0624
1043   1376   5732
1044   1377   0400
       0000              FIELD   0
```

```
0000  00000000  00000000  11101111  11111111  11000000  00000000  00000000  00000000
0100  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000

0200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11111111  11111111  11111111  11111111  10000001  11111111  11111111

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111111  11111111  11111110  11111111  11111111

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111


1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11111111  11100000  00111111  11111111

1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  00000000  00000111  11111111

1400
1500

1600
1700


2000
2100

2200
2300

2400
2500

2600
2700


3000
3100

3200
3300

3400
3500

3600
3700
```

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4000
4100

4200
4300

4400
4500

4600
4700


5000
5100

5200
5300

5400
5500

5600
5700


6000
6100

6200
6300

6400
6500

6600
6700


7000
7100

7200
7300

7400
7500

7600
7700
```

```
1045                     /
1046                     /ALL KNOWN HLTS.
1047                     /
1048                     /
1049   1400  6031        ERHLT1                          /UNDEFINED INTERRUPT
1050   1401  6142        ERHLT2                          /SKIP TRAP FOR DCLR
1051   1402  6115        ERHLT3                          /SKIP TRAP FOR DLAG
1052   1403  6104        ERHLT4                          /SKIP TRAP FOR DLCA
1053   1404  6070        ERHLT5                          /SKIP TRAP FOR DRST
1054   1405  6126        ERHLT6                          /SKIP TRAP FOR DLDC
1055   1406  6151        ERHLT7                          /SKIP TRAP FOR DMAN
1056   1407  6726        ERHLT9                          /RECOVERABLE ERROR HALT
1057   1410  5716        ENDHLT                          /END OF TEST HALT
1058   1411  7014        STPHLT                          /HALT FROM SWR4=1
1059   1412  7126        CHNHLT                          /IOT CHANGE HALT
1060                     /
1061         6741        DSKP=6741                       /SKIP ON TRANSFER DONE OR ERROR
1062         6742        DCLR=6742                       /CLEAR DISK CONTROL LOGIC
1063         6743        DLAG=6743                       /LOAD ADDRESS AND GO
1064         6744        DLCA=6744                       /LOAD CURRENT ADDRESS
1065         6745        DRST=6745                       /READ STATUS REGISTER
1066         6746        DLDC=6746                       /LOAD COMMAND REGISTER
1067         6747        DMAN=6747                       /LOAD MAINTENANCE
1068                     /
1069         4405        SET=JMS I       XSET
1070         4424        TICK=JMS I      XTICK
1071         4425        AERRO=JMS I     XAERRO
1072         4423        APT8A=JMS I     XAPT8A
1073         4404        LAS=JMS I       XLAS
1074         4406        CLASIC=JMS I    XCLAS
```

```
1075         5426        IOTCHN=JMP I    XCHANG
1076         5430        MANUAL=JMP I    MANTST
1077         4444        ENMAN1=JMS I    XMAIN1
1078         4445        ENMAN2=JMS I    XMAIN2
1079         4435        NERROR=JMS I    XNERRO
1080         4436        ERROR=JMS I     XERRO
1081         4437        IONWAT=JMS I    XIONWT
1082         4440        ACCMP1=JMS I    XCOMP1
1083         4441        ACCMP2=JMS I    XCOMP2
1084         4442        RDSTAT=JMS I    XRDST
1085         4443        RDCMD=JMS I     XRDCM
1086         4446        RDADD=JMS I     XRDAD
1087         4427        LDBUF=JMS I     XUPPER
1088         4452        LOADD=JMS I     XLDAD
1089         4447        DSKSKP=JMS I    XSDKP
1090         4450        LDCMD=JMS I     XLDCM
1091         4451        LDCUR=JMS I     XLDCA
1092         4453        CLRALL=JMS I    XCLDR
1093         4454        RDCRC=JMS I     XRDCR
1094         4455        LDMAN=JMS I     XLDMN
1095         4456        RDBUF=JMS I     XRDBF
1096         4457        PRNTER=JMS I    XPRN
1097         4460        OCTEL=JMS I     XFROCT
1098         4461        TWOCT=JMS I     XTOCT
1099         4434        TYPE=JMS I      XPRINT
1100         4462        CRLF=JMS I      XCRLF
1101                     /
1102         0000        *0
1103                     /
1104   0000  0305                305                     /REV E
1105   0001  5001                5001
1106   0002  0002                0002
1107   0003  0003                0003
1108                     /
1109   0004  5764        XLAS,    MYLAS
1110   0005  7040        XSET,    SETUP
1111   0006  5732        XCLAS,   CLASIK
1112   0007  0000        SAVEND,  0
1113                     /
1114         0010        *10
1115                     /
1116   0010  0000        AUTO10,  0
1117                     /
1118         0020        *20
1119                     /
1120   0020  0000        SWR,     0
1121   0021  4000        OP1,     4000
1122   0022  0000        OP2,     0
1123                     /
1124   0023  7200        XAPT8A,  APT8
1125   0024  7220        XTICK,   KTICK
1126   0025  7241        XAERRO,  WAERRO
1127   0026  7101        XCHANG,  CHANG
1128   0027  7055        XUPPER,  UPPER
1129   0030  5723        MANTST,  MANUL
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1130    0031    6011    INTRQ,  INTADD
1131    0032    5670    XEND,   ENDTST
1132    0033    0210    THSFLD, PRSFLD
1133    0034    6463    XPRINT, PRINT
1134    0035    7000    XNERRO, NERRO
1135    0036    6600    XERRO,  ERRO
1136    0037    6900    XIONWT, IONWT
1137    0040    6033    XCOMP1, COMP1
1138    0041    6044    XCOMP2, COMP2
1139    0042    6063    XRDST,  RDST
1140    0043    6240    XRDCM,  RDCM
1141    0044    6256    XMAIN1, MAIN1
1142    0045    6760    XMAIN2, MAIN2
1143    0046    6200    XRDAD,  RDAD
1144    0047    6130    XSDKP,  SDKP
1145    0050    6117    XLDCM,  LDCM
1146    0051    6075    XLDCA,  LDCA
1147    0052    6106    XLDAD,  LDAD
1148    0053    6135    XCLDR,  CLDR
1149    0054    6263    XRDCR,  RDCR
1150    0055    6144    XLDMN,  LDMN
1151    0056    6226    XRDBF,  RDBF
1152    0057    6423    XPRN,   PRN
1153    0060    6400    XFROCT, FROCT
1154    0061    6314    XTOCT,  TOCT
1155    0062    6331    XCRLF,  UPONE
1156    0063    0260    K0260,  0260
1157    0064    0000    K0000,  0000
1158    0065    0001    K0001,  0001
1159    0066    0002    K0002,  0002
1160    0067    0003    K0003,  0003
1161    0070    0004    K0004,  0004
1162    0071    0006    K0006,  0006
1163    0072    0007    K0007,  0007
1164    0073    0010    K0010,  0010
1165    0074    0020    K0020,  0020
1166    0075    0037    K0037,  0037
1167    0076    0040    K0040,  0040
1168    0077    0100    K0100,  0100
1169    0100    0200    K0200,  0200
1170    0101    0207    K0207,  0207
1171    0102    0400    K0400,  0400
1172    0103    1000    K1000,  1000
1173    0104    2000    K2000,  2000
1174    0105    3777    K3777,  3777
1175    0106    4000    K4000,  4000
1176    0107    7000    K7000,  7000
1177    0110    7776    K7776,  7776
1178    0111    7775    K7775,  7775
1179    0112    7700    K7700,  7700
1180    0113    7740    K7740,  7740
1181    0114    0070    K0070,  0070
1182    0115    0077    K0077,  0077
1183    0116    0377    K0377,  0377
1184    0117    0177    K0177,  0177
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1185    0120    2525    K2525,  2525
1186    0121    5252    K5252,  5252
1187    0122    3737    K3737,  3737
1188    0123    7717    K7717,  7717
1189    0124    4100    K4100,  4100
1190    0125    7600    K7600,  7600
1191    0126    5000    K5000,  5000
1192    0127    5777    K5777,  5777
1193    0130    7774    K7774,  7774
1194    0131    7771    K7771,  7771
1195    0132    7777    K7777,  7777
1196                    /
1197                    DECIMAL
1198                    /
1199    0133    7774    M4,     -4
1200    0134    7773    M5,     -5
1201    0135    7771    M7,     -7
1202    0136    7764    M12,    -12
1203    0137    7760    M16,    -16
1204    0140    7720    M48,    -48
1205    0141    7600    M128,   -128
1206    0142    7501    M191,   -191
1207    0143    7401    M255,   -255
1208    0144    7324    M300,   -300
1209                    /
1210                    OCTAL
1211                    /
1212    0145    0017    K0017,  0017
1213    0146    0215    K0215,  0215
1214    0147    0212    K0212,  0212
1215    0150    6201    KCDF,   CDF
1216    0151    6244    KRMF,   RMF
1217    0152    3741    MTS85,  -TST85 -1
1218    0153    0000    REG1,   0
1219    0154    0000    REG2,   0
1220    0155    0000    SBCNT1, 0
1221    0156    0000    TCNTR1, 0
1222    0157    0000    TCNTR2, 0
1223    0160    0000    TCNTR3, 0
1224    0161    0000    TCNTR4, 0
1225                    /
1226    0162    0000    GDREG1, 0
1227    0163    0000    GDREG2, 0
1228    0164    0000    CRREG1, 0
1229    0165    0000    CRREG2, 0
1230    0166    0000    STREG,  0
1231    0167    0000    DBREG,  0
1232    0170    0000    CMREG,  0
1233    0171    0000    DAREG,  0
1234    0172    0000    ADREG,  0
1235    0173    0000    DTREG,  0
1236    0174    0000    ACREG,  0
1237    0175    0000    HOMEMA, 0
1238    0176    0000    FLDMAX, 0
1239    0177    2200    STCON,  2200
```

```
1240
1241        0200    /
1242                /
1243                /SETUP POINTERS FOR AMOUNT OF EXTENDED
1244                /BANKS OF MEMORY, INTERRUPT SERVICE, CURRENT
1245                /FIELD , AND TESTS FOR CLASSIC PACKAGE OR APT SYSYTEM.
1246                /IF CONSOLE IS ACTIVE APT FUNTIONS OR NOP.
1247
1248                /
1249   0200  5203  BGN,    JMP     .+3           /RUN DISKLESS.
1250   0201  5430          MANUAL                /TO MANUAL SCOPE TEST
1251   0202  5426          IOTCHN                /TO IOT CHANGE ROUTINE
1252   0203  6224          RIF
1253   0204  3175          DCA     HOMEMA
1254   0205  1175          TAD     HOMEMA
1255   0206  1150          TAD     KCDF          /MAKE HOMEDF
1256   0207  3210          DCA     PRSFLD
1257   0210  7402  PRSFLD, HLT                   /MAKE DF=IF
1258   0211  4405          SET                   /SETUP FIELD 0
1259   0212  1176          TAD     FLDMAX        /GET FIRST PASS POINTER
1260   0213  7640          SZA CLA               /IS IT FIRST PASS
1261   0214  5217          JMP     .+3           /NO, MUST BE A RESTART
1262   0215  1532          TAD I   K7777         /GET LAST LOCATION
1263   0216  3007          DCA     SAVEND        /SAVE IT FOR A RESTORE
1264   0217  4423          APT8A                 /NOP CONSOLE IF ON APT8A
1265   0220  4406          CLASIC                /CHECK FOR CONSOLE CLASSIC
1266   0221  4431          C8SWIT                /CHECK FOR SWITCH SR=.
1267   0222  7000          NOP
1268   0223  4404          LAS
1269   0224  0072          AND     K0007         /MASK 9-11
1270   0225  7040          CMA
1271   0226  3176          DCA     FLDMAX        /SAVE AMOUNT OF EXTENDED MEMORY
1272   0227  1022          TAD     22
1273   0230  0102          AND     K0400
1274   0231  7640          SZA CLA               /ON CLASSIC,
1275   0232  6007          6007                  /YES, THEN CLEAR ALL FLAGS.
1276                /
1277                /VERIFY THAT THE DISK MOTOR IS OFF. THE
1278                /STATUS REGISTER SHOULD ONLY CONTAIN NOT READY TO
1279                /SEEK, READ, OR WRITE AND NOT DISK FILE READY.
1280                /INITIALIZE SHOULD HAVE CLEARED ALL OTHER BITS
1281                /
1282
1283   0233  3153          DCA     REG1
1284   0234  1177          TAD     STCON         /GET EXPECTED STATUS
1285   0235  3163          DCA     GDREG2        /SETUP TEST HANDLER
1286                /
1287   0236  1153  TST0,   TAD     REG1          /GET AC VALUE
1288   0237  4442          RDSTAT                /READ STATUS REGISTER
1289   0240  4440          ACCMP1                /CHECK RESULTS
1290   0241  4435          NERROR                /AC O.K. 4096 LOOPS
1291   0242  4436          ERROR                 /ERROR, "INITIALIZE" CLEAR STATUS
1292                                             /REGISTER FAILED.
1293   0243  0236          TST0                  /SCOPE LOOP POINTER
1294   0244  5000          5000                  /TEXT POINTER
```

```
1295                /
1296                /VERIFY THAT SKIP CONDITIONS WERE CLEARED
1297                /BY "INITIALIZE" ON START OF TEST.
1298                /
1299   0245  4447  TST1,   DSKSKP                /ISSUE "DSKP" IOT
1300   0246  4435          NERROR                /DSKP O.K. 4096 LOOPS
1301   0247  4436          ERROR                 /ERROR, "INITIALIZE" CLEAR
1302                                             /SKIP CONDITIONS
1303   0250  0245          TST1                  /SCOPE LOOP POINTER
1304   0251  0006          0006                  /TEXT POINTER
1305                /
1306                /VERIFY THAT INTERRUPT REQUESTS WERE
1307                /CLEARED BY "INITIALIZE" AT START OF TEST
1308                /
1309   0252  4437  TST2,   IONWAT                /GO WAIT FOR INT.
1310   0253  4435          NERROR                /INT. O.K. 4096 LOOPS
1311   0254  4436          ERROR                 /ERROR, "INITIALIZE" CLEAR
1312                                             /INT. CONDITION
1313   0255  0252          TST2                  /SCOPE LOOP POINTER
1314   0256  0007          0007                  /TEXT POINTER
1315                /
1316                /VERIFY THAT COMMAND REGISTER WAS CLEARED
1317                /BY "INITIALIZE" AT START OF TEST. READ COMMAND
1318                /REGISTER WITH "DMAN" (MAINTENANCE IOT)
1319                /
1320   0257  3163          DCA     GDREG2        /SETUP COMPARE REGISTER
1321   0260  4443  TST3,   RDCMD                 /READ COMMAND REGISTER
1322   0261  7650          SNA CLA               /AC SHOULD BE 0
1323   0262  4435          NERROR                /AC O.K. 4096 LOOPS
1324   0263  4436          ERROR                 /ERROR, "INITIALIZE" CLEAR
1325                                             /COMMAND REGISTER
1326   0264  0260          TST3                  /SCOPE LOOP POINTER
1327   0265  4201          4201                  /TEXT POINTER
1328                /
1329                /VERIFY THAT ALL DRIVES ON CONTROL ARE OFF.
1330                /THE STATUS SHOULD BE 2200 WHEN DRIVES ARE SELECTED.
1331                /
1332   0266  1177  TST4,   TAD     STCON         /EXPECTED STATUS
1333   0267  3163          DCA     GDREG2        /SETUP COMPARE REGISTER
1334   0270  7301          CLA CLL IAC           /ENABLE CLEAR CONTROL
1335   0271  4453          CLRALL                /DCLR "CLR ALL"
1336   0272  1153          TAD     REG1          /GET AC VALUE
1337   0273  4450          LDCMD                 /LOAD COMMAND
1338   0274  4442          RDSTAT                /READ STATUS
1339   0275  4440          ACCMP1                /CHECK RESULTS
1340   0276  4435          NERROR                /O.K. 4096 LOOPS
1341   0277  4436          ERROR                 /ERROR, STATUS
1342   0300  0266          TST4                  /SCOPE LOOP POINTER
1343   0301  5000          5000                  /TEXT POINTER
1344                /
1345                /VERIFY THAT IOT "DSKP" DOES NOT AFFECT
1346                /AC REGISTER. TRY ALL COMBINATIONS IN AC.
1347                /
1348   0302  1153  TST5,   TAD     REG1          /GET AC VALUE
1349   0303  3163          DCA     GDREG2        /SETUP COMPARE REGISTER
```

```
1350    0304  1153           TAD     REG1
1351    0305  4447           DSKSKP                  /ISSUE "DSKP" IOT
1352    0306  7000           NOP
1353    0307  4440           ACCMP1                  /CHECK AC, COMPARE TO GDREG2
1354    0310  4435           NERROR                  /AC O.K. 4096 LOOPS
1355    0311  4436           ERROR                   /ERROR, "DSKP" CHANGED AC.
1356    0312  0302           TST5                    /SCOPE LOOP POINTER
1357    0313  4010           4010                    /TEXT POINTER
1358                 /
1359                 /VERIFY THAT "DLCA" LOAD CURRENT ADDRESS
1360                 /REGISTER CLEARS THE AC. TRY ALL COMBINATIONS IN AC
1361                 /
1362    0314  3163           DCA     GDREG2          /SETUP COMPARE REGISTER
1363    0315  1153    TST6,   TAD     REG1            /GET AC VALUE
1364    0316  4451           LDCUR                   /LOAD CURRENT ADDRESS "DLCA"
1365    0317  4440           ACCMP1                  /CHECK AC, COMPARE TO GDREG2
1366    0320  4435           NERROR                  /AC O.K. 4096 LOOPS
1367    0321  4436           ERROR                   /ERROR, DLCA CLEAR AC
1368    0322  0315           TST6                    /SCOPE LOOP POINTER
1369    0323  4010           4010                    /TEXT POINTER
1370                 /
1371                 /VERIFY THAT "DLDC" LOAD COMMAND REGISTER
1372                 /CLEARS THE AC, TRY ALL COMBINATIONS IN AC.
1373                 /
1374    0324  1153    TST7,   TAD     REG1            /GET AC VALUE
1375    0325  4450           LDCMD                   /"DLDC" LOAD COMMAND REGISTER
1376    0326  4440           ACCMP1                  /CHECK AC, COMPARE TO GDREG2
1377    0327  4435           NERROR                  /AC O.K. 4096 LOOPS
1378    0330  4436           ERROR                   /ERROR, DLDC CLEAR AC
1379    0331  0324           TST7                    /SCOPE LOOP POINTER
1380    0332  4010           4010                    /TEXT POINTER
1381                 /
1382                 /VERIFY THAT "DLAG" CLEARS THE AC REGISTER.
1383                 /TRY ALL COMBINATIONS IN AC.
1384                 /
1385    0333  7301    TST8,   CLA CLL IAC
1386    0334  4453           CLRALL                  /CLEAR CONTROL
1387    0335  1154           TAD     REG2            /GET DATA
1388    0336  4452           LDADD                   /LOAD DISK ADDRESS
1389    0337  4440           ACCMP1                  /CHECK RESULTS
1390    0340  4435           NERROR                  /O.K. 4096 LOOPS
1391    0341  4436           ERROR                   /ERROR, DLAG, CLEAR AC
1392    0342  0333           TST8                    /SCOPE LOOP POINTER
1393    0343  4010           4010                    /TEXT POINTER
1394                 /
1395                 /VERIFY THE IOT "DCLR" CLEARS THE AC.
1396                 /TRY ALL COMBINATIONS IN AC
1397                 /
1398    0344  1153    TST9,   TAD     REG1
1399    0345  4453           CLRALL                  /DCLR "CLR ALL"
1400    0346  4440           ACCMP1                  /CHECK AC, COMPARE TO GDREG2
1401    0347  4435           NERROR                  /AC O.K. 4096 LOOPS
1402    0350  4436           ERROR                   /ERROR, DCLR CLEAR AC
1403    0351  0344           TST9                    /SCOPE LOOP POINTER
1404    0352  4010           4010                    /TEXT POINTER
```

```
1405                 /
1406                 /VERIFY THAT THE COMMAND REGISTER CAN BE LOADED
1407                 /AND SHIFTED INTO THE LOWER DATA BUFFER WITH
1408                 /THE MAINTENANCE IOT. USE DATA PATTERN 0000 + 7777.
1409                 /
1410    0353  7301    TST10,  CLA CLL IAC
1411    0354  4453           CLRALL                  /DCLR "CLR ALL"
1412    0355  1153           TAD     REG1
1413    0356  7110           CLL RAR
1414    0357  7630           SZL CLA                 /DATA 7777 IF LINK IS SET
1415    0360  7240           CLA CMA
1416    0361  3163           DCA     GDREG2          /SETUP COMPARE REGISTER
1417    0362  1163           TAD GDREG2
1418    0363  7040           CMA
1419    0364  4450           LDCMD                   /SET COMMAND TO OPOSITE
1420    0365  1163           TAD GDREG2
1421    0366  4450           LDCMD                   /SET COMMAND TO VALUE EXPECTED
1422    0367  4443           RDCMD                   /READ COMMAND REGISTER
1423    0370  4440           ACCMP1                  /CHECK RESULTS
1424    0371  4435           NERROR                  /O.K. 4096 LOOPS
1425    0372  4436           ERROR                   /ERROR, COMMAND REGISTER
1426    0373  0353           TST10                   /SCOPE LOOP POINTER
1427    0374  4201           4201                    /TEXT POINTER
1428                 /
1429                 /VERIFY THAT THE COMMAND REGISTER CAN BE LOADED
1430                 /AND SHIFTED INTO THE LOWER DATA BUFFER WITH
1431                 /THE MAINTENANCE IOT. USE DATA PATTERN 2525 + 5252
1432                 /
1433    0375  7301    TST11,  CLA CLL IAC
1434    0376  4453           CLRALL                  /DCLR "CLR ALL"
1435    0377  1153           TAD     REG1
1436    0400  7110           CLL RAR
1437    0401  7630           SZL CLA                 /DATA 5252 IF LINK IS SET
1438    0402  1120           TAD     K2525
1439    0403  1120           TAD     K2525
1440    0404  3163           DCA     GDREG2          /SETUP COMPARE REGISTER
1441    0405  1163           TAD     GDREG2
1442    0406  7040           CMA
1443    0407  4450           LDCMD                   /SET COMMAND TO OPOSITE
1444    0410  1163           TAD     GDREG2
1445    0411  4450           LDCMD                   /SET COMMAND TO VALUE EXPECTED
1446    0412  4443           RDCMD                   /READ COMMAND REGISTER
1447    0413  4440           ACCMP1                  /CHECK RESULTS
1448    0414  4435           NERROR                  /O.K. 4096 LOOPS
1449    0415  4436           ERROR                   /ERROR, COMMAND REGISTER
1450    0416  0375           TST11                   /SCOPE LOOP POINTER
1451    0417  4201           4201                    /TEXT POINTER
1452                 /
1453                 /VERIFY THAT THE COMMAND REGISTER
1454                 /BE LOADED AND THEN SHIFTED INTO THE LOWER
1455                 /DATA BUFFER. TRY ALL COMBINATIONS.
1456                 /
1457    0420  1154    TST12,  TAD     REG2            /GET AC VALUE
1458    0421  4450           LDCMD                   /LOAD COMMAND REGISTER
1459    0422  1153           TAD     REG1
```

```
1460    0423  3163              DCA    GDREG2          /SETUP COMPARE REGISTER
1461    0424  1153              TAD    REG1
1462    0425  4450              LDCMD                  /LOAD COMMAND REGISTER
1463    0426  4443              RDCMD                  /READ COMMAND REGISTER
1464    0427  4440              ACCMP1                 /CHECK AC, COMPARE TO GDREG2
1465    0430  4435              NERROR                 /AC O.K. 4096 LOOPS
1466    0431  4436              ERROR                  /ERROR, LOAD OR READ
1467                                                   /COMMAND REGISTER
1468    0432  0420              TST12                  /SCOPE LOOP POINTER
1469    0433  4201              4201                   /TEXT POINTER
1470                     /
1471                     /VERIFY THAT DCLR DOES NOT CLEAR COMMAND
1472                     /REGISTER WHEN AC10=0 AND A11=0
1473                     /
1474    0434  1153       TST13, TAD   REG1
1475    0435  4450              LDCMD                  /LOAD COMMAND REGISTER
1476    0436  1154              TAD    REG2
1477    0437  3163              DCA    GDREG2          /SETUP COMPARE REGISTER
1478    0440  1154              TAD    REG2
1479    0441  4450              LDCMD                  /LOAD COMMAND REGISTER
1480    0442  4453              CLRALL                 /DCLR "CLR ALL"
1481    0443  4443              RDCMD                  /READ COMMAND REGISTER
1482    0444  4440              ACCMP1                 /CHECK AC, COMPARE TO GDREG2
1483    0445  4435              NERROR                 /AC O.K. 4096 LOOPS
1484    0446  4436              ERROR                  /ERROR, DCLR CLEAR COMMAND
1485                                                   /REGISTER WHEN AC10=0 + AC11=0
1486    0447  0434              TST13                  /SCOPE LOOP POINTER
1487    0450  4201              4201
1488                     /
1489                     /VERIFY THAT DCLR DOES CLEAR COMMAND
1490                     /REGISTER WHEN AC10=0 AND AC11=1
1491                     /
1492    0451  3163              DCA    GDREG2          /SETUP COMPARE REGISTER
1493    0452  1153       TST14, TAD   REG1
1494    0453  4450              LDCMD                  /LOAD COMMAND REGISTER
1495    0454  7301              CLA CLL IAC            /ENABLE CLEAR CONTROL
1496    0455  4453              CLRALL                 /DCLR "CLR ALL"
1497    0456  4443              RDCMD                  /READ COMMAND REGISTER
1498    0457  7650              SNA CLA                /CHECK AC, SHOULD EQUAL 0
1499    0460  4435              NERROR                 /AC O.K. LOOP 4096
1500    0461  4436              ERROR                  /ERROR, DCLR CLEAR COMMAND
1501                                                   /REGISTER WHEN AC10=0+AC11=1
1502    0462  0452              TST14                  /SCOPE LOOP POINTER
1503    0463  4201              4201                   /TEXT POINTER
1504                     /
1505                     /VERIFY THAT DLAG DOES LOAD THE SURFACE AND SECTOR
1506                     /REGISTER, USE DATA PATTERN 00 - 37.
1507                     /
1508    0464  7301       TST15, CLA CLL IAC            /ENABLE CLEAR CONTROL
1509    0465  4453              CLRALL                 /CLEAR CONTROL
1510    0466  1136              TAD    M12
1511    0467  3156              DCA    TCNTR1          /SETUP 12 BIT SHIFT COUNTER
1512    0470  1153              TAD    REG1
1513    0471  7110              CLL RAR
1514    0472  7630              SZL CLA                /DATA 00 + 3777
```

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1515    0473  7340              CLA CLL CMA           /371
1516    0474  4452              LDADD                 /LOAD DISK ADDRESS "DLAG"
1517    0475  1171              TAD    DAREG
1518    0476  0075              AND    K0037          /MASK EXPECTED VALUE
1519    0477  3163              DCA    GDREG2         /SETUP COMPARE REGISTER
1520    0500  4445              ENMAN2                /ENTER MAINTENANCE
1521    0501  1100              TAD    K0200          /ENABLE SHIFT LOWER BUFFER
1522    0502  4455              LDMAN                 /LOAD MAINTENANCE
1523    0503  2156              ISZ    TCNTR1         /COUNT 12 SHIFTS
1524    0504  5302              JMP    .-2
1525    0505  7300              CLA CLL
1526    0506  1074              TAD    K0020          /ENABLE READ LOWER BUFFER
1527    0507  4455              LDMAN                 /LOAD MAINTENANCE
1528    0510  3171              DCA    DAREG          /SAVE VALUE FOUND
1529    0511  1171              TAD    DAREG
1530    0512  4440              ACCMP1                /CHECK RESULTS
1531    0513  4435              NERROR                /O.K. 4096 LOOPS
1532    0514  4436              ERROR                 /ERROR, SURFACE AND SECTOR SHIFT
1533    0515  0464              TST15                 /SCOPE LOOP POINTER
1534    0516  4102              4102                  /TEXT POINTER
1535                     /
1536                     /VERIFY THAT DLAG LOADS THE SURFACE AND
1537                     /SECTOR REGISTER, USE DATA PATTERN ALL
1538                     /COMBINATIONS.
1539                     /
1540    0517  7301       TST16, CLA CLL IAC           /ENABLE CLEAR CONTROL
1541    0520  4453              CLRALL                /CLEAR CONTROL
1542    0521  1136              TAD    M12
1543    0522  3156              DCA    TCNTR1         /SETUP 12 BIT SHIFT COUNTER
1544    0523  1153              TAD    REG1
1545    0524  0075              AND    K0037          /MASK EXPECTED VALUE
1546    0525  3163              DCA    GDREG2         /SETUP COMPARE REGISTER
1547    0526  1153              TAD    REG1
1548    0527  4452              LDADD                 /LOAD DISK ADDRESS "DLAG"
1549    0530  4445              ENMAN2                /ENTER MAINTENANCE
1550    0531  1100              TAD    K0200          /ENABLE SHIFT LOWER BUFFER
1551    0532  4455              LDMAN                 /LOAD MAINTENANCE
1552    0533  2156              ISZ    TCNTR1         /COUNT 12 SHIFTS
1553    0534  5332              JMP    .-2
1554    0535  7300              CLA CLL
1555    0536  1074              TAD    K0020          /ENABLE READ LOWER BUFFER
1556    0537  4455              LDMAN                 /LOAD MAINTENANCE
1557    0540  3171              DCA    DAREG          /SAVE VALUE FOUND
1558    0541  1171              TAD    DAREG
1559    0542  4440              ACCMP1                /CHECK RESULTS
1560    0543  4435              NERROR                /O.K. 4096 LOOPS
1561    0544  4436              ERROR                 /ERROR, SURFACE AND SECTOR SHIFT
1562    0545  0517              TST16                 /SCOPE LOOP POINTER
1563    0546  4102              4102                  /TEXT POINTER
1564                     /
1565                     /VERIFY THAT THE DISK ADDRESS REGISTER CAN BE LOADED
1566                     /AND SHIFTED TO LOWER DATA BUFFER WITH THE MAINTENANCE
1567                     /IOT, USE DATA PATTERN 0000 + 7777
1568                     /SHIFT THE SURFACE AND SECTOR FROM THE SURFACE AND SECTOR
1569                     /REGISTER, SHIFT THE LOWER CYLINDER BITS FROM THE CRC REGISTER.
```

```
1570                    /
1571    0547 7301   TST17,  CLA CLL IAC
1572    0550 4453            CLRALL                  /DCLR "CLR ALL"
1573    0551 1153            TAD     REG1
1574    0552 7110            CLL RAR
1575    0553 7630            SZL CLA                  /USE DATA 7777 IF LINK IS SET
1576    0554 7240            CLA CMA
1577    0555 3163            DCA GDREG2               /SETUP COMPARE REGISTER
1578    0556 1163            TAD     GDREG2
1579    0557 7040            CMA
1580    0560 4452            LDADD                    /SET DISK ADDRESS TO OPOSITE
1581    0561 1163            TAD GDREG2
1582    0562 4452            LDADD                    /SET DISK ADDRESS TO EXPECTED
1583    0563 4446            RDADD                    /READ DISK ADDRESS
1584    0564 4440            ACCMP1                   /CHECK RESULTS
1585    0565 4435            NERROR                   /O.K. 4096 LOOPS
1586    0566 4436            ERROR                    /ERROR, DISK ADDRESS REGISTER
1587    0567 0547            TST17                    /SCOPE LOOP POINTER
1588    0570 4102            4102                     /TEXT POINTER
1589                    /
1590                    /VERIFY THAT THE DISK ADDRESS REGISTER CAN BE LOADED
1591                    /AND SHIFTED TO LOWER DATA BUFFER WITH THE MAINTENANCE
1592                    /IOT. USE DATA PATTERN 2525 + 5252.
1593                    /SHIFT THE SURFACE AND SECTOR FROM THE SURFACE AND SECTOR
1594                    /REGISTER, SHIFT THE LOWER CYLINDER BITS FROM THE CRC REGISTER.
1595                    /
1596    0571 7301   TST18,  CLA CLL IAC
1597    0572 4453            CLRALL                  /DCLR "CLR ALL"
1598    0573 1153            TAD     REG1
1599    0574 7110            CLL RAR
1600    0575 7630            SZL CLA                  /USE DATA 5252 IF LINK IS SET
1601    0576 1120            TAD     K2525
1602    0577 1120            TAD     K2525
1603    0600 3163            DCA     GDREG2          /SETUP COMPARE REGISTER
1604    0601 1163            TAD     GDREG2
1605    0602 7040            CMA
1606    0603 4452            LDADD                    /SET DISK ADDRESS TO OPOSITE
1607    0604 1163            TAD GDREG2
1608    0605 4452            LDADD                    /SET DISK ADDRESS TO EXPECTED
1609    0606 4446            RDADD                    /READ DISK ADDRESS
1610    0607 4440            ACCMP1                   /CHECK RESULTS
1611    0610 4435            NERROR                   /O.K. 4096 LOOPS
1612    0611 4436            ERROR                    /ERROR, DISK ADDRESS REGISTER
1613    0612 0571            TST18                    /SCOPE LOOP POINTER
1614    0613 4102            4102                     /TEXT POINTER
1615                    /
1616                    /VERIFY THAT THE DISK ADDRESS REGISTER
1617                    /CAN BE LOADED AND SHIFTED INTO THE LOWER
1618                    /DATA BUFFER. TRY ALL COMBINATIONS IN AC
1619                    /SHIFT THE SURFACE AND SECTOR FROM THE SURFACE AND SECTOR
1620                    /REGISTER, SHIFT THE LOWER CYLINDER BITS FROM THE CRC REGISTER.
1621                    /
1622    0614 1153   TST19,  TAD     REG1            /GET AC VALUE
1623    0615 3163            DCA     GDREG2          /SETUP COMPARE REGISTER
1624    0616 1153            TAD     REG1
```

```
1625    0617 4452            LDADD                    /LOAD DISK ADDRESS REGISTER
1626    0620 4446            RDADD                    /READ DISK ADDRESS REGISTER
1627    0621 4440            ACCMP1                   /CHECK AC, COMPARE TO GDREG2
1628    0622 4435            NERROR                   /AC O.K., LOOP 4096 TIMES
1629    0623 4436            ERROR                    /ERROR, LOAD OR READ DISK
1630                                                  /ADDRESS REGISTER
1631    0624 0614            TST19                    /SCOPE LOOP POINTER
1632    0625 4102            4102                     /TEXT POINTER
1633                    /
1634                    /VERIFY THAT DCLR DOES NOT AFFECT THE SURFACE
1635                    /AND SECTOR WHEN AC10=0 + AC11=0
1636                    /
1637    0626 1153   TST20,  TAD     REG1            /GET AC VALUE
1638    0627 3163            DCA     GDREG2          /SETUP COMPARE REGISTER
1639    0630 1154            TAD     REG2            /AC VALUE, COMPLIMENT OF REG1
1640    0631 4452            LDADD                    /LOAD DISK ADDRESS
1641    0632 1153            TAD     REG1
1642    0633 4452            LDADD                    /LOAD DISK ADDRESS
1643    0634 4453            CLRALL                   /DCLR "CLR ALL"
1644    0635 4446            RDADD                    /READ DISK ADDRESS
1645    0636 4440            ACCMP1                   /CHECK AC, COMPARE TO GDREG2
1646    0637 4435            NERROR                   /AC O.K. LOOP 4096 TIMES
1647    0640 4436            ERROR                    /ERROR, LOAD OR READ DISK
1648                                                  /ADDRESS OR DCLR CLEAR
1649    0641 0626            TST20                    /SCOPE LOOP POINTER
1650    0642 4102            4102                     /TEXT POINTER
1651                    /
1652                    /VERIFY THAT "DCLR" DOESN'T  CLEAR SURFACE AND SECTOR
1653                    /REGISTER WHEN A10=0 + A11=1
1654                    /
1655    0643 1153   TST21,  TAD     REG1            /GET AC VALUE
1656    0644 3163            DCA     GDREG2          /SETUP COMPARE REGISTER
1657    0645 1153            TAD     REG1
1658    0646 4452            LDADD                    /LOAD DISK ADDRESS
1659    0647 7301            CLA CLL IAC              /ENABLE "CLR ALL" BIT
1660    0650 4453            CLRALL                   /DCLR "CLR ALL"
1661    0651 4446            RDADD                    /READ DISK ADDRESS
1662    0652 4440            ACCMP1                   /CHECK RESULTS
1663    0653 4435            NERROR                   /AC O.K. LOOP 4096
1664    0654 4436            ERROR                    /ERROR, LOAD, READ, OR CLEAR
1665                                                  /DISK ADDRESS
1666    0655 0643            TST21                    /SCOPE LOOP POINTER
1667    0656 4102            4102                     /TEXT POINTER
1668                    /
1669                    /VERIFY THAT THE CRC CAN BE LOADED BY "DLAG"
1670                    /AND "DLDC". USE DATA PATTERN 0000 + 7777.
1671                    /THIS WILL VERIFY THAT THE CRC CAN BE LOADED
1672                    /BY THE EXTENDED CYLINDER BIT IN THE COMMAND REGISTER
1673                    /BY THE "DLAG" IOT.
1674                    /
1675    0657 7301   TST22,  CLA CLL IAC
1676    0660 4453            CLRALL                  /DCLR
1677    0661 1153            TAD     REG1
1678    0662 7110            CLL RAR
1679    0663 7630            SZL CLA                  /USE DATA 7777 IF LINK IS SET
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1680    0664  7240            CLA CMA
1681    0665  0113            AND     K7740
1682    0666  3163            DCA     GDREG2          /SETUP COMPARE # 1
1683    0667  7004            RAL                     /LINK FOR EXTENDED BIT
1684    0670  3162            DCA     GDREG1          /SETUP COMPARE REGISTER
1685    0671  1162            TAD     GDREG1          /GET DATA
1686    0672  4450            LDCMD                   /LOAD CRC
1687    0673  1163            TAD     GDREG2          /LOAD CRC
1688    0674  4452            LDADD                   /LOAD CRC
1689    0675  4454            RDCRC                   /READ CRC
1690    0676  4441            ACCMP2                  /CHECK RESULTS
1691    0677  4435            NERROR                  /O.K. 4096 LOOPS
1692    0700  4436            ERROR                   /ERROR, CRC REGISTER
1693    0701  0657            TST22                   /SCOPE LOOP POINTER
1694    0702  6004            6004                    /TEXT POINTER
1695                  /
1696                  /VERIFY THAT THE CRC CAN BE LOADED BY "DLAG"
1697                  /AND "DLDC", USE DATA PATTERN 2525 + 5252.
1698                  /THIS WILL VERIFY THAT THE CRC CAN BE LOADED
1699                  /BY THE EXTENDED CYLINDER BIT IN THE COMMAND REGISTER
1700                  /BY THE "DLAG" IOT.
1701                  /
1702    0703  7301  TST23,    CLA CLL IAC
1703    0704  4453            CLRALL                  /DCLR
1704    0705  1153            TAD     REG1
1705    0706  7110            CLL RAR
1706    0707  7630            SZL CLA                 /USE DATA 5252 IF LINK IS SET
1707    0710  1120            TAD     K2525
1708    0711  1120            TAD     K2525
1709    0712  0113            AND     K7740
1710    0713  3163            DCA     GDREG2          /SETUP COMPARE # 1
1711    0714  7004            RAL                     /LINK FOR EXTENDED BIT
1712    0715  3162            DCA     GDREG1          /SETUP COMPARE REGISTER
1713    0716  1162            TAD     GDREG1          /GET DATA
1714    0717  4450            LDCMD                   /LOAD CRC
1715    0720  1163            TAD     GDREG2
1716    0721  4452            LDADD                   /LOAD CRC
1717    0722  4454            RDCRC                   /READ CRC
1718    0723  4441            ACCMP2                  /CHECK RESULTS
1719    0724  4435            NERROR                  /O.K. 4096 LOOPS
1720    0725  4436            ERROR                   /ERROR, CRC REGISTER
1721    0726  0703            TST23                   /SCOPE LOOP POINTER
1722    0727  6004            6004                    /TEXT POINTER
1723                  /
1724                  /VERIFY THAT THE CRC CAN BE LOADED BY "DLAG"
1725                  /AND DLDC", USE DATA PATTERN ALL COMBINATIONS.
1726                  /THIS WILL VERIFY THAT THE CRC CAN BE LOADED
1727                  /BY THE EXTENDED CYLINDER BIT IN THE COMMAND REGISTER
1728                  /BY THE "DLAG" IOT.
1729                  /
1730    0730  1153  TST24,    TAD     REG1            /GET AC VALUE
1731    0731  7106            CLL RTL
1732    0732  7006            RTL
1733    0733  7004            RAL
1734    0734  0113            AND     K7740
```

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1735    0735  3163            DCA     GDREG2          /SETUP COMPARE REGISTER
1736    0736  7004            RAL                     /LINK FOR EXTENDED BIT
1737    0737  3162            DCA     GDREG1          /SETUP COMPARE REGISTER
1738    0740  1162            TAD     GDREG1          /GET DATA
1739    0741  4450            LDCMD                   /LOAD COMMAND REGISTER
1740    0742  1163            TAD     GDREG2
1741    0743  4452            LDADD                   /LOAD DISK ADDRESS
1742    0744  4454            RDCRC                   /READ CRC REGISTER
1743    0745  4441            ACCMP2                  /CHECK AC, COMPARE TO GDREG1 + GDREG2
1744    0746  4435            NERROR                  /AC O.K, LOOP 4096
1745    0747  4436            ERROR                   /ERROR, CPC REGISTER LOAD BY
1746                                                  /DLAG OR DLDC.
1747    0750  0730            TST24                   /SCOPE LOOP POINTER
1748    0751  6004            6004                    /TEXT POINTER
1749                  /
1750                  /
1751                  /VERIFY THAT DCLR DOES NOT AFFECT CRC REGISTER.
1752                  /LOAD CRC WITH DLAG + DLDC.
1753                  /
1754    0752  1154  TST25,    TAD     REG2
1755    0753  7106            CLL RTL
1756    0754  7006            RTL
1757    0755  7004            RAL
1758    0756  0113            AND     K7740
1759    0757  3163            DCA     GDREG2          /SETUP COMPARE REGISTER
1760    0760  7004            RAL                     /LINK FOR EXTENDED BIT
1761    0761  3162            DCA     GDREG1          /SETUP COMPARE REGISTER
1762    0762  1162            TAD     GDREG1
1763    0763  4450            LDCMD                   /LOAD COMMAND REGISTER
1764    0764  1163            TAD     GDREG2
1765    0765  4452            LDADD                   /LOAD DISK ADDRESS
1766    0766  1154            TAD     REG2
1767    0767  0111            AND     K7775           /DON'T DO RECAL.
1768    0770  4453            CLRALL                  /DCLR "CLR ALL"
1769    0771  4454            RDCRC                   /READ CRC REGISTER
1770    0772  4441            ACCMP2                  /CHECK RESULTS, COMPARE TO GDREG1
1771                                                  /AND GDREG2
1772    0773  4435            NERROR                  /O.K. 4096 LOOPS
1773    0774  4436            ERROR                   /ERROR, LOAD, READ, CLEAR CPC
1774                                                  /REGISTER
1775    0775  0752            TST25                   /SCOPE LOOP POINTER
1776    0776  6004            6004                    /TEXT POINTER
1777                  /
1778                  /VERIFY THAT THE CRC REGISTER IS NOT AFFECTED BY
1779                  /"DLDC", "DSKP", "DRST", "RDBUF", OR "DLCA".
1780                  /USE DATA PATTERN 2525 + 5252.
1781                  /
1782    0777  7301  TST26,    CLA CLL IAC
1783    1000  4453            CLRALL                  /DCLR
1784    1001  1153            TAD     REG1
1785    1002  7110            CLL RAR
1786    1003  7630            SZL CLA                 /USE DATA 5252 IF LINK IS SET
1787    1004  1120            TAD     K2525
1788    1005  1120            TAD     K2525
1789    1006  0113            AND     K7740
```

```
1790    1007  3163          DCA      GDREG2         /SETUP COMPARE REGISTER
1791    1010  7004          RAL                     /LINK FOR EXTENDED BIT
1792    1011  3162          DCA      GDREG1         /SETUP COMPARE REGISTER
1793    1012  1162          TAD      GDREG1         /GET UPPER DATA
1794    1013  4450          LDCMD                   /LOAD COMMAND
1795    1014  1163          TAD      GDREG2
1796    1015  4452          LDADD                   /LOAD DISK ADDRESS
1797    1016  1154          TAD REG2
1798    1017  4442          RDSTAT                  /READ STATUS
1799    1020  1154          TAD      REG2
1800    1021  4447          DSKSKP                  /"DSKP"
1801    1022  7000          NOP
1802    1023  4456          RDBUF                   /READ BUFFER
1803    1024  1154          TAD REG2
1804    1025  4451          LDCUR                   /LOAD CURRENT ADDRESS
1805    1026  1154          TAD      REG2
1806    1027  4450          LDCMD                   /LOAD COMMAND
1807    1030  1153          TAD      REG1
1808    1031  4427          LDBUF                   /LOAD UPPER BUFFER
1809    1032  4454          RDCRC                   /READ CRC REGISTER
1810    1033  4441          ACCMP2                  /CHECK RESULTS
1811    1034  4435          NERROR                  /O.K. 4096 LOOPS
1812    1035  4436          ERROR                   /ERROR, CRC REGISTER
1813    1036  0777          TST26                   /SCOPE LOOP POINTER
1814    1037  6004          6004                    /TEXT POINTER
1815                 /
1816                        /VERIFY THAT WRITE LOCK INHIBITS LOAD ADDRESS
1817                        /WHEN IT IS SET.
1818                 /
1819    1040  7301  TST27,  CLA CLL IAC
1820    1041  4453          CLRALL                  /CLEAR CONTROL
1821    1042  3163          DCA      GDREG2         /SETUP COMPARE REGISTER
1822    1043  1153          TAD      REG1           /GET AC VALUE
1823    1044  4452          LDADD                   /LOAD DISK ADDRESS
1824    1045  1104          TAD      K2000
1825    1046  4450          LDCMD                   /SET WRITE LOCK
1826    1047  1154          TAD      REG2           /GET AC VALUE
1827    1050  4452          LDADD                   /TRY TO LOAD DISK ADDRESS
1828    1051  4446          RDADD                   /READ DISK ADDRESS
1829    1052  4440          ACCMP1                  /CHECK RESULTS
1830    1053  4435          NERROR                  /O.K. 4096 LOOPS
1831    1054  4436          ERROR                   /ERROR LOAD DISK ADDRESS
1832    1055  1040          TST27                   /SCOPE LOOP POINTER
1833    1056  4102          4102
1834                 /
1835                        /VERIFY THAT THE DISK ADDRESS REGISTER IS NOT
1836                        /AFFECTED BY "DCLR", "DLCA", "DRST", "DLDC", "DSKP"
1837                        /OR "RDBUF". USE DATA PATTERN ALL COMBINATIONS.
1838                 /
1839    1057  1153  TST28,  TAD      REG1           /GET AC VALUE
1840    1060  3163          DCA      GDREG2         /SETUP COMPARE REGISTER
1841    1061  1153          TAD      REG1
1842    1062  4452          LDADD                   /LOAD DISK ADDRESS
1843    1063  1154          TAD      REG2
1844    1064  0127          AND      K5777          /MASK OUT WRITE LOCK
```

```
1845    1065  4450          LDCMD                   /LOAD COMMAN REGISTER
1846    1066  1154          TAD      REG2
1847    1067  4451          LDCUR                   /LOAD CURRENT ADDRESS
1848    1070  1154          TAD      REG2
1849    1071  4447          DSKSKP                  /DSKP
1850    1072  7000          NOP
1851    1073  4442          RDSTAT                  /READ STATUS
1852    1074  1154          TAD      REG2
1853    1075  4427          LDBUF                   /LOAD BUFFERS
1854    1076  4456          RDBUF                   /READ LOWER BUFFER
1855    1077  7300          CLA CLL
1856    1100  4453          CLRALL                  /CLEAR STATUS
1857    1101  4446          RDADD                   /READ DISK ADDRESS
1858    1102  4440          ACCMP1                  /CHECK AC, COMPARE TO GDREG2
1859    1103  4435          NERROR                  /AC O.K. 4096 LOOPS
1860    1104  4436          ERROR                   /ERROR, DISK ADDRESS AFFECTED
1861    1105  1057          TST28                   /SCOPE LOOP POINTED
1862    1106  4107          4107                    /TEXT POINTER
1863                 /
1864                        /VERIFY THAT THE COMMAND REGISTER IS NOT AFFECTED BY
1865                        /"DLCR", "DLCA", "DRST", "DLAG", "DSKP", OR "RDBUF".
1866                        /USE DATA PATTERN ALL COMBINATIONS.
1867                 /
1868    1107  7301  TST29,  CLA CLL IAC
1869    1110  4453          CLRALL                  /CLEAR CONTROL
1870    1111  1153          TAD      REG1           /GET AC VALUE
1871    1112  3163          DCA      GDREG2         /SETUP COMPARE REGISTER
1872    1113  1153          TAD      REG1
1873    1114  4450          LDCMD                   /LOAD COMMAND REGISTER
1874    1115  1154          TAD      REG2
1875    1116  4452          LDADD                   /LOAD DISK ADDRESS
1876    1117  1154          TAD      REG2
1877    1120  4451          LDCUR                   /LOAD CURRENT ADDRESS
1878    1121  1154          TAD      REG2
1879    1122  4447          DSKSKP                  /DSKP
1880    1123  7000          NOP
1881    1124  4442          RDSTAT                  /READ STATUS
1882    1125  1154          TAD      REG2
1883    1126  4427          LDBUF                   /LOAD UPPER BUFFER
1884    1127  4456          RDBUF                   /READ LOWER BUFFER
1885    1130  7300          CLA CLL
1886    1131  4453          CLRALL                  /CLEAR STATUS
1887    1132  7326          CLA CLL CML RTL
1888    1133  4453          CLRALL                  /RECALIBRATE
1889    1134  4443          RDCMD                   /READ COMMAND REGISTER
1890    1135  4440          ACCMP1                  /CHECK AC, COMPARE TO GDREG2
1891    1136  4435          NERROR                  /AC O.K. 4096 LOOPS
1892    1137  4436          ERROR                   /ERROR, COMMAND REGISTER
1893    1140  1107          TST29                   /SCOPE LOOP POINTER
1894    1141  4201          4201                    /TEXT POINTER
1895                 /
1896                        /VERIFY THAT RECALIBRATE INHIBITS LOAD COMMAND
1897                 /
1898    1142  7301  TST30,  CLA CLL IAC             /ENABLE CLEAR CONTROL
1899    1143  4453          CLRALL                  /CLEAR CONTROL
```

```
1900    1144  4444           ENMAN1                    /ENTER MAINTENANCE
1901    1145  7326           CLA CLL CML RTL           /ENABLE RECALIBRATE
1902    1146  4453           CLRALL                    /RECALIBRATE
1903    1147  7326           CLA CLL CML RTL           /ENABLE RECALIBRATE
1904    1150  4453           CLRALL                    /RECALIBRATE
1905    1151  3163           DCA     GDREG2            /SETUP COMPARE REGISTER
1906    1152  1153           TAD     REG1
1907    1153  4450           LDCMD                     /TRY TO LOAD COMMAND
1908    1154  4443           RDCMD                     /READ COMMAND
1909    1155  4440           ACCMP1                    /CHECK RESULTS
1910    1156  4435           NERROR                    /O.K, 4096 LOOPS
1911    1157  4436           ERROR                     /ERROR, IDLE (1)
1912    1160  1142           TST30                     /SCOPE LOOP POINTER
1913    1161  4201           4201                      /TEXT POINTER
1914                   /
1915                   /VERIFY THAT RECALIBRATE INHIBITS
1916                   /LOAD DISK ADDRESS DLAG
1917                   /
1918    1162  7301  TST31,   CLA CLL IAC               /ENABLE CLEAR CONTROL
1919    1163  4453           CLRALL                    /CLEAR CONTROL
1920    1164  4444           ENMAN1                    /ENTER MAINTENANCE
1921    1165  1153           TAD     REG1              /GET AC VALUE
1922    1166  3163           DCA     GDREG2            /SETUP COMPARE
1923    1167  1163           TAD     GDREG2
1924    1170  4452           LDADD                     /LOAD DISK ADDRESS (DLAG)
1925    1171  7326           CLA CLL CML RTL           /ENABLE RECAL.
1926    1172  4453           CLRALL                    /RECALIBRATE
1927    1173  1154           TAD     REG2
1928    1174  4452           LDADD                     /LOAD DISK ADDRESS (DLAG)
1929    1175  4446           RDADD                     /READ DISK ADDRESS
1930    1176  4440           ACCMP1                    /CHECK RESULTS
1931    1177  4435           NERROR                    /O.K, 4096 LOOPS
1932    1200  4436           ERROR                     /ERROR ON INHIBIT
1933    1201  1162           TST31                     /SCOPE POINTER
1934    1202  4102           4102                      /TEXT POINTER
1935                   /
1936                   /VERIFY THAT "DMAN" (MAINTENANCE) DOES NOT
1937                   /AFFECT AC WHEN AC0=0 AND AC7=1 OR 0.
1938                   /
1939    1203  7301  TST32,   CLA CLL IAC               /CLEAR ENABLE BIT
1940    1204  4453           CLRALL                    /DCLR "CLR ALL"
1941    1205  1153           TAD     REG1
1942    1206  0122           AND     K3737             /MASK OUT 0
1943    1207  3163           DCA     GDREG2            /SETUP COMPARE REGISTER
1944    1210  1163           TAD     GDREG2
1945    1211  4455           LDMAN                     /LOAD MAINTENANCE "DMAN"
1946    1212  4440           ACCMP1                    /CHECK AC, COMPARE TO GDREG2
1947    1213  4435           NERROR                    /AC O.K, 4096 LOOPS
1948    1214  4436           ERROR                     /ERROR, "DMAN" AFFECTED AC
1949    1215  1203           TST32                     /SCOPE LOOP POINTER
1950    1216  4010           4010                      /TEXT POINTER
1951                   /
1952                   /VERIFY THAT "DMAN" DOES NOT AFFECT AC WHEN
1953                   /AC7=0 AND AC0=1 OR 0.
1954                   /
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1955    1217  7301  TST33,   CLA CLL IAC               /CLEAR ENABLE BIT
1956    1220  4453           CLRALL                    /DCLR "CLR ALL"
1957    1221  1153           TAD     REG1              /GET AC VALUE
1958    1222  0123           AND     K7717             /MASK OUT BIT 7
1959    1223  3163           DCA     GDREG2            /SETUP COMPARE REGISTER
1960    1224  1163           TAD     GDREG2
1961    1225  4455           LDMAN                     /LOAD MAINTENANCE
1962    1226  4440           ACCMP1                    /CHECK AC, COMPARE TO GDREG2
1963    1227  4435           NERROR                    /AC O.K., 4096 LOOPS
1964    1230  4436           ERROR                     /ERROR, DMAN AFFECT AC
1965    1231  1217           TST33                     /SLOPE LOOP POINTER
1966    1232  4010           4010                      /TEXT POINTER
1967                   /
1968                   /VERIFY THAT "DMAN" ONLY GETS CLEARED BY
1969                   /DCLR NOT BY ANOTHER DMAN.
1970                   /
1971    1233  7301  TST34,   CLA CLL IAC               /CLEAR ENABLE BIT
1972    1234  4453           CLRALL                    /DCLR "CLR ALL"
1973    1235  1153           TAD     REG1
1974    1236  3163           DCA     GDREG2            /SETUP COMPARE REGISTER
1975    1237  1153           TAD     REG1
1976    1240  4450           LDCMD                     /LOAD COMMAND REGISTER
1977    1241  1136           TAD     M12               /NO. OF SHIFTS
1978    1242  3156           DCA     TCNTR1            /STORE IN COUNTER
1979    1243  4445           ENMAN2                    /ENTER MAINTENANCE MODE + DB4=1
1980    1244  1102           TAD     K0404             /GET ENABLE COMMAND REG.
1981    1245  4455           LDMAN                     /LOAD MAINTENANCE
1982    1246  2156           ISZ     TCNTR1            /COUNT + SHIFT 12
1983    1247  5245           JMP     .-2
1984    1250  7300           CLA CLL
1985    1251  4455           LDMAN                     /"DMAN" TRY TO CLEAR MAIN FLOP
1986    1252  1074           TAD     K0020             /ENABLE BIT FOR READ BUFFER
1987    1253  4455           LDMAN                     /READ BUFFER
1988    1254  3167           DCA     DBREG             /SAVE FOR PRINTER
1989    1255  1167           TAD     DBREG
1990    1256  4440           ACCMP1                    /CHECK AC
1991    1257  4435           NERROR                    /AC O.K, 4096 LOOPS
1992    1260  4436           ERROR                     /ERROR, MAIN FLIP FLOP
1993    1261  1233           TST34                     /SCOPE LOOP POINTER
1994    1262  4405           4405
1995                   /
1996                   /
1997                   /VERIFY THAT "DMAN" GETS CLEARED BY DCLR
1998                   /"CLR ALL"
1999                   /
2000    1263  7301  TST35,   CLA CLL IAC
2001    1264  4453           CLRALL                    /DCLR "CLR ALL"
2002    1265  1074           TAD     K0020
2003    1266  3163           DCA     GDREG2            /SETUP COMPARE REGISTER
2004    1267  1153           TAD     REG1
2005    1270  4450           LDCMD                     /LOAD COMMAND REGISTER
2006    1271  1136           TAD     M12
2007    1272  3156           DCA     TCNTR1            /SHIFT 12 COUNTER
2008    1273  4445           ENMAN2                    /ENTER MAINTENANCE MODE + DB4=1
2009    1274  1102           TAD     K0400
```

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2010    1275   4455            LDMAN                       /LOAD MAINTENANCE "DMAN"
2011    1276   2156            ISZ      TCNTR1
2012    1277   5275            JMP      .-2                /12 COUNT
2013    1300   7301            CLA CLL IAC
2014    1301   4453            CLRALL                      /CLEAR ALL "DCLR"
2015    1302   1074            TAD      K0020
2016    1303   4455            LDMAN                       /LOAD MAINTENCE
2017    1304   4440            ACCMP1                      /CHECK AC, COMPARE TO GDREG2
2018    1305   4435            NERROR                      /AC O.K. 4096 LOOPS
2019    1306   4436            ERROR                       /ERROR, DMAN AFFECTED AC
2020    1307   1263            TST35                       /SCOPE LOOP POINTER
2021    1310   4010            4010                        /TEXT POINTER
2022
2023                   /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2024                   /CRC REGISTER, THEN READ CRC REGISTER.
2025                   /TRY ALL 1'S AND ALL 0'S.
2026                   /
2027    1311   7301    TST36,   CLA CLL IAC
2028    1312   4453            CLRALL                      /DCLR "CLR ALL"
2029    1313   1153            TAD      REG1
2030    1314   7110            CLL RAR
2031    1315   7630            SZL CLA                     /SKIP IF ALL 0'S DATA
2032    1316   7340            CLA CLL CMA                 /ALL ONE'S DATA
2033    1317   3163            DCA      GDREG2             /SETUP COMPARE REGISTER
2034    1320   1163            TAD      GDREG2
2035    1321   0145            AND      K0017
2036    1322   3162            DCA      GDREG1             /SETUP COMPARE REGISTER
2037    1323   1137            TAD      M16
2038    1324   3156            DCA      TCNTR1             /SHIFTER FOR CRC
2039    1325   4444            ENMAN1                      /ENTER MAINTENANCE MODE
2040    1326   1153            TAD      REG1
2041    1327   7104            CLL RAL
2042    1330   0066            AND      K0002
2043    1331   1103            TAD      K1000              /ENABLE BITS
2044    1332   4455            LDMAN                       /LOAD MAINTENANCE
2045    1333   2156            ISZ      TCNTR1
2046    1334   5332            JMP      .-2                /16 COUNT
2047    1335   4454            RDCRC                       /READ CRC REGISTER
2048    1336   4441            ACCMP2                      /COMPARE RESULTS
2049    1337   4435            NERROR                      /AC O.K. 4096 LOOPS
2050    1340   4436            ERROR                       /ERROR, CRC REGISTER
2051    1341   1311            TST36                       /SCOPE LOOP POINTER
2052    1342   6004            6004                        /TEXT POINTER
2053
2054                   /
2055                   /VERIFY THAT "AC 10 DATA" CAN BE SHIFTED TO
2056                   /CRC REGISTER, THEN READ CRC REGISTER.
2057                   /TRY PATTERN "125252"
2058
2059
2060
2061
2062
2063
2064
```

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2065
2066
2067
2068                   /
2069    1343   7301    TST37,   CLA CLL IAC
2070    1344   4453            CLRALL                      /DCLR "CLR ALL"
2071    1345   1121            TAD      K5252
2072    1346   3163            DCA      GDREG2             /SETUP COMPARE REGISTER
2073    1347   1163            TAD      GDREG2
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2074     1350  0145              AND       K0017
2075     1351  3162              DCA       GDREG1           /SETUP COMPARE REGISTER
2076     1352  1137              TAD       M16
2077     1353  3156              DCA       TCNTR1           /SETUP 16 COUNT
2078     1354  4444              ENMAN1                     /ENTEP MAINTENANCF MODE
2079     1355  7300     T37R,    CLA CLL
2080     1356  1156              TAD       TCNTR1
2081     1357  7004              RAL
2082     1360  0066              AND       K0002            /SETUP DATA BIT
2083     1361  1103              TAD       K1000            /ENABLE BITS
2084     1362  4455              LDMAN                      /LOAD MAINTENANCE
2085     1363  2156              ISZ       TCNTR1
2086     1364  5355              JMP       T37R             /16 COUNT
2087     1365  4454              RDCRC                      /READ CRC REGISTER
2088     1366  4441              ACCMP2                     /CHECK RESULTS
2089
2090     1367  4435              NEPROR                     /AC O.K. 4096 LOOPS
2091     1370  4436              ERROR                      /ERROR, CRC REGISTER
2092     1371  1343              TST37                      /SCOPE LOOP POINTER
2093     1372  6004              6004                       /TEXT POINTER
2094                    /
2095     1373  5774              JMP I     .+1              /TO NEXT TEST
2096     1374  1400              TST38
2097                    /
2098            1400     PAGE
2099                    /
2100                    /VERIFY THAT "AC10 DATA" CAN BE SHIFTED
2101                    /TO CRC RFGISTEP, THEN READ CRC REGISTEP.
2102
2103
2104
2105
2106                    /TRY PATTER "052525"
2107                    /
2108     1400  7301     TST38,   CLA CLL IAC
2109     1401  4453              CLRALL                     /CLEAR ALL "DCRL"
2110     1402  1120              TAD       K2525
2111     1403  3163              DCA       GDREG2           /SETUP COMPARE REGISTER
2112     1404  1163              TAD       GDREG2
2113     1405  0145              AND       K0017
2114     1406  3162              DCA       GDREG1           /SETUP COMPARE REGISTER
2115     1407  1137              TAD       M16
2116     1410  3156              DCA       TCNTR1           /16 COUNTER SHIFTER
2117     1411  4444              ENMAN1                     /ENTER MAINTENANCE MODE
2118     1412  7300     T38R,    CLA CLL
2119     1413  1156              TAD       TCNTR1
2120     1414  7044              CMA RAL
2121     1415  0066              AND       K0002            /SETUP "AC 10 DATA"
2122     1416  1103              TAD       K1000            /ENABLE BITS
2123     1417  4455              LDMAN                      /LOAD MAINTENANCE
2124     1420  2156              ISZ       TCNTR1
2125     1421  5212              JMP       T38R             /16 COUNT
2126     1422  4454              RDCPC                      /READ CRC REGISTER
2127     1423  4441              ACCMP2                     /CHECK RESULTS
2128     1424  4435              NERROR                     /O.K. 4096 LOOPS
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2129     1425  4436              ERROR                      /ERROR, CRC REGISTER
2130     1426  1400              TST38                      /SCOPE LOOP POINTER
2131     1427  6004              6004                       /TEXT POINTER
2132                    /
2133
2134                    /
2135                    /
2136                    /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO CRC
2137                    /REGISTEP, TRY ALL COMBINATIONS.
2138                    /
2139     1430  7301     TST39,   CLA CLL IAC
2140     1431  4453              CLRALL                     /DCLR "CLR ALL"
2141     1432  1153              TAD       REG1
2142     1433  3163              DCA       GDPEG2           /SETUP COMPARE PEGISTER
2143     1434  1153              TAD       REG1
2144     1435  0145              AND       K0017
2145     1436  3162              DCA       GDREG1           /SETUP COMPARE PEGISTER
2146     1437  7301              CLA CLL IAC
2147     1440  3156              DCA       TCNTR1           /SETUP BIT MASKER
2148     1441  1137              TAD       M16
2149     1442  3157              DCA       TCNTR2           /SETUP FIRST SHIFT COUNTER
2150     1443  4444              ENMAN1                     /ENTER MAINTENANCE MODE
2151     1444  1153     T39R,    TAD       REG1
2152     1445  0156              AND       TCNTR1
2153     1446  7640              SZA CLA                    /SKIF IF 0
2154     1447  1066              TAD       K0002            /WAS A 1
2155     1450  1103              TAD       K1000            /ENABLE BITS
2156     1451  4455              LDMAN                      /LOAD MAINTENANCE
2157     1452  7300              CLA CLL
2158     1453  1156              TAD       TCNTR1
2159     1454  7004              RAL                        /ROTATE BIT MASKER
2160     1455  3156              DCA       TCNTR1
2161     1456  7630              SZL CLA                    /WAIT FOR FIRST LINK THEN
2162     1457  5254              JMP       .-3              /RESET BIT 11 IN MASKER
2163     1460  2157              ISZ       TCNTR2
2164     1461  5244              JMP       T39R             /LOOP BACK
2165     1462  4454              RDCRC                      /PEAD CRC REGISTER
2166     1463  4441              ACCMP2                     /CHECK RESULTS
2167     1464  4435              NERROR                     /O.K. 4096 LOOPS
2168     1465  4436              EPROR                      /ERPOR, CRC REGISTER
2169     1466  1430              TST39                      /ERROR, CRC REGISTER
2170     1467  6004              6004                       /TEXT POINTER
2171                    /
2172                    /VERIFY THAT "DLAG" CLEARS ALL OF THE
2173                    /CRC REGISTEP, TRY ALL COMBINATIONS IN CRC.
2174                    /
2175     1470  7301     TST40,   CLA CLL IAC
2176     1471  4453              CLRALL                     /DCLR "CLP ALL"
2177     1472  3163              DCA       GDPEG2
2178     1473  3162              DCA       GDREG1           /SETUP CUMPARE REGISTERS
2179     1474  7301              CLA CLL IAC
2180     1475  3156              DCA       TCNTR1           /SETUP BIT MASKER
2181     1476  1137              TAD       M16
2182     1477  3157              DCA       TCNTR2           /SETUP FIRST SHIFT COUNTEP
2183     1500  4444              ENMAN1                     /ENTEP MAINTENANCF MODE
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2184    1501  1154    T40R,   TAD     REG2
2185    1502  0156            AND     TCNTR1
2186    1503  7640            SZA CLA                 /SKIP IF 0
2187    1504  1066            TAD     K0002           /WAS A 1
2188    1505  1103            TAD     K1000           /ENABLE BITS
2189    1506  4455            LDMAN                   /LOAD MAINTENANCE
2190    1507  7300            CLA CLL
2191    1510  1156            TAD     TCNTR1
2192    1511  7004            RAL                     /ROTATE BIT MASKER
2193    1512  3156            DCA     TCNTR1
2194    1513  7630            SZL CLA                 /WAIT FOR FIRST LINK THEN
2195    1514  5311            JMP     .-3             /RESET BIT 11 IN MASKER
2196    1515  2157            ISZ     TCNTR2
2197    1516  5301            JMP     T40R            /LOOP BACK
2198    1517  4452            LDADD                   /LOAD DISK ADDRESS AND CLEAR CRC
2199    1520  4454            RDCRC                   /READ CRC REGISTER
2200    1521  4441            ACCMP2                  /CHECK RESULTS
2201    1522  4435            NERROR                  /O.K. 4096 LOOPS
2202    1523  4436            ERROR                   /ERROR, CRC REGISTER
2203    1524  1470            TST40                   /ERROR, CRC REGISTER
2204    1525  6004            6004                    /TEXT POINTER
2205                  /
2206                  /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2207                  /UPPER DATA BUFFER THEN SINK TO LOWER DATA
2208                  /BUFFER, TRY ALL 1'S AND 0'S.
2209                  /
2210    1526  7301    TST41,  CLA CLL IAC
2211    1527  4453            CLRALL                  /"DCLR" "CLR ALL"
2212
2213    1530  1153            TAD     REG1
2214    1531  7110            CLL RAR
2215    1532  7630            SZL CLA
2216    1533  7240            CLA CMA
2217    1534  3163            DCA     GDREG2
2218    1535  1163            TAD     GDREG2          /GET VALUE TO LOAD
2219    1536  4427            LDBUF                   /LOAD UPPER BUFFER
2220    1537  4456            RDBUF                   /READ LOWER BUFFER
2221    1540  4440            ACCMP1                  /CHECK AC, COMPARE TO GDREG2
2222    1541  4435            NERROR                  /AC O.K. 4096 LOOPS
2223    1542  4436            ERROR                   /ERROR, DATA REGISTERS
2224    1543  1526            TST41                   /SCOP LOOP POINTER
2225    1544  4405            4405                    /TEXT POINTER
2226                  /
2227                  /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2228                  /UPPER DATA BUFFER THEN SINK TO LOWER DATA
2229                  /BUFFER, TRY PATTERN 2525 + 5252
2230                  /
2231    1545  7301    TST42,  CLA CLL IAC
2232    1546  4453            CLRALL                  /"DCKR" "CLR ALL"
2233    1547  1153            TAD     REG1
2234    1550  7110            CLL RAR
2235    1551  7630            SZL CLA                 /WHAT DATA????
2236    1552  1120            TAD     K2525           /DATA 5252
2237    1553  1120            TAD     K2525
2238    1554  3163            DCA     GDREG2          /SETUP COMPARE REGISTER
```

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2239    1555  1163            TAD     GDREG2          /GET VALUE TO LOAD
2240    1556  4427            LDBUF                   /LOAD UPPER BUFFER
2241    1557  4456            RDBUF                   /READ LOWER DATA BUFFER
2242    1560  4440            ACCMP1                  /CHECK AC, COMPARE TO GDREG2
2243    1561  4435            NERROR                  /AC O.K. 4096 LOOPS
2244    1562  4436            ERROR                   /ERROR, DATA BUFFERS
2245    1563  1545            TST42                   /SCOPE LOOP POINTER
2246    1564  4405            4405                    /TEXT POINTER
2247
2248                  /
2249                  /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2250                  /UPPER DATA BUFFER THEN SINK TO LOWER
2251                  /DATA BUFFER, TRY PATTERN ALL COMBINSTIONS
2252                  /
2253    1565  7301    TST43,  CLA CLL IAC
2254    1566  4453            CLRALL                  /"DCLR" "CLR ALL"
2255    1567  1154            TAD     REG2            /GET VALUE TO LOAD
2256    1570  3163            DCA     GDREG2          /SETUP COMPARE REGISTER
2257    1571  1163            TAD     GDREG2          /GET IT
2258    1572  4427            LDBUF                   /LOAD UPPER BUFFER
2259    1573  4456            RDBUF                   /READ LOWER DATA BUFFER
2260    1574  4440            ACCMP1                  /CHECK AC
2261    1575  4435            NERROR                  /AC O.K. 4096 LOOPS
2262    1576  4436            ERROR                   /ERROR, DATA REGISTERS
2263    1577  1565            TST43                   /SCOPE LOOP POINTER
2264    1600  4405            4405                    /TEXT POINTER
2265                  /
2266                  /VERIFY THAT "AC10 DATA" CAN BE SHIFTED
2267                  /TO UPPER DATA BUFFER THEN SINK TO LOWER
2268                  /DATA BUFFER, TRY ALL COMBINATIONS.
2269                  /
2270    1601  7301    TST44,  CLA CLL IAC
2271    1602  4453            CLRALL
2272    1603  1153            TAD     REG1
2273    1604  3163            DCA     GDREG2          /SETUP COMPARE REGISTER
2274    1605  1153            TAD     REG1            /GET VALUE TO LOAD
2275    1606  4427            LDBUF                   /LOAD UPPER BUFFER
2276    1607  4456            RDBUF                   /READ DATA BUFFER
2277    1610  4440            ACCMP1                  /CHECK AC, COMPARE TO GDREG2
2278    1611  4435            NERROR                  /AC O.K. 4096 LOOPS
2279    1612  4436            ERROR                   /ERROR, DATA REGISTERS
2280    1613  1601            TST44                   /SCOPE LOOP POINTER
2281    1614  4405            4405                    /TEXT POINTER
2282                  /
2283                  /VERIFY THAT ALL DATA BUFFERS CAN BE FULL
2284                  /AT ONCE, TRY ALL COMBINATIONS
2285                  /
2286    1615  7301    TST45,  CLA CLL IAC
2287    1616  4453            CLRALL                  /DCLR "CLR ALL"
2288    1617  1153            TAD     REG1
2289    1620  3161            DCA     TCNTR4
2290    1621  1133            TAD     M4
2291    1622  3160            DCA     TCNTR3          /COUNTER FOR # OF BUFFERS
2292    1623  1161    T45R1,  TAD     TCNTR4
2293    1624  4427            LDBUF                   /LOAD UPPER BUFFER
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2294    1625    7301            CLA CLL IAC
2295    1626    1161            TAD     TCNTR4
2296    1627    3161            DCA     TCNTR4
2297    1630    2160            ISZ     TCNTR3
2298    1631    5223            JMP     T45R1           /4 COUNT, SKIP WHEN BUFFERS FULL
2299    1632    1153            TAD     REG1
2300    1633    3163            DCA     GDREG2          /SETUP FOR FIRST COMPARE
2301    1634    1133            TAD     M4
2302    1635    3160            DCA     TCNTR3
2303    1636    4456    T45R3,  RDBUF                   /READ BUFFER
2304    1637    4440            ACCMP1                  /CHECK
2305    1640    7610            SKP CLA                 /O.K. CHECK NEXT
2306    1641    5247            JMP     T45E            /ERROR DATA BUFFERS
2307    1642    2163            ISZ     GDREG2
2308    1643    7030            NOP
2309    1644    2160            ISZ     TCNTR3
2310    1645    5236            JMP     T45R3
2311    1646    4435            NERROR                  /O.K. 4096 LOOPS
2312    1647    4436    T45E,   ERROR                   /ERROR, DATA BUFFERS
2313    1650    1615            TST45                   /SCOPE LOOP POINTER
2314    1651    4405            4405                    /TEXT POINTER
2315
2316                    /VERIFY THAT THE SILO BUFFERS ARE NOT AFFECTED BY
2317                    /"DCLR", "DLAG", "DLDC", "DLCA", "DSKP", OR "DRST" IOTS.
2318                    /USE DATA PATTERN ALL COMBINATIONS
2319                    /
2320    1652    7301    TST46,  CLA CLL IAC
2321    1653    4453            CLRALL                  /DCLR
2322    1654    1154            TAD     REG2
2323    1655    3163            DCA     GDREG2          /SETUP COMPARE REGISTER
2324    1656    1133            TAD     M4
2325    1657    3156            DCA     TCNTR1          /COUNTER FOR AMOUNT OF BUFFERS
2326    1660    1163    T46A1,  TAD     GDREG2          /GET VALUE TO LOAD
2327    1661    4427            LDBUF                   /LOAD UPPER BUFFER
2328    1662    2156            ISZ     TCNTR1          /COUNT AMOUNT
2329    1663    5260            JMP     T46A1           /MORE TO LOAD
2330    1664    1153            TAD     REG1
2331    1665    4452            LDADD                   /LOAD DISK ADDRESS
2332    1666    1153            TAD     REG1
2333    1667    4451            LDCUR                   /LOAD CURRENT ADDRESS
2334    1670    1153            TAD     REG1
2335    1671    0105            AND     K3777           /MASK OFF WRITE
2336    1672    4450            LDCMD                   /LOAD COMMAND REGISTER
2337    1673    1153            TAD     REG1
2338    1674    4447            DSKSKP                  /DSKP
2339    1675    7000            NOP
2340    1676    4442            RDSTAT                  /READ STATUS
2341    1677    7300            CLA CLL
2342    1700    4453            CLRALL                  /CLEAR STATUS
2343    1701    1133            TAD     M4
2344    1702    3156            DCA     TCNTR1          /SETUP COUNTER
2345    1703    7300    T46A2,  CLA CLL
2346    1704    1074            TAD     K0020           /ENABLE READ BUFFER
2347    1705    4455            LDMAN                   /DMAN
2348    1706    3167            DCA     DBREG           /SAVE RESULTS
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2349    1707    1167            TAD     DBREG
2350    1710    4440            ACCMP1                  /CHECK RESULTS
2351    1711    7610            SKP CLA                 /DATA O.K.
2352    1712    5316            JMP     T46E            /ERROR
2353    1713    2156            ISZ     TCNTR1          /READ ALL FOUR
2354    1714    5303            JMP     T46A2           /LOOP
2355    1715    4435            NERROR                  /O.K. 4096 LOOPS
2356    1716    4436    T46E,   ERROR                   /ERROR, BUFFER AFFECTED
2357    1717    1652            TST46                   /SCOPE LOOP POINTER
2358    1720    4405            4405                    /TEXT POINTER
2359                    /
2360                    /VERIFY THAT THE UPPER BUFFER CAN BE LOADED
2361                    /THEN SINK TO LOWER BUFFER. USE A FLOATING
2362                    /1'S PATTERN.
2363                    /
2364    1721    3156            DCA     TCNTR1          /START AT 0
2365    1722    7301    TST47,  CLA CLL IAC             /ENABLE CLEAR CONTROL
2366    1723    4453            CLRALL                  /CLEAR CONTROL
2367    1724    1156            TAD     TCNTR1          /GET VALUE TO LOAD
2368    1725    3163            DCA     GDREG2          /SETUP COMPARE REGISTER
2369    1726    1156            TAD     TCNTR1          /GET VALUE TO LOAD
2370    1727    4427            LDBUF                   /LOAD UPPER BUFFER
2371    1730    4456            RDBUF                   /READ LOWER BUFFER
2372    1731    4440            ACCMP1                  /CHECK RESULTS
2373    1732    7610            SKP CLA                 /DATA O.K.
2374    1733    5342            JMP     T47E            /ERROR
2375    1734    1156            TAD     TCNTR1
2376    1735    7104            CLL RAL
2377    1736    7450            SNA
2378    1737    7001            IAC
2379    1740    3156            DCA     TCNTR1          /SET ONE TO LEFT
2380    1741    4435            NERROR                  /LOOP 4096 TIMES
2381    1742    4436    T47E,   ERROR                   /ERROR SILO BUFFERS
2382    1743    1722            TST47                   /SCOPE LOOP POINTER
2383    1744    4405            4405                    /TEXT POINTER
2384                    /
2385                    /VERIFY THAT THE UPPER BUFFER CAN BE LOADED
2386                    /THEN SINK TO LOWER BUFFER. USE A FLOATING
2387                    /0'S PATTERN.
2388                    /
2389    1745    3156            DCA     TCNTR1          /START AT 7777
2390    1746    7301    TST48,  CLA CLL IAC             /ENABLE CLEAR CONTROL
2391    1747    4453            CLRALL                  /CLEAR CONTROL
2392    1750    1156            TAD     TCNTR1          /GET VALUE TO LOAD
2393    1751    7040            CMA                     /INVERT FOR 0'S
2394    1752    3163            DCA     GDREG2          /SETUP COMPARE REGISTER
2395    1753    1163            TAD     GDREG2          /GET VALUE TO LOAD
2396    1754    4427            LDBUF                   /LOAD UPPER BUFFER
2397    1755    4456            RDBUF                   /READ LOWER BUFFER
2398    1756    4440            ACCMP1                  /CHECK RESULTS
2399    1757    7610            SKP CLA                 /DATA O.K.
2400    1760    5367            JMP     T48E            /ERROR
2401    1761    1156            TAD     TCNTR1
2402    1762    7104            CLL RAL
2403    1763    7450            SNA
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2404   1764  7001          IAC
2405   1765  3156          DCA     TCNTR1           /SET ONE TO LEFT
2406   1766  4435          NERROR                   /LOOP 4096 TIMES
2407   1767  4436   T48E,  ERROR                    /ERROR SILO BUFFERS
2408   1770  1746          TST48                    /SCOPE LOOP POINTER
2409   1771  4405          4405                     /TEXT POINTER
2410                /
2411   1772  5773          JMP I   .+1              /TO NEXT TEST
2412   1773  2000          TST49
2413                /
2414         2000   PAGE
2415                /
2416                /VERIFY THAT "DRL" OCCURES WHEN BUFFER
2417                /EMPTY.
2418                /
2419   2000  7301   TST49,  CLA CLL IAC
2420   2001  4453          CLRALL                   /"DCLR" CLEAR ALL
2421   2002  1177          TAD     STCON            /GET EXPECTED BITS
2422   2003  3163          DCA     GDREG2           /SETUP COMPARE REGISTER
2423   2004  1153          TAD     REG1
2424   2005  4442          RDSTAT                   /READ STATUS REGISTER
2425   2006  4440          ACCMP1                   /CHECK RESULTS
2426   2007  7610          SKP CLA                  /O.K.
2427   2010  5232          JMP     T49E             /ERROR, STATUS REGISTER
2428   2011  1177          TAD     STCON
2429   2012  1070          TAD     K0004            /GET EXPECTED BITS
2430   2013  3163          DCA     GDREG2           /SETUP COMPARE REGISTER
2431   2014  4444          ENMAN1                   /ENTER MAINTENANCE MODE
2432   2015  1103          TAD     K1000
2433   2016  4455          LDMAN                    /LOAD MAINTENANCE
2434   2017  7240          CLA CMA
2435   2020  4442          RDSTAT                   /READ STATUS REGISTER
2436   2021  4440          ACCMP1                   /CHECK RESULTS
2437   2022  7610          SKP CLA                  /O.K.
2438   2023  5232          JMP     T49E             /ERROR, STATUS REGISTER
2439   2024  1177          TAD     STCON
2440   2025  3163          DCA     GDREG2           /SETUP COMPARE REGISTER
2441   2026  4453          CLRALL                   /DCLR "CLEAR STATUS"
2442   2027  4442          RDSTAT                   /READ STATUS REGISTER
2443   2030  4440          ACCMP1                   /CHECK RESULTS
2444   2031  4435          NERROR                   /STATUS O.K., 4096 LOOPS
2445   2032  4436   T49E,  ERROR                    /ERROR, STATUS REGISTER
2446   2033  2000          TST49                    /SCOPE LOOP POINTER
2447   2034  5000          5000                     /TEXT POINTER
2448                /
2449                /VERIFY THAT BUFFER FULL CAUSES "DRL".
2450                /
2451   2035  7301   TST50,  CLA CLL IAC
2452   2036  4453          CLRALL                   /DCLR "CLR ALL"
2453   2037  1177          TAD     STCON
2454   2040  3163          DCA     GDREG2           /SETUP COMPARE REGISTER
2455   2041  1154          TAD     REG2
2456   2042  4442          RDSTAT                   /READ STATUS REGISTER
2457   2043  4440          ACCMP1                   /CHECK RESULTS
2458   2044  7610          SKP CLA                  /O.K.
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2459   2045  5274          JMP     T50E             /ERROR, STATUS REGISTER
2460   2046  1140          TAD     M48
2461   2047  3156          DCA     TCNTR1           /48 COUNTER
2462   2050  4444          ENMAN1                   /ENTER MAINTENANCE MODE
2463   2051  1077          TAD     K0100            /ENABLE BITS
2464   2052  4455          LDMAN                    /LOAD MAINTENANCE
2465   2053  2156          ISZ     TCNTR1
2466   2054  5252          JMP     .-2              /SKIP WHEN BUFFERS ARE FULL
2467   2055  7300          CLA CLL
2468   2056  4442          RDSTAT                   /READ STATUS REGISTER
2469   2057  4440          ACCMP1                   /CHECK RESULTS
2470   2060  7610          SKP CLA
2471   2061  5274          JMP     T50E             /ERROR, STATUS REGISTER
2472   2062  1077          TAD     K0100
2473   2063  4455          LDMAN                    /CAUSE "DRL" DMAN
2474   2064  7300          CLA CLL
2475   2065  1177          TAD     STCON
2476   2066  1070          TAD     K0004            /BIT EXPECTED
2477   2067  3163          DCA     GDREG2           /SETUP COMPARE REGISTER
2478                /
2479   2070  1153          TAD     REG1
2480   2071  4442          RDSTAT                   /READ STATUS REGISTER
2481   2072  4440          ACCMP1                   /CHECK RESULTS
2482   2073  4435          NERROR                   /STATUS O.K., 4096 LOOPS
2483   2074  4436   T50E,  ERROR                    /ERROR, STATUS REGISTER
2484   2075  2035          TST50                    /SCOPE LOOP POINTER
2485   2076  5000          5000                     /TEXT POINTER
2486                /
2487                /VERIFY THAT "DSKP" SKIPS ON "DRL" ERROR
2488                /
2489   2077  7301   TST51,  CLA CLL IAC
2490   2100  4453          CLRALL                   /DCLR "CLR ALL"
2491   2101  4444          ENMAN1                   /ENTER MAINTENANCE MODE
2492   2102  1103          TAD     K1000
2493   2103  4455          LDMAN                    /SET "DRL" "DMAN"
2494   2104  7300          CLA CLL
2495   2105  4447          DSKSKP                   /"DSKP"
2496   2106  5314          JMP     T51E             /ERROR, "DSKP"
2497   2107  4447          DSKSKP                   /"DSKP"
2498   2110  5314          JMP     T51E             /ERROR, "DSKP"
2499   2111  4453          CLRALL                   /CLEAR STATUS "DCRL"
2500   2112  4447          DSKSKP                   /"DSKP" SKIP
2501   2113  4435          NERROR                   /SKIP O.K, 4096 LOOPS
2502   2114  4436   T51E,  ERROR                    /ERROR, "DSKP" SKIP ON "DRL"
2503   2115  2077          TST51                    /SLOPE LOOP POINTER
2504   2116  0006          0006                     /TEXT POINTER
2505                /
2506                /VERIFTY THAT "DRL" DOES CAUSE DISK "INTERRUPT" IF
2507                /ENABLED BY "ENABLE INTERRUPT" BIT IN COMMAND REGISTER.
2508                /
2509   2117  7301   TST52,  CLA CLL IAC
2510   2120  4453          CLRALL                   /"DCRL" "CLR ALL"
2511   2121  1102          TAD     K0400
2512   2122  4450          LDCMD                    /SET INT. ENABLE "LOAD COMMAND REG."
2513   2123  4444          ENMAN1                   /ENTER MAINTENANCE MODE
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2514    2124 1103            TAD      K1000
2515    2125 4455            LDMAN                    /"SET DRL" "DMAN"
2516    2126 4437            IONWAT                   /WAIT FOR INTERRUPT
2517    2127 7610            SKP CLA                  /ERROR, NO INT. RQ.
2518    2130 4435            NERROR                   /O.K. INT. OCCURRED
2519    2131 4436            ERROR                    /ERROR, INT. REQUEST
2520    2132 2117            TST52                    /SCOP LOOP POINTER
2521    2133 0007            0007                     /TFXTPOINTER
2522
2523                 /
2524                 /VERIFY THAT "DRL" SHOULD CAUSE INT. RQ. ONLY
2525                 /WHEN "INT. ENABLE BIT IS SET. DOES LDCMD CLEAR INT.
2526                 /
2527
2528    2134 7301    TST53,   CLA CLL IAC
2529    2135 4453            CLRALL                   /DCLR "CLR ALL"
2530    2136 4444            ENMAN1                   /ENTER MAINTENANCE MODE
2531    2137 1103            TAD      K1000
2532    2140 4455            LDMAN                    /SET "DRL" DMAN
2533    2141 4437            IONWAT                   /WAIT FOR INT.
2534    2142 7610            SKP CLA                  /O.K. NO INT.
2535    2143 5356            JMP      T53E            /ERROR, INT. OCCURRED
2536    2144 1102            TAD      K0400
2537    2145 4450            LDCMD                    /SET INT. ENABLE AND CLEAR INT.
2538    2146 4437            IONWAT                   /WAIT FOR INT.
2539    2147 7610            SKP CLA                  /O.K. NO INT. RQ.
2540    2150 5356            JMP      T53E            /ERROR, INT. OCCURED
2541    2151 1103            TAD      K1000
2542    2152 4455            LDMAN                    /SET "DRL" "DMAN"
2543    2153 4437            IONWAT                   /WAIT INT., SHOULD INT.
2544    2154 7610            SKP CLA                  /ERROR, NO INT.
2545    2155 4435            NERROR                   /O.K. INT. OCCURRED
2546    2156 4436    T53E,    ERROR                    /ERROR,, INT. RQ
2547    2157 2134            TST53                    /SCOPE LOOP POINTER
2548    2160 0007            0007                     /TEXT POINTER
2549                 /
2550    2161 5762            JMP I    .+1             /TO NEXT TEST
2551    2162 2200            TST54
2552                 /
2553         2200    PAGE
2554                 /
2555                 /VERIFY THAT "LDCMD" CLEARS STATUS REGISTER
2556                 /
2557    2200 7301    TST54,   CLA CLL IAC
2558    2201 4453            CLRALL                   /DCLR "CLR ALL"
2559    2202 1177            TAD      STCON
2560    2203 1070            TAD      K0004
2561    2204 3163            DCA      GDREG2          /SETUP COMPARE REGISTER
2562    2205 4444            ENMAN1                   /ENTER MAINTENANCE MODE
2563    2206 1103            TAD      K1000           /ENABLE
2564    2207 4455            LDMAN                    /SET "DRL" DMAN
2565    2210 7300            CLA CLL
2566    2211 1154            TAD      REG2
2567    2212 4442            RDSTAT                   /READ STATUS REGISTER
2568    2213 4440            ACCMP1                   /CHECK RESULTS
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2569    2214 7610            SKP CLA                  /O.K. CHECK CLEAR
2570    2215 5225            JMP      T54E            /STATUS REGISTER ERROR
2571    2216 4450            LDCMD                    /CLEAR STATUS, "LOAD COMMAND"
2572    2217 1177            TAD      STCON
2573    2220 3163            DCA      GDREG2          /SETUP COMPARE REGISTER
2574    2221 1153            TAD      REG1
2575    2222 4442            RDSTAT                   /READ STATUS REGISTER
2576    2223 4440            ACCMP1                   /CHECK RESULTS
2577    2224 4435            NERROR                   /STATUS O.K. 4096 LOOPS
2578    2225 4436    T54E,    ERROR                    /ERROR, STATUS REGISTER
2579    2226 2200            TST54                    /SCOPE LOOP POINTER
2580    2227 5000            5000                     /TEXT POINTER
2581                 /
2582                 /VERIFY THAT RECALIBRATE DOES SET DRIVE STATUS
2583                 /ERROR IN THE STATUS REGISTER.
2584                 /
2585    2230 7301    TST55,   CLA CLL IAC             /ENABLE CLEAR CONTROL
2586    2231 4453            CLRALL                   /CLEAR CONTROL
2587    2232 7301            CLA CLL IAC             /ENABLE CLEAR CONTROL
2588    2233 4453            CLRALL                   /ENABLE CLEAR CONTROL
2589    2234 1177            TAD      STCON
2590    2235 3163            DCA      GDREG2          /SETUP EXPECTED COMPARE
2591    2236 4442            RDSTAT                   /READ STATUS REGISTER
2592    2237 4440            ACCMP1                   /CHECK RESULTS
2593    2240 7610            SKP CLA                  /STATUS O.K.
2594    2241 5252            JMP      T55E            /ERROR, STATUS
2595    2242 7326            CLA CLL CML RTL
2596    2243 1177            TAD      STCON
2597    2244 3163            DCA      GDREG2          /SETUP EXPECTED COMPARE
2598    2245 7326            CLA CLL CML RTL         /ENABLE RECALIBRATE
2599    2246 4453            CLRALL                   /RECALIBRATE
2600    2247 4442            RDSTAT                   /READ STATUS
2601    2250 4440            ACCMP1                   /CLECK RESULTS
2602    2251 4435            NERROR                   /O.K. 4096 LOOPS
2603    2252 4436    T55E,    ERROR                    /ERROR, STATUS
2604    2253 2230            TST55                    /SCOPE LOOP POINTER
2605    2254 5000            5000                     /TEXT POINTER
2606                 /
2607                 /VERIFY THAT "LOAD DISK ADDRESS CAUSES" "DRIVE STATUS ERROR"
2608                 /
2609    2255 7301    TST56,   CLA CLL IAC             /ENABLE CLEAR CONTROL
2610    2256 4453            CLRALL
2611    2257 4452            LDADD
2612    2260 1177            TAD      STCON
2613    2261 1066            TAD      K0002
2614    2262 3163            DCA      GDREG2
2615    2263 1153            TAD      REG1
2616
2617    2264 4442            RDSTAT                   /READ STATUS REGISTER
2618    2265 4440            ACCMP1                   /CHECK RESULTS
2619    2266 4435            NERROR                   /STATUS O.K. 4096 LOOPS
2620    2267 4436            ERROR                    /ERROR, STATUS REGISTER
2621    2270 2255            TST56                    /SCOPF LOOP POINTER
2622    2271 5000            5000                     /TEXT POINTER
2623                 /
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2624                                /VERIFY THAT "DRIVE STATUS ERROR" CAUSES INT. RQ.
2625                                / "DOES LDCMD CLEAR INT."
2626                                /
2627    2272   7301        TST57,   CLA CLL IAC
2628    2273   4453                 CLRALL                   /DCLR "CLR ALL"
2629    2274   1102                 TAD     K0400
2630    2275   4450                 LDCMD                    /SET INT. ENABLE "LOAD COMMAND"
2631    2276   4452                 LDADD                    /SET "SELECT", LOAD DISK ADDRESS
2632    2277   4437                 IONWAT                   /WAIT FOR EXPECTED INT.
2633    2300   5305                 JMP     T57E             /ERROR, NO INT.
2634    2301   1102                 TAD     K0400
2635    2302   4450                 LDCMD                    /CLEAR INT. "LOAD COMMAND"
2636    2303   4437                 IONWAT
2637    2304   4435                 NERROR                   /O.K. INT. WORKED
2638    2305   4436        T57E,    ERROR                    /ERROR, SELECT ERROR INT.
2639    2306   2272                 TST57                    /SCOPE LOOP POINTER
2640    2307   0007                 0007                     /TEXT POINTER
2641                                /
2642                                /VERIFY THAT "LOAD DISK ADDRESS" CAUSES
2643                                /"DRIVE STATUS ERROR". TEST WITH DISK SKIP
2644                                /
2645    2310   7301        TST58,   CLA CLL IAC
2646    2311   4453                 CLRALL                   /DCLR "CLR ALL"
2647    2312   4452                 LDADD                    /LOAD DISK AND GO
2648    2313   4447                 DSKSKP                   /DSKP DISK SKIP IOT
2649    2314   5320                 JMP     T58E             /ERROR, NO SKIP
2650    2315   4447                 DSKSKP                   /DSKP DISK SKIP IOT
2651    2316   5320                 JMP     T58E             /ERROR, NO SKIP
2652    2317   4435                 NERROR                   /STATUS O.K.
2653    2320   4436        T58E,    ERROR                    /ERROR, STATUS REGISTER
2654    2321   2310                 TST58                    /SCOPE LOOP POINTER
2655    2322   0006                 0006                     /TEXT POINTER
2656                                /
2657                                /
2658                                /VERIFY THAT SELECT ERROR CAUSES "DSKP" TO SKIP ON ERROR
2659                                /
2660    2323   7301        TST59,   CLA CLL IAC
2661    2324   4453                 CLRALL                   /DCLR "CLR ALL"
2662    2325   4452                 LDADD                    /LOAD DISK ADDRESS AND GO
2663    2326   4447                 DSKSKP                   /DSKP "SKIP ON ERROR"
2664    2327   5333                 JMP     T59E             /ERROR, NO SKIP
2665    2330   4453                 CLRALL                   /CLEAR SKIP
2666    2331   4447                 DSKSKP                   /DSKP
2667    2332   4435                 NERROR                   /O.K. 4096 LOOPS
2668    2333   4436        T59E,    ERROR                    /ERROR, "DSKP SKIP"
2669    2334   2323                 TST59                    /SCOPE LOOP POINTER
2670    2335   0006                 0006                     /TEXT POINTER
2671                                /
2672                                /
2673                                /
2674                                /VERIFY THAT SELECT ERROR CAUSES "DSKP" TO SKIP ON ERROR
2675                                /THEN INTERRUPT
2676                                /
2677
2678    2336   7301        TST60,   CLA CLL IAC
```

```
2679    2337   4453                 CLRALL                   /DCLR "CLR ALL"
2680    2340   1071                 TAD     K0006
2681    2341   3356                 DCA     T60E+2           /SETUP TEXT POINTER
2682    2342   1102                 TAD     K0400
2683    2343   4450                 LDCMD                    /SET INT. ENABLE
2684    2344   4452                 LDADD                    /LOAD DISK AND GO
2685    2345   4447                 DSKSKP                   /DSKP  DISK SKIP
2686    2346   5354                 JMP     T60E             /ERROR, NO SKIP
2687    2347   1072                 TAD     K0007
2688    2350   3356                 DCA     T60E+2           /SETUP TEXT POINTER
2689    2351   4437                 IONWAT                   /WAIT FOR INT.
2690    2352   7610                 SKP CLA                  /ERROR, NO INT. OCCURRED
2691    2353   4435                 NERROR                   /SKIP AND INT. O.K.
2692    2354   4436        T60E,    ERROR                    /ERROR, DSKP OR INT.
2693    2355   2336                 TST60                    /SCOPE LOOP POINTER
2694    2356   0006                 0006                     /MODIFIED TEXT POINTER
2695                                /
2696    2357   5760                 JMP I   .+1              /TO NEXT TEST
2697    2360   2400                 TST61
2698           2400        PAGE
2699                                /
2700                                /VERIFY THAT "DRL" CAUSES AN INT. THEN SKIP
2701                                /
2702    2400   7301        TST61,   CLA CLL IAC
2703    2401   4453                 CLRALL                   /DCLR "CLR ALL"
2704    2402   1072                 TAD     K0007
2705    2403   3222                 DCA     T61E+2           /SETUP TEXT POINTER
2706    2404   1102                 TAD     K0400
2707    2405   4450                 LDCMD                    /SETUP INT. ENABLE
2708    2406   4444                 ENMAN1                   /ENTER MAINTENANCE MODE
2709    2407   1103                 TAD     K1000
2710    2410   4455                 LDMAN                    /SET "DRL" DMAN
2711    2411   4437                 IONWAT                   /WAIT FOR INT.
2712    2412   5220                 JMP     T61E             /ERROR, NO INT.
2713    2413   1071                 TAD     K0006
2714    2414   3222                 DCA     T61E+2           /SETUP TEXT POINTER
2715    2415   4447                 DSKSKP                   /"DSKP" SHOULD SKIP
2716    2416   7610                 SKP CLA                  /ERROR, NO SKIP
2717    2417   4435                 NERROR                   /O.K. 4096 LOOPS
2718    2420   4436        T61E,    ERROR                    /ERROR, SKIP OR INT.
2719    2421   2400                 TST61                    /SCOPE LOOP POINTER
2720    2422   0007                 0007                     /MODIFIED TEXT POINTER
2721                                /
2722                                /VERIFY THAT MAINTENANCE DOES INHIBIT
2723                                /DRIVE STATUS ERROR SKIP
2724                                /
2725    2423   7301        TST62,   CLA CLL IAC
2726    2424   4453                 CLRALL                   /CLEAR CONTROL
2727    2425   4447                 DSKSKP                   /DISK SKIP
2728    2426   7610                 SKP CLA                  /O.K. NO SKIP
2729    2427   5244                 JMP     T62E             /ERROR, SKIP
2730    2430   7326                 CLA CLL CML RTL
2731    2431   4453                 CLRALL                   /RECALIBRATE
2732    2432   4447                 DSKSKP                   /DISK SKIP
2733    2433   5244                 JMP     T62E             /ERROR, NO SKIP
```

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2734    2434   4444            ENMAN1                   /SET MAIN
2735    2435   4447            DSKSKP                   /DISK SKIP
2736    2436   7610            SKP CLA                  /O.K, NO SKIP
2737    2437   5244            JMP       T62E           /ERROR, SKIP
2738    2440   7326            CLA CLL CML RTL
2739    2441   4453            CLRALL                   /RECALIBRATE
2740    2442   4447            DSKSKP                   /DISK SKIP
2741    2443   4435            NERROR                   /O.K. 4096 LOOPS
2742    2444   4436   T62E,    ERROR                    /ERROR, DISK SKIP
2743    2445   2423            TST62                    /SCOPE LOOP POINTER
2744    2446   0006            0006                     /TEXT POINTER
2745                   /
2746                   /VERIFY THAT "RECALIBRATE" THEN DCLR DOES SET BUSY
2747                   /AND DRIVE STATUS ERROR
2748                   /
2749    2447   7301   TST63,   CLA CLL IAC
2750    2450   4453            CLRALL                   /CLEAR CONTROL
2751    2451   1177            TAD       STCON          /EXPECTED STATUS
2752    2452   3163            DCA       GDREG2         /SETUP COMPARE REGISTER
2753    2453   4442            RDSTAT                   /READ STATUS
2754    2454   4440            ACCMP1                   /CHECK RESULTS
2755    2455   7610            SKP CLA                  /STATUS O.K.
2756    2456   5304            JMP       T63E           /ERROR, STATUS
2757    2457   4444            ENMAN1                   /ENTER MAINTENANCE
2758    2460   7326            CLA CLL CML RTL
2759    2461   1177            TAD       STCON          /EXPECTED STATUS
2760    2462   3163            DCA       GDREG2         /SETUP COMPARE REGISTER
2761    2463   7326            CLA CLL CML RTL
2762    2464   4453            CLRALL                          /"RECALIBRATE" DCLR
2763    2465   4442            RDSTAT                   /READ STATUS
2764    2466   4440            ACCMP1                   /CHECK RESULTS
2765    2467   7610            SKP CLA                  /STATUS O.K.
2766    2470   5304            JMP       T63E           /ERROR, STATUS
2767    2471   1153            TAD       REG1
2768    2472   0110            AND       K7776          /MASK OUT CLEAR CONTROL
2769    2473   4453            CLRALL                   /DCLR
2770    2474   7326            CLA CLL CML RTL
2771    2475   1177            TAD       STCON
2772    2476   1077            TAD       K0100          /BUSY BIT
2773    2477   3163            DCA       GDREG2                  /SETUP COMPARE REGISTER
2774    2500   1154            TAD       REG2
2775    2501   4442            RDSTAT                           /READ STATUS REGISTER
2776    2502   4440            ACCMP1                   /CHECK RESULTS
2777    2503   4435            NERROR                   /STATUS, O.K. 4096 LOOPS
2778    2504   4436   T63E,    ERROR                    /ERROR, RECALIBRATE
2779    2505   2447            TST63                    /SCOPE LOOP POINTER
2780    2506   5000            5000                     /TEXT POINTER
2781                   /
2782                   /VERIFY THAT "RECALIBRATE" THEN "DRL" RESULTS IN DRL,
2783                   /DRIVE STATUS, AND TRANSFER DONE
2784                   /
2785    2507   7301   TST64,   CLA CLL IAC
2786    2510   4453            CLRALL                   /CLEAR CONTROL
2787    2511   1177            TAD       STCON
2788    2512   3163            DCA       GDREG2         /SETUP COMPARE REGISTER
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2789    2513   4442            RDSTAT                   /READ STATUS
2790    2514   4440            ACCMP1                   /CHECK RESULTS
2791    2515   7610            SKP CLA                  /STATUS O.K.
2792    2516   5344            JMP       T64E           /ERROR, STATUS
2793    2517   4444            ENMAN1                   /ENTER MAINTENANCE
2794    2520   7326            CLA CLL CML RTL
2795    2521   1177            TAD       STCON          /EXPECTED STATUS
2796    2522   3163            DCA       GDREG2         /SETUP COMPARE REGISTER
2797    2523   7326            CLA CLL CML RTL
2798    2524   4453            CLRALL                   /DCLR
2799    2525   4442            RDSTAT                   /READ STATUS
2800    2526   4440            ACCMP1                   /CHECK RESULTS
2801    2527   7610            SKP CLA                  /STATUS O.K.
2802    2530   5344            JMP       T64E           /ERROR, STATUS
2803    2531   7326            CLA CLL CML RTL
2804    2532   1177            TAD       STCON
2805    2533   1106            TAD       K4000
2806    2534   1070            TAD       K0004          /EXPECTED STATUS
2807    2535   3163            DCA       GDREG2
2808    2536   1103            TAD       K1000          /ENABLE SHIFT
2809    2537   4455            LDMAN                    /LOAD MAINTENANCE SET DRL
2810    2540   1153            TAD       REG1
2811    2541   4442            RDSTAT                           /READ STATUS REGISTER
2812    2542   4440            ACCMP1                   /CHECK RESULTS
2813    2543   4435            NERROR                   /O.K. 4096 LOOPS
2814    2544   4436   T64E,    ERROR                    /ERROR, STATUS REGISTER
2815    2545   2507            TST64                    /SCOPE LOOP POINTER
2816    2546   5000            5000                     /TEXT POINTER
2817                   /
2818    2547   5750            JMP I     .+1            /TO NEXT TEST
2819    2550   2600            TST65
2820                   /
2821           2600   PAGE
2822                   /
2823                   /VERIFY THAT "RECALIBRATE" THEN "DLCA" SETS
2824                   /DRIVE STATUS AND BUSY ERROR IN STATUS REGISTER
2825                   /
2826    2600   7301   TST65,   CLA CLL IAC
2827    2601   4453            CLRALL                   /CLEAR CONTROL
2828    2602   1177            TAD       STCON          /EXPECTED STATUS
2829    2603   3163            DCA       GDREG2         /SETUP COMPARE REGISTER
2830    2604   4442            RDSTAT                   /READ STATUS
2831    2605   4440            ACCMP1                   /CHECK RESULTS
2832    2606   7610            SKP CLA                  /STATUS O.K.
2833    2607   5233            JMP       T65E           /ERROR, STATUS
2834    2610   4444            ENMAN1                   /ENTER MAINTENANCE
2835    2611   7326            CLA CLL CML RTL
2836    2612   1177            TAD       STCON          /EXPECTED STATUS
2837    2613   3163            DCA       GDREG2         /SETUP COMPARE REGISTER
2838    2614   7326            CLA CLL CML RTL
2839    2615   4453            CLRALL
2840    2616   4442            RDSTAT                   /READ STATUS
2841    2617   4440            ACCMP1                   /CHECK RESULTS
2842    2620   7610            SKP CLA                  /STATUS O.K.
2843    2621   5233            JMP       T65E           /ERROR, STATUS
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2844    2622  7326            CLA CLL CML RTL
2845    2623  1077            TAD     K0100
2846    2624  1177            TAD     STCON           /EXPECTED STATUS
2847    2625  3163            DCA     GDREG2
2848    2626  4451            LDCUR                   /LOAD CURRENT ADDRESS
2849    2627  1154            TAD     REG2
2850    2630  4442            RDSTAT                  /READ STATUS REGISTER
2851    2631  4440            ACCMP1                  /CHECK RESULTS
2852    2632  4435            NERROR                  /O.K, 4096 LOOPS
2853    2633  4436    T65E,   ERROR                   /ERROR, STATUS REGISTER
2854    2634  2600            TST65                   /SCOPE LOOP POINTER
2855    2635  5000            5000                    /TEXT POINTER
2856                  /
2857                  /VERIFY THAT "RECALIBRATE" THEN "DLDC"
2858                  /DOES SET BUSY ERROR IN STATUS
2859                  /
2860    2636  7301    TST66,  CLA CLL IAC
2861    2637  4453            CLRALL                  /CLEAR CONTROL
2862    2640  4444            ENMAN1                  /ENTER MAINTENANCE
2863    2641  7326            CLA CLL CML RTL
2864    2642  4453            CLRALL
2865    2643  7326            CLA CLL CML RTL
2866    2644  1077            TAD     K0100
2867    2645  1177            TAD     STCON           /EXPECTED STATUS
2868    2646  3163            DCA     GDREG2
2869    2647  4450            LDCMD                   /LOAD COMMAND REGISTER
2870    2650  1154            TAD     REG2
2871    2651  4442            RDSTAT                  /READ STATUS REGISTER
2872    2652  4440            ACCMP1                  /CHECK RESULTS
2873    2653  4435            NERROR                  /O.K, 4096 LOOPS
2874    2654  4436            ERROR                   /ERROR, STATUS REGISTER
2875    2655  2636            TST66                   /SCOPE LOOP POINTER
2876    2656  5000            5000                    /TEXT POINTER
2877                  /
2878                  /VERIFY THAT RECALIBRATE THEN DLAG RESULTS IN
2879                  /BUSY AND DRIVE STATUS ERROR.
2880                  /
2881    2657  7301    TST67,  CLA CLL IAC
2882    2660  4453            CLRALL                  /CLEAR CONTROL
2883    2661  4444            ENMAN1                  /ENTER MAINTENANCE
2884    2662  7326            CLA CLL CML RTL
2885    2663  1077            TAD     K0100
2886    2664  1177            TAD     STCON           /EXPECTED STATUS
2887    2665  3163            DCA     GDREG2          /SETUP EXPECTED COMPARE
2888    2666  7326            CLA CLL CML RTL         /ENABLE RECALIBRATE
2889    2667  4453            CLRALL
2890    2670  4452            LOADD                   /LOAD DISK ADDRESS
2891    2671  4442            RDSTAT                  /READ STATUS
2892    2672  4440            ACCMP1                  /CHECK RESULTS
2893    2673  4435            NERROR                  /O.K, 4096 LOOPS
2894    2674  4436            ERROR                   /ERROR, BUSY OR DRIVE STATUS
2895    2675  2657            TST67                   /SCOPE LOOP POINTER
2896    2676  5000            5000                    /TEXT POINTER
2897                  /
2898                  /VERIFY THAT SKIP OCCURRES ON BUSY ERROR
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2899                  /
2900    2677  7301    TST68,  CLA CLL IAC
2901    2700  4453            CLRALL                  /CLEAR CONTROL
2902    2701  4447            DSKSKP                  /DSKP
2903    2702  7610            SKP CLA                 /SKIP O.K.
2904    2703  5315            JMP     T68E            /ERROR, DISK SKIP
2905    2704  4444            ENMAN1                  /ENTER MAINTENANCE
2906    2705  7326            CLA CLL CML RTL
2907    2706  4453            CLRALL                  /DCLR
2908    2707  4451            LDCUR                   /LOAD CURRENT ADDRESS
2909    2710  4447            DSKSKP                  /DSKP DISK SKIP
2910    2711  5315            JMP,    T68E            /ERROR, NO SKIP
2911    2712  4447            DSKSKP                  /DSKP DISK SKIP
2912    2713  5315            JMP     T68E            /ERROR
2913    2714  4435            NERROR                  /O.K, 4096 LOOPS
2914    2715  4436    T68E,   ERROR                   /ERROR, DSKP
2915    2716  2677            TST68                   /SCOPE LOOP POINTER
2916    2717  0006            0006                    /TEXT POINTER
2917                  /
2918                  /VERIFY THAT DCLR CLEARS ALL OF STATUS REGISTER
2919                  /
2920    2720  7301    TST69,  CLA CLL IAC
2921    2721  4453            CLRALL                  /CLEAR CONTROL
2922    2722  4444            ENMAN1                  /ENTER MAINTENANCE
2923    2723  7326            CLA CLL CML RTL
2924    2724  4453            CLRALL                  /DCLR
2925    2725  7326            CLA CLL CML RTL
2926    2726  1177            TAD     STCON
2927    2727  1106            TAD     K4000
2928    2730  1070            TAD     K0004           /EXPECTED STATUS
2929    2731  3163            DCA GDREG2
2930    2732  1103            TAD     K1000           /ENABLE SHIFT
2931    2733  4455            LDMAN                   /LOAD MAINTENANCE SET DRL
2932    2734  1153            TAD     REG1
2933    2735  4442            RDSTAT                  /READ STATUS REGISTER
2934    2736  4440            ACCMP1                  /CHECK RESULTS
2935    2737  7610            SKP CLA                 /O.K
2936    2740  5350            JMP     T69E            /ERROR
2937    2741  4453            CLRALL                  /DCLR
2938    2742  1177            TAD     STCON
2939    2743  3163            DCA GDREG2              /SETUP COMPARE REGISTER
2940    2744  1154            TAD     REG2
2941    2745  4442            RDSTAT                  /READ STATUS
2942    2746  4440            ACCMP1                  /CHECK RESULTS
2943    2747  4435            NERROR                  /O.K, 4096 LOOPS
2944    2750  4436    T69E,   ERROR                   /ERROR, STATUS REGISTER
2945    2751  2720            TST69                   /SCOPE LOOP POINTER
2946    2752  5000            5000                    /TEXT POINTER
2947                  /
2948                  /VERIFY THAT INTERRUPT OCCURES ON BUSY ERROR
2949                  /
2950    2753  7301    TST70,  CLA CLL IAC
2951    2754  4453            CLRALL                  /CLEAR CONTROL
2952    2755  1102            TAD     K0400           /ENABLE INT. BIT
2953    2756  4450            LDCMD                   /LOAD COMMAND
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2954    2757  4444          ENMAN1                 /ENTER MAINTENANCE
2955    2760  7326          CLA CLL CML RTL
2956    2761  4453          CLRALL                 /DCLR
2957    2762  4437          IONWAT                 /WAIT FOR INT.
2958    2763  7610          SKP CLA                /INT. O.K.
2959    2764  5374          JMP    T70E            /ERROR, DISK INT.
2960    2765  4453          CLRALL                 /CLEAR STATUS
2961    2766  4437          IONWAT                 /WAIT FOR INTERRUPT
2962    2767  5374          JMP    T70E            /ERROR, NO INT.
2963    2770  4453          CLRALL                 /DCLR
2964    2771  4437          IONWAT                 /WAIT FOR INT.
2965    2772  7610          SKP CLA                /INT. O.K.
2966    2773  4435          NERROR                 /O.K. 4096 LOOPS
2967    2774  4436   T70E,  ERROR                  /ERROR, INT.
2968    2775  2753          TST70                  /SCOPE LOOP POINTER
2969    2776  0007          0007                   /TEXT POINTER
2970                 /
2971                 /VERIFY THAT "RDBUF", "DLCA", "DRST", "DLAG"
2972                 /OR "DSKP" DOES NOT AFFECT STATUS REGISTER.
2973                 /
2974    2777  7301   TST71, CLA CLL IAC
2975    3000  4453          CLRALL                 /CLEAR CONTROL
2976    3001  4444          ENMAN1                 /ENTER MAINTENANCE
2977    3002  7326          CLA CLL CML RTL
2978    3003  4453          CLRALL                 /DCLR
2979    3004  1103          TAD    K1000           /ENABLE SHIFT
2980    3005  4455          LDMAN                  /LOAD MAINTENANCE
2981    3006  7326          CLA CLL CML RTL
2982    3007  1177          TAD    STCON
2983    3010  1070          TAD    K0004
2984    3011  1106          TAD    K4000           /EXPECTED STATUS
2985    3012  3163          DCA    GDREG2          /SETUP COMPARE REGISTER
2986    3013  4456          RDBUF                  /READ BUFFER
2987    3014  1153          TAD    REG1
2988    3015  4442          RDSTAT                 /READ STATUS
2989    3016  1154          TAD    REG2
2990    3017  4451          LOCUR                  /LOAD CURRENT ADDRESS
2991    3020  1153          TAD    REG1
2992    3021  4447          DSKSKP                 /DSKP
2993    3022  7000          NOP
2994    3023  4452          LDADD                  /LOAD DISK ADDRESS
2995    3024  1153          TAD    REG1
2996    3025  4427          LDBUF                  /LOAD BUFFER REGISTER
2997    3026  1154          TAD    REG2
2998    3027  4442          RDSTAT                 /READ STATUS
2999    3030  4440          ACCMP1                 /CHECK RESULTS
3000    3031  7610          SKP CLA                /STATUS O.K.
3001    3032  5241          JMP    T71E            /ERROR, STATUS
3002    3033  4453          CLRALL                 /CLEAR STATUS
3003    3034  1177          TAD    STCON           /EXPECTED STATUS
3004    3035  3163          DCA    GDREG2          /SETUP COMPARE REGISTER
3005    3036  4442          RDSTAT                 /READ STATUS
3006    3037  4440          ACCMP1                 /CHECK RESULTS
3007    3040  4435          NERROR                 /O.K. 4096 LOOPS
3008    3041  4436   T71E,  ERROR                  /ERROR, STATUS REGISTER
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3009    3042  2777          TST71                  /SCOPE LOOP POINTER
3010    3043  5000          5000                   /TEXT POINTER
3011                 /
3012                 /VERIFY THAT "WORD COUNT" OVERFLOWS AND SETS
3013                 /TRANSFER DONE ONLY AFTER 256 (12 BIT COUNTS).
3014                 /TRANSFER DONE SHOULD SFT ON THE 11 TH. SHIFT
3015                 /OF THE 256 TH. WORD.
3016                 /
3017    3044  7240   TST72, CLA CMA
3018    3045  3153          DCA    REG1            /SET FOR 1 PASS PER TEST
3019    3046  7301          CLA CLL IAC
3020    3047  4453          CLRALL                 /DCLR "CLR ALL"
3021    3050  1177          TAD    STCON
3022    3051  3163          DCA    GDREG2          /SETUP COMPARE REGISTER
3023    3052  7326          CLA CLL CML RTL         /TWO
3024    3053  1136          TAD    M12
3025    3054  3156          DCA    TCNTR1          /FOR FINAL WORD!
3026    3055  1143          TAD    M255
3027    3056  3157          DCA    TCNTR2          /FOR ONE LESS THAN "LAST WORD"
3028    3057  4444          ENMAN1                 /ENTER MAINTENANCE MODE
3029    3060  1136   T72R,  TAD    M12             /FOR EACH 12 BIT WORD
3030    3061  3160          DCA    TCNTR3          /ENABLE BITS TOSHIFT SILO
3031    3062  1077          TAD    K0100           /ENABLE BITS TOSHIFT SILO
3032    3063  4455          LDMAN                  /LOAD MAINTENANCE
3033    3064  2160          ISZ    TCNTR3          /SKIP ON EVERY "12 BIT WORD"
3034    3065  5263          JMP    .-2
3035    3066  4456          RDBUF                  /THIS SHOULD PREVENT A "DRL"
3036    3067  4442          RDSTAT                 /GET STATUS
3037    3070  4440          ACCMP1                 /CHECK RESULTS
3038    3071  7610          SKP CLA
3039    3072  5315          JMP    T72E            /STATUS ERROR
3040    3073  2157          ISZ    TCNTR2
3041    3074  5260          JMP    T72R            /COUNT 255 "12 BIT WORDS"
3042    3075  1077          TAD    K0100           /ENABLE SHIFT SILO
3043    3076  4455          LDMAN                  /LOAD MAINTENANCE
3044    3077  2156          ISZ    TCNTR1          /BIT COUNTER
3045    3100  5276          JMP    .-2             /COUNT 11 BITS
3046    3101  4442          RDSTAT                 /READ STATUS
3047    3102  4440          ACCMP1                 /CHECK RESULTS
3048    3103  7610          SKP CLA                /STATUS O.K.
3049    3104  5315          JMP    T72E            /ERROR, STATUS
3050    3105  7330          CLA CLL CML RAR
3051    3106  1177          TAD    STCON
3052    3107  3163          DCA    GDREG2          /SETUP COMPARE REGISTER
3053    3110  1077          TAD    K0100
3054    3111  4455          LDMAN                  /SHIFT IN LAST WORD
3055    3112  4442          RDSTAT                 /READ STATUS
3056    3113  4440          ACCMP1                 /ONLY TRANSFER DONE
3057    3114  4435          NERROR                 /STATUS OK
3058    3115  4436   T72E,  ERROR                  /ERROR, 12 BIT COUNTER
3059    3116  3044          TST72                  /SCOP LOOP
3060    3117  5000          5000                   /TEXT POINTER
3061                 /
3062    3120  5721          JMP I  .+1             /TO NEXT TEST
3063    3121  3209          TST73
```

```
3064                   /
3065          3200     PAGE
3066                   /
3067                   /VERIFY THAT DCLR DOES CLEAR 12  BIT COUNTER
3068                   /
3069    3200   7240    TST73,  CLA CMA
3070    3201   3153            DCA     REG1           /SET FOR 1 PASS PER TEST
3071    3202   1143            TAD     M255
3072    3203   3161            DCA     TCNTR4         /SETUP COUNTER
```

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3073    3204   7301    T73R1,  CLA CLL IAC
3074    3205   4453            CLRALL                         /DCLR "CLR ALL"
3075    3206   1161            TAD     TCNTR4
3076    3207   3156            DCA     TCNTR1
3077    3210   1136    T73R2,  TAD     M12
3078    3211   3157            DCA     TCNTR2         /12 BIT WORD COUNTER
3079    3212   4444            ENMAN1                 /ENTER MAINTENANCE MODE
3080    3213   1077            TAD     K0100          /ENABLE SHIFT
3081    3214   4455            LDMAN                  /LOAD MAINTENANCE
3082    3215   2157            ISZ     TCNTR2         /COUNT SHIFTS
3083    3216   5214            JMP     .-2            /MORE TO GO
3084    3217   4456            RDBUF                  /PREVENT DRL
3085    3220   2156            ISZ     TCNTR1         /DO IT 12 TIMES
3086    3221   5210            JMP     T73R2          /MORE 12 BIT COUNTS
3087    3222   7301            CLA CLL IAC            /ENABLE CLEAR CONTROL
3088    3223   4453            CLRALL                /AND CLEAR THE COUNTER
3089    3224   1177            TAD     STCON
3090    3225   3163            DCA     GDREG2                 /SETUP COMPARE REGISTER
3091    3226   1136            TAD     M12
3092    3227   3156            DCA     TCNTR1                 /FOR FINAL WORD!
3093    3230   1143            TAD     M255
3094    3231   3157            DCA     TCNTR2                 /FOR ONE LESS THAN "LAST WORD"
3095    3232   4444            ENMAN1                 /ENTER MAINTENANCE MODE
3096    3233   1136    T73R3,  TAD     M12
3097    3234   3160            DCA     TCNTR3                 /FOR EACH 12 BIT WORD
3098    3235   1077            TAD     K0100                  /ENABLE BITS TOSHIFT SILO
3099    3236   4455            LDMAN                          /LOAD MAINTENANCE
3100    3237   2160            ISZ     TCNTR3                 /SKIP ON EVERY "12 BIT WORD"
3101    3240   5236            JMP     .-2
3102    3241   4456            RDBUF                          /THIS SHOULD PREVENT A "DRL"
3103    3242   4442            RDSTAT                         /GET STATUS
3104    3243   4440            ACCMP1                 /CHECK RESULTS
3105    3244   7610            SKP CLA
3106    3245   5266            JMP     T73E                   /STATUS ERROR
3107    3246   2157            ISZ     TCNTR2
3108    3247   5233            JMP     T73R3                  /COUNT 255 "12 BIT WORDS"
3109    3250   7330            CLA CLL CML RAR
3110    3251   1177            TAD     STCON
3111    3252   3163            DCA     GDREG2                 /SETUP COMPARE REGISTER
3112    3253   1077            TAD     K0100                  /SHIFT IN LAST WORD
3113    3254   4455            LDMAN
3114    3255   2156            ISZ     TCNTR1
3115    3256   5254            JMP     .-2
3116    3257   4442            RDSTAT                         /READ STATUS
3117    3260   4440            ACCMP1                         /ONLY TRANSFER DONE
3118    3261   7610            SKP CLA                /STATUS O.K.
3119    3262   5266            JMP     T73E          /ERROR, STATUS
3120    3263   2161            ISZ     TCNTR4        /UPDATE SPECIAL COUNTER
3121    3264   5204            JMP     T73R1         /MORE TO TEST
3122    3265   4435            NERROR                         /STATUS OK
3123    3266   4436    T73E,   ERROR                          /ERROR, 12 BIT COUNTER
3124    3267   3200            TST73                          /SCOP LOOP
3125    3270   5000            5000                           /TEXT POINTER
3126                   /
3127                   /
```

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3128                             /VERIFY THAT 12TH BIT O.K. H DOES INHIBIT
3129                             /SETTING DB CONT1=1. THIS IS WHAT STOPS
3130                             /HALF BLOCK DATA BREAKS ON A READ BPEAK.
3131                             /
3132    3271   7301    TST74,  CLA CLL IAC
3133    3272   4453            CLRALL                  /CLEAR CONTROL
3134    3273   1077            TAD     K0100           /HALF BLOCK TRANSFERS
3135    3274   4450            LDCMD                   /LOAD COMMAND
3136    3275   7340            CLA CLL CMA
3137    3276   3153            DCA     REG1            /SETUP FOR 1 PASS
3138    3277   1141            TAD     M128
3139    3300   3156            DCA     TCNTR1          /COUNTER FOR 128 WORDS
3140    3301   4444            ENMAN1                  /ENTER MAINTENANCE MODE
3141    3302   3163    T74R1,  DCA     GDREG2          /SETUP COMPARE REGISTER
3142    3303   1136    T74R1A, TAD     M12
3143    3304   3157            DCA     TCNTR2          /12 BIT WORD COUNTER
3144    3305   7300    T74R2,  CLA CLL
3145    3306   1077            TAD     K0100           /ENABLE SHIFT
3146    3307   4455            LDMAN                   /LOAD MAINTENANCE
3147    3310   2157            ISZ     TCNTR2
3148    3311   5307            JMP     .-2
3149    3312   4456            RDBUF                   /READ LOWER BUFFER
3150    3313   4440            ACCMP1                  /CHECK RESULTS
3151    3314   7610            SKP CLA                 /DATA O.K.
3152    3315   5340            JMP     T74E            /ERROR
3153    3316   2156            ISZ     TCNTR1          /COUNT 128 WORDS
3154    3317   5302            JMP     T74R1           /MORE TO GO
3155    3320   1141            TAD     M128
3156    3321   3156            DCA     TCNTR1          /SETUP COUNTER
3157    3322   1136    T74R3,  TAD     M12
3158    3323   3157            DCA     TCNTR2          /SETUP BIT COUNTER
3159    3324   7326            CLA CLL CML RTL
3160    3325   1077            TAD     K0100           /ENABLE SHIFT
3161    3326   4455            LDMAN                   /LOAD MAINTENANCE
3162    3327   2157            ISZ     TCNTR2          /COUNT BITS
3163    3330   5326            JMP     .-2             /MORE TO GO
3164    3331   4456            RDBUF                   /READ LOWER BUFFER
3165    3332   4440            ACCMP1                  /CHECK RESULTS
3166    3333   7610            SKP CLA                 /DATA O.K.
3167    3334   5340            JMP     T74E            /ERROR
3168    3335   2156            ISZ     TCNTR1          /UPDATE COUNTER
3169    3336   5322            JMP     T74R3           /TEST 128 TIMES
3170    3337   4435            NERROR                  /TO NEXT TEST
3171    3340   4436    T74E,   ERROR                   /ERROR, 128 WORD
3172    3341   3271            TST74                   /SCOPE LOOP POINTER
3173    3342   4405            4405                    /TEXT POINTER
3174                           /
3175    3343   5744            JMP I   .+1             /TO NEXT TEST
3176    3344   3400            TST75
3177                           /
3178                             /VERIFY THAT TRANSFER DONE "ALONE" CAUSES
3179                             /DSKP TO SKIP.
3180                           /
3181           3400    PAGE
3182    3400   7340    TST75,  CLA CLL CMA
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3183    3401   3153            DCA     REG1            /SET FOR 1 PASS PER TEST
3184    3402   7301            CLA CLL IAC
3185    3403   4453            CLRALL                  /DCLR "CLR ALL"
3186    3404   1143            TAD     M255
3187    3405   3156            DCA     TCNTR1          /ONE LESS THAN "LAST WORD"
3188    3406   1136            TAD     M12
3189    3407   3157            DCA     TCNTR2          /FINAL WORD
3190    3410   4444            ENMAN1                  /ENTER MAINTENANCE MODE
3191    3411   1136    T75R,   TAD     M12
3192    3412   3160            DCA     TCNTR3          /"12 BIT" WORD COUNTER
3193    3413   1077            TAD     K0100
3194    3414   4455            LDMAN                   /LOAD MAINTENANCE
3195    3415   2160            ISZ     TCNTR3
3196    3416   5214            JMP     .-2             /COUNT 12 BIT WORDS
3197    3417   4456            RDBUF                   /PREVENT "DRL"
3198    3420   4447            DSKSKP                  /SHOULD NOT SKIP HERE
3199    3421   7610            SKP CLA                 /O.K.
3200    3422   5234            JMP     T75E            /ERROR, DSKP
3201    3423   2156            ISZ     TCNTR1
3202    3424   5211            JMP     T75R            /COUNT 255 WORDS
3203    3425   1077            TAD     K0100
3204    3426   4455            LDMAN                   /LOAD MAINTENANCE
3205    3427   2157            ISZ     TCNTR2
3206    3430   5226            JMP     .-2             /DO ONE MORE WORD
3207    3431   4447            DSKSKP                  /DSKP "SKIP"
3208    3432   7610            SKP CLA                 /ERROR, DSKP DID NOT SKIP
3209    3433   4435            NERROR                  /O.K. 4096 LOOPS
3210    3434   4436    T75E,   ERROR                   /ERROR, DSKP
3211    3435   3400            TST75                   /SCOPE LOOP POINTER
3212    3436   0006            0006                    /TEXT POINTER
3213                           /
3214                             /VERFIFY THAT TRANSFER DONE CAUSES "INT. RQ."
3215                           /
3216    3437   7340    TST76,  CLA CLL CMA
3217    3440   3153            DCA     REG1            /SETUP FOR 1 PASS PER TEST
3218    3441   7301            CLA CLL IAC
3219    3442   4453            CLRALL                  /DCLR "CLR ALL"
3220    3443   1143            TAD     M255
3221    3444   3156            DCA     TCNTR1          /ONE LESS THAN "LAST WORD"
3222    3445   1136            TAD     M12
3223    3446   3157            DCA     TCNTR2          /FINAL WORD
3224    3447   1102            TAD     K0400           /ENABLE INT. BIT
3225    3450   4450            LDCMD                   /LOAD COMMAND REGISTER
3226    3451   4444            ENMAN1                  /ENTER MAINTENANCE MODE
3227    3452   1136    T76R,   TAD     M12
3228    3453   3160            DCA     TCNTR3          /"12 BIT" WORD COUNTER
3229    3454   1077            TAD     K0100           /ENABLE SHIFT SILO
3230    3455   4455            LDMAN                   /LOAD MAINTENANCE
3231    3456   2160            ISZ     TCNTR3
3232    3457   5255            JMP     .-2             /COUNT "12 BIT" WORDS
3233    3460   4456            RDBUF                   /PREVENT "DRL"
3234    3461   4437            IONWAT                  /WAIT FOR INT.
3235    3462   7610            SKP CLA                 /O.K. NO INT.
3236    3463   5275            JMP     T76E            /ERROR, INT. OCCURED
3237    3464   2156            ISZ     TCNTR1
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3238    3465  5252              JMP     T76R                /COUNT 255 WORDS
3239    3466  1077              TAD     K0100
3240    3467  4455              LDMAN                       /LOAD MAINTENANCE
3241    3470  2157              ISZ     TCNTR2
3242    3471  5267              JMP     .-2                 /DO ONE MORE WORD
3243    3472  4437              IONWAT                      /WAIT FOR EXPECTED INT.
3244    3473  7610              SKP CLA                     /ERROR, INT. DIDN'T OCCUR
3245    3474  4435              NERROR                      /O.K. 4096 LOOPS
3246    3475  4436      T76E,   ERROR                       /ERROR, INT.
3247    3476  3437              TST76                       /SCOPE LOOP POINTER
3248    3477  0007              0007                        /TEXT POINTER
3249                    /
3250                    /
3251                    /
3252                    /
3253                    /VERIFY "DATA BREAK" FROM CURRENT FIELD LOCATION 0
3254                    /USE DATA PATTERN 0000 AND 7777. "DO A WRITE"
3255                    /
3256    3500  7301      TST77,  CLA CLL IAC
3257    3501  4453              CLRALL                      /DCLR
3258    3502  4444              ENMAN1                      /ENTER MAINTENANCE MODE
3259    3503  1175              TAD     HOMEMA              /CURRENT FIELD BITS
3260    3504  1106              TAD     K4000               /ENABLE "WRITE"
3261    3505  4450              LDCMD                       /LOAD COMMAND
3262    3506  1153              TAD     REG1
3263    3507  7110              CLL RAR
3264    3510  7630              SZL CLA
3265    3511  7340              CLA CLL CMA                 /MAKE "DATA WORD"
3266    3512  3163              DCA     GDREG2              /SETUP COMPARE REGISTER
3267    3513  1163              TAD     GDREG2
3268    3514  3000              DCA     0                   /STORE OUT BOUND DATA
3269    3515  7340              CLA CLL CMA
3270    3516  4451              LDCUR                       /SET CURRENT ADDRESS TO 7777
3271    3517  4451              LDCUR                       /LOAD CURRENT ADDRESS TO 0
3272    3520  1076              TAD     K0040               /ENABLE "BREAK"
3273    3521  4455              LDMAN                       /LOAD AND GO
3274    3522  4456              RDBUF                       /READ DATA BUFFER
3275    3523  4440              ACCMP1                      /CHECK RESULTS
3276    3524  4435              NERROR                      /O.K. 4096 LOOPS
3277
3278    3525  4436      T77E,   ERROR                       /ERROR, DATA BREAK
3279    3526  3500              TST77                       /SCOPE LOOP POINTER
3280    3527  4263              4263                        /TEXT POINTER
3281                    /
3282                    /VERIFY THAT "DATA BREAK" WORKS FROM LOCATION 0
3283                    /OF CURRENT FIELD, DO  "A WRITE" AND USE DATA
3284                    /PATTERN "2525 AND 5252"
3285                    /
3286    3530  7301      TST78,  CLA CLL IAC
3287    3531  4453              CLRALL                      /DCLR "CLR ALL"
3288    3532  4444              ENMAN1                      /ENTER MAINTENANCE MODE
3289    3533  1153              TAD     REG1
3290    3534  7110              CLL RAR
3291    3535  7630              SZL CLA
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3293    3536  1120              TAD     K2525
3294    3537  1120              TAD     K2525               /TAKE DATA WORD
3295    3540  3163              DCA     GDREG2              /SETUP COMPARE REGISTER
3296    3541  1163              TAD     GDREG2
3297    3542  3000              DCA     0                   /STORE OUTBOUND DATA
3298    3543  1175              TAD     HOMEMA              /GET CURRENT FIELD BITS
3299    3544  1126              TAD     K5000               /GET "WRITE ENABLE BIT"
3300    3545  4450              LDCMD                       /LOAD COMMAND REGISTER
3301    3546  1154              TAD     REG2
3302    3547  4451              LDCUR                       /SET CURRENT ADDRESS TO 7777
3303    3550  4451              LDCUR                       /LOAD CURRENT ADDRESS TO 0
3304    3551  1076              TAD     K0040               /DATA BREAK ENABLE BIT
3305    3552  4455              LDMAN                       /LOAD AND GO
3306    3553  4456              RDBUF                       /READ DATA BUFFER
3307    3554  4440              ACCMP1                      /CHECK RESULTS
3308    3555  4435              NERROR                      /O.K. 4096 LOOPS
3309    3556  4436      T78E,   ERROR                       /ERROR, DATA BREAK
3310    3557  3530              TST78                       /SCOPE LOOP POINTER
3311    3560  4263              4263                        /TEXT POINTER
3312                    /
3313                    /VERIFY THAT "DATA BREAK" WORK FROM LOCATION 7777
3314                    /OF CURRENT FIELD, DO A WRITE AND           USE DATA PATTERN
3315                    /0000 AND 7777.
3316                    /
3317    3561  7301      TST79,  CLA CLL IAC
3318    3562  4453              CLRALL                      /DCLR "CLR ALL"
3319    3563  4444              ENMAN1                      /ENTER MAINTENANCE MODE
3320    3564  1153              TAD     REG1
3321    3565  7110              CLL RAR
3322    3566  7630              SZL CLA
3323    3567  7340              CLA CLL CMA                 /MAKE DATA WORD
3324    3570  3163              DCA     GDREG2              /SETUP COMPARE REGISTER
3325    3571  1163              TAD     GDREG2
3326    3572  3532              DCA I   K7777               /STORE OUTBOUND DATA
3327    3573  1153              TAD     REG1
3328    3574  4451              LDCUR                       /SET CURRENT ADDRESS
3329    3575  7340              CLA CLL CMA
3330    3576  4451              LDCUR                       /LOAD  CURRENT ADDRESS TO 7777
3331    3577  1175              TAD     HOMEMA              /CURRENT FIELD BITS
3332    3600  1106              TAD     K4000               /WRITE ENABLE
3333    3601  4450              LDCMD                       /LOAD COMMAND REGISTER
3334    3602  1076              TAD     K0040               /BREAK ENABLE BIT
3335    3603  4455              LDMAN                       /LOAD AND GO
3336    3604  4456              RDBUF                       /READ DATA BUFFER
3337    3605  4440              ACCMP1                      /CHECK RESULTS
3338    3606  4435              NERROR                      /O.K. 4096 LOOPS
3339    3607  4436      T79E,   ERROR                       /ERROR, DATA BREAK
3340    3610  3561              TST79                       /SCOPE LOOP POINTER
3341    3611  4263              4263                        /TEXT POINTER
3342                    /
3343                    /
3344                    /VERIFY "DATA BREAK" FROM LOCATION 7777 OF
3345                    /CURRENT FIELD, DO A "WRITE" AND USE DATA
3346                    /PATTERN 2525 AND 5252.
3347                    /
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3348    3612  7301    TST80,  CLA CLL IAC
3349    3613  4453            CLRALL                          /DCLR "CLR ALL"
3350    3614  4444            ENMAN1                  /ENTER MAINTENANCE MODE
3351    3615  1153            TAD     REG1
3352    3616  7110            CLL RAR
3353    3617  7630            SZL CLA
3354    3620  1120            TAD     K2525
3355    3621  1120            TAD     K2525                   /MAKE DATA WORD
3356    3622  3163            DCA     GDREG2                  /SETUP COMPARE REGISTER
3357    3623  1163            TAD     GDREG2
3358    3624  3532            DCA I   K7777          /STORE OUTBOUND DATA
3359    3625  1175            TAD     HOMEMA                  /CURRENT FIELD BITS
3360    3626  1126            TAD     K5000                   /FUNCTION "WRITE"
3361    3627  4450            LDCMD                   /LOAD COMMAND
3362    3630  1154            TAD     REG2
3363    3631  4451            LDCUR                   /SET CURRENT ADDRESS
3364    3632  7340            CLA CLL CMA
3365    3633  4451            LDCUR                           /LOAD CURRENT ADDRESS TO 7777
3366    3634  1076            TAD     K0040                   /BREAK ENABLE BIT
3367    3635  4455            LDMAN                           /LOAD MAINTENANCE AND GO
3368    3636  4456            RDBUF                           /READ BUFFER
3369    3637  4440            ACCMP1                  /CHECK RESULTS
3370    3640  4435            NERROR                          /O.K, 4096 LOOPS
3371    3641  4436    T80E,   ERROR                           /ERROR, DATA BREAK
3372    3642  3612            TST80                           /SCOPE LOOP POINTER
3373    3643  4263            4263                            /TEXT POINTER
3374                  /
3375                  /VERIFY THAT "DATA BREAK" WORKS FROM CURRENT FIELD
3376                  /LOCATION 0, DO A "WRITE" AND USE ALL COMBINATION PATTERN
3377                  /ALSO VERIFY THAT DATA IN LOCATION 0 DOESN'T CHANGE
3378                  /ON A WRITE BREAK, (NOTE: DATA FROM LOCATION 0 PUT
3379                  /IN INDICATOR "DT:")
3380                  /
3381    3644  7301    TST81,  CLA CLL IAC
3382    3645  4453            CLRALL                          /DCLR "CLR ALL"
3383    3646  4444            ENMAN1                  /ENTER MAINTENANCE MODE
3384    3647  1154            TAD     REG2
3385    3650  3163            DCA     GDREG2                  /SETUP COMPARE REGISTER
3386    3651  1163            TAD     GDREG2
3387    3652  3000            DCA     0                       /STORE OUTBOUND DATA
3388    3653  4451            LDCUR                           /SET CURRENT ADDRESS TO 0
3389    3654  1175            TAD     HOMEMA                  /CURRENT FIELD BITS
3390    3655  1106            TAD     K4000                   /WRITE FUNCTION
3391    3656  4450            LDCMD                           /LOAD COMMAND
3392    3657  1076            TAD     K0040                   /DATA BREAK ENABLE BIT
3393    3660  4455            LDMAN                           /LOAD AND GO
3394    3661  4456            RDBUF                           /READ BUFFER
3395    3662  4440            ACCMP1                          /CHECK RESULTS
3396    3663  7610            SKP CLA
3397    3664  5272            JMP     T81E            /ERROR
3398    3665  1000            TAD     0
3399    3666  3173            DCA     DTREG           /SAVE IN CASE OF ERROR
3400    3667  1173            TAD     DTREG
3401    3670  4440            ACCMP1                  /CHECK RESULTS
3402    3671  4435            NERROR                          /O.K, 4096 LOOPS
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3403    3672  4436    T81E,   ERROR                           /ERROR, DATA BREAK
3404    3673  3644            TST81                           /SCOPE LOOP POINTER
3405    3674  4263            4263                            /TEXT POINTER
3406
3407                  /
3408                  /VERIFY "DATA BREAK" FROM LOCATION 7777 OF
3409                  /CURRENT FIELD, DO A "WRITE" AND USE ALL COMBINATIONS,
3410                  /ALSO VERIFY THAT OUTBOUND DATA IN LOCATION 7777
3411                  /DOESN'T CHANGE WHEN DOING A WRITE BREAK, (NOTE: DATA FROM
3412                  /LOCATION 7777 PUT IN INDICATOR "DT:")
3413                  /
3414    3675  7301    TST82,  CLA CLL IAC
3415    3676  4453            CLRALL                          /DCLR "CLR ALL"
3416    3677  4444            ENMAN1                  /ENTER MAINTENANCE MODE
3417
3418    3700  1153            TAD     REG1
3419    3701  3163            DCA     GDREG2                  /SETUP COMPARE REGISTER
3420    3702  1163            TAD     GDREG2
3421    3703  3532            DCA I   K7777                   /STORE OUTBOUND DATA
3422    3704  7340            CLA CLL CMA
3423    3705  4451            LDCUR                           /SET CURRENT ADDRESS TO      7777
3424    3706  1175            TAD     HOMEMA                  /CURRENT FIELD BITS
3425    3707  1126            TAD     K5000                   /WRITE FUNCTION
3426    3710  4450            LDCMD                           /LOAD COMMAND
3427    3711  1076            TAD     K0040                   /BREAK ENABLE BIT
3428    3712  4455            LDMAN                           /LOAD AND GO
3429    3713  4456            RDBUF                           /READ BUFFER
3430    3714  4440            ACCMP1                          /CHECK RESULTS
3431    3715  7610            SKP CLA
3432    3716  5324            JMP     T82E            /ERROR
3433    3717  1532            TAD I   K7777
3434    3720  3173            DCA     DTREG           /SAVE INCASE OF ERROR
3435    3721  1173            TAD     DTREG
3436    3722  4440            ACCMP1                  /CHECK RESULTS
3437    3723  4435            NERROR                          /O.K, 4096 LOOPS
3438    3724  4436    T82E,   ERROR                           /ERROR, DATA BREAK
3439    3725  3675            TST82                           /SCOPE LOOP POINTER
3440    3726  4263            4263                            /TEXT POINTER
3441                  /
3442                  /VERIFY THAT "DCLR" CLEARS CURRENT ADDRESS
3443                  /FIRST DO A DATA BREAK FROM LOCATION 7776
3444                  /THEN "DCLR" FROM LOCATION 0000, DO    "A WRITE"
3445                  /AND USE DATA PATTERN ALL COMBINATIONS,
3446                  /
3447    3727  7301    TST83,  CLA CLL IAC
3448    3730  4453            CLRALL                          /DCLR "CLR ALL"
3449    3731  4444            ENMAN1                  /ENTER MAINTENANCE MODE
3450    3732  1153            TAD     REG1
3451    3733  3163            DCA     GDREG2                  /SETUP COMPARE REGISTER
3452    3734  1163            TAD     GDREG2
3453    3735  3510            DCA I   K7776                   /STORE OUTBOUND DATA BREAK 1
3454    3736  1154            TAD     REG2
3455    3737  3000            DCA     0                       /STORE OUTBOUND DATA BREAK 2
3456    3740  1175            TAD     HOMEMA                  /CURRENT         FIELD BITS
3457    3741  1106            TAD     K4000                   /WRITE FUNCTION
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3458    3742 4450              LDCMD                           /LOAD COMMAND
3459    3743 7344              CLA CLL CMA RAL
3460    3744 4451              LDCUR                           /LOAD CURRENT ADDRESS TO 7776
3461    3745 1076              TAD     K0040                   /BREAK ENABLE BIT
3462    3746 4455              LDMAN                           /LOAD AND GO
3463    3747 4456              RDBUF                           /READ BUFFER
3464    3750 4440              ACCMP1                          /CHECK RESULTS
3465    3751 7610              SKP CLA                         /O.K. TRY LOCATION A
3466    3752 5371              JMP     T83E                    /ERROR, DATA BREAK
3467    3753 7301              CLA CLL IAC
3468    3754 4453              CLRALL                          /DCLR "CLEAR CURRENT ADDRESS"
3469    3755 4444              ENMAN1                          /ENTER MAINTENANCE MODE
3470    3756 3172              DCA     ADREG                   /SETUP FOR ERROR PRINTER
3471    3757 1175              TAD     HOMEMA                  /CURRENT FIELD BITS
3472    3760 1126              TAD     K5000                   /FUNCTION WRITE
3473    3761 4450              LDCMD                           /LOAD COMMAND
3474    3762 1154              TAD     REG2
3475    3763 3163              DCA     GDREG2                  /SETUP COMPARE REGISTER
3476    3764 1076              TAD     K0040                   /BREAK ENABLE BIT
3477    3765 4455              LDMAN                           /LOAD AND GO
3478    3766 4456              RDBUF                           /READ BUFFER
3479
3480    3767 4440              ACCMP1                          /CHECK RESULTS
3481    3770 4435              NERROR                          /ALL WORKED 4096 LOOPS
3482    3771 4436      T83E,   ERROR                           /ERROR, DATA BREAK
3483    3772 3727              TST83                           /SCOPE LOOP POINTER
3484    3773 4263              4263                            /TEXT POINTER
3485
3486                   /VERIFY THAT CURRENT ADDRESS DOES INCREMENT FROM 7777
3487                   /TO 0000, DO A WRITE DATA BREAK AND USE DATA PATTERN
3488                   /ALL COMBINATION,
3489                   /
3490    3774 7301      TST84,  CLA CLL IAC
3491    3775 4453              CLRALL                          /CLEAR CONTROL
3492    3776 1153              TAD     REG1
3493    3777 3000              DCA     0                       /STORE OUTBOUND DATA
3494    4000 1154              TAD     REG2
3495    4001 3532              DCA I   K7777                   /STORE OUTBOUND DATA
3496    4002 7340              CLA CLL CMA
3497    4003 4451              LDCUR                           /LOAD CURRENT ADDRESS
3498    4004 4444              ENMAN1                          /ENTER MAINTENANCE MODE
3499    4005 1126              TAD     K5000                   /WRITE FUNCTION
3500    4006 1175              TAD     HOMEMA                  /CURRENT FIELD
3501    4007 4450              LDCMD                           /LOAD COMMAND
3502    4010 7344              CLA CLL CMA RAL
3503    4011 3156              DCA     TCNTR1                  /2 BREAK COUNTER
3504    4012 1076              TAD     K0040                   /ENABLE BREAK BIT
3505    4013 4455              LDMAN                           /LOAD MAINTENANCE
3506    4014 2156              ISZ     TCNTR1                  /COUNT BREAKS
3507    4015 5213              JMP     .-2                     /DO 2
3508    4016 7300              CLA CLL
3509    4017 1154              TAD     REG2
3510    4020 3163              DCA     GDREG2                  /SETUP COMPARE REGISTER
3511    4021 4456              RDBUF                           /GET FIRST WORD
3512    4022 4440              ACCMP1                          /CHECK IT
```

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3513    4023 7610              SKP CLA                         /FIRST O.K.
3514    4024 5233              JMP     T84E                    /ERROR, FIRST WORD
3515    4025 3172              DCA     ADREG                   /SETUP ERROR PRINTER
3516    4026 1153              TAD     REG1
3517    4027 3163              DCA     GDREG2                  /SETUP COMPARE REGISTER
3518    4030 4456              RDBUF                           /GET SECOND WORD
3519    4031 4440              ACCMP1                          /CHECK IT
3520    4032 4435              NERROR                          /O.K. 4096 LOOPS
3521    4033 4436      T84E,   ERROR                           /DATA BREAK
3522    4034 3774              TST84                           /SCOPE LOOP POINTER
3523    4035 4263              4263                            /TEXT POINTER
3524                   /
3525
3526                   /VERIFY THAT CURRENT ADDRESS DOES INCREMENT
3527                   /ADDRESS TEST FROM 0200 TO TST85 OF CURRENT
3528                   /FIELD, DO A WRITE DATA BREAK.
3529                   /
3530    4036 7301      TST85,  CLA CLL IAC
3531    4037 4453              CLRALL                          /DCLR "CLR ALL"
3532    4040 7340              CLA CLL CMA
3533    4041 3153              DCA     REG1                    /SETUP FOR 1 PASS PER TEST
3534    4042 1100              TAD     K0200
3535    4043 3157              DCA     TCNTR2                  /START AT ADDRESS 0200
3536    4044 1100              TAD     K0200
3537    4045 4451              LDCUR                           /LOAD CURRENT ADDRESS
3538    4046 4444      T85R1,  ENMAN1                          /ENTER MAINTENANCE MODE
3539    4047 4452              LDADD                           /KEEP WRITE INHIBIT CLEAR
3540    4050 1557              TAD I   TCNTR2                  /GET INSTRUCTION
3541    4051 3156              DCA     TCNTR1                  /SAVE INSTRUCTION
3542    4052 1157              TAD     TCNTR2
3543    4053 7110              CLL RAR
3544    4054 7630              SZL CLA
3545    4055 7240              CLA CMA                         /USE DATA 7777
3546    4056 3163              DCA     GDREG2                  /SETUP COMPARE REGISTER
3547    4057 1163              TAD     GDREG2
3548    4060 3557              DCA I   TCNTR2                  /STORE OUTBOUND DATA
3549    4061 1175              TAD     HOMEMA                  /CURRENT FIELD BITS
3550    4062 1106              TAD     K4000                   /WRITE FUNCTION
3551    4063 4450              LDCMD                           /LOAD COMMAND REGISTER
3552    4064 1076              TAD     K0040                   /BREAK ENABLE BIT
3553    4065 4455              LDMAN                           /LOAD AND GO
3554    4066 7300              CLA CLL
3555    4067 1156              TAD     TCNTR1                  /GET INSTRUCTION
3556    4070 3557              DCA I   TCNTR2                  /REPLACE INSTRUCTION
3557    4071 1157              TAD     TCNTR2
3558    4072 3172              DCA     ADREG                   /ADDRESS OF BREAK
3559    4073 4456              RDBUF                           /GET DATA
3560    4074 4440              ACCMP1                          /CHECK RESULTS
3561    4075 7610              SKP CLA
3562    4076 5306              JMP     T85E                    /ERROR, DATA BREAK
3563    4077 1157              TAD     TCNTR2
3564    4100 1152              TAD     MTS85                   /SPECIAL POINTER FOR START OF
3565    4101 7650              SNA CLA                         /THIS TEST,
3566    4102 5305              JMP     T850K                   /TEST O.K.
3567    4103 2157              ISZ     TCNTR2
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3568    4104  5246            JMP     T85R1           /LOOP DO 0200 TO TST60
3569    4105  4435            NERROR                  /THIS ADDRESS WORKED TRY NEXT
3570    4106  4436    T85E,   ERROR                   /ERROR, DATA BREAK
3571    4107  4036            TST85                   /SCOPE LOOP POINTER
3572    4110  4263            4263                    /TEXT POINTER
3573                  /
3574    4111  5712            JMP I   .+1             /TO NEXT TEST
3575    4112  4200            TST86
3576                  /
3577                          /VERIFY THAT B LAST BREAK SETS AFTER 256 WRITE DATA BREAKS
3578                          /AND VERIFY THAT DCLR CLEARS WRITE INHIBIT COUNTER.
3579                  /
3580          4200    PAGE
3581    4200  7340    TST86,  CLA CLL CMA
3582    4201  3153            DCA     REG1            /SETUP FOR 1 PASS PER TEST
3583    4202  1143            TAD     M255
3584    4203  3156            DCA     TCNTR1          /SPECIAL COUNTER
3585    4204  7301    T86R1,  CLA CLL IAC
3586    4205  4453            CLRALL                  /CLEAR CONTROL
3587    4206  1156            TAD     TCNTR1
3588    4207  3157            DCA     TCNTR2          /AMOUNT OF BREAKS TO DO
3589    4210  4444            ENMAN1                  /ENTER MAINTENANCE MODE
3590    4211  1175            TAD     HOMEMA          /CURRENT FIELD BITS
3591    4212  1106            TAD     K4000           /WRITE FUNCTION
3592    4213  4450            LDCMD                   /LOAD COMMAND
3593    4214  4451    T86R2,  LDCUR                   /LOAD CURRENT ADDRESS
3594    4215  7340            CLA CLL CMA
3595    4216  3000            DCA     0               /STORE OUTBOUND DATA
3596    4217  7340            CLA CLL CMA
3597    4220  3163            DCA     GDREG2          /SETUP COMPARE REGISTER
3598    4221  1076            TAD     K0040           /BREAK ENABLE BIT
3599    4222  4455            LDMAN                   /LOAD AND GO
3600    4223  4456            RDBUF                   /GET WORD
3601    4224  4440            ACCMP1                  /CHECK RESULTS
3602    4225  7610            SKP CLA
3603    4226  5276            JMP     T86E            /DATA EPROR
3604    4227  2157            ISZ     TCNTR2
3605    4230  5214            JMP     T86R2           /DO 0-255 BREAKS
3606    4231  7301            CLA CLL IAC
3607    4232  4453            CLRALL                  /CLEAR CONTROL AND COUNTER
3608    4233  7340            CLA CLL CMA
3609    4234  1143            TAD     M255
3610    4235  3157            DCA     TCNTR2          /256 BREAK COUNTER
3611    4236  7300    T86R3,  CLA CLL
3612                                                  /MAKE DATA PATTERN
3613    4237  3000            DCA     0               /STORE OUTBOUND DATA
3614    4240  3163            DCA     GDREG2          /SETUP COMPARE REGISTER
3615    4241  4444            ENMAN1                  /ENTER MAINTENANCE MODE
3616    4242  4451            LDCUR                   /LOAD CURRENT ADDRESS
3617    4243  1126            TAD     K5000           /WRITE FUNCTION
3618    4244  1175            TAD     HOMEMA          /CURRENT FIELD
3619    4245  4450            LDCMD                   /LOAD COMMAND
3620    4246  1076            TAD     K0040           /ENABLE BREAK BIT
3621    4247  4455            LDMAN                   /LOAD MAINTENANCE
3622    4250  4456            RDBUF                   /GET WORD
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3623    4251  4440            ACCMP1                  /CHECK RESULTS
3624    4252  7610            SKP CLA                 /WORD O.K.
3625    4253  5276            JMP     T86E            /DATA ERROR
3626    4254  2157            ISZ     TCNTR2
3627    4255  5236            JMP     T86R3           /DO 256 WRITE BREAKS
3628    4256  1107            TAD     K7000
3629    4257  3160            DCA     TCNTR3          /CLEAR COUNTER
3630    4260  7340    T86R4,  CLA CLL CMA
3631    4261  3000            DCA     0               /STORE NOT OUTBOUND DATA
3632    4262  4451            LDCUR                   /LOAD CURRENT ADDRESS
3633    4263  1076            TAD     K0040           /ENABLE BREAK BIT
3634    4264  4455            LDMAN                   /LOAD "SHOULD NOT BREAK"
3635    4265  4456            RDBUF                   /GET DATA
3636    4266  4440            ACCMP1                  /CHECK IT
3637    4267  7610            SKP CLA                 /DATA O.K.
3638    4270  5276            JMP     T86E            /ERROR, DATA BREAK INHIBIT
3639    4271  2160            ISZ     TCNTR3
3640    4272  5260            JMP     T86R4           /DO "1000 FAKE" BREAKS
3641    4273  2156            ISZ     TCNTR1
3642    4274  5204            JMP     T86R1           /START ALL OVER WITH ONE LESS
3643    4275  4435            NERROR                  /TO NEXT TEST
3644    4276  4436    T86E,   ERROR                   /ERROR, DATA BREAK
3645    4277  4200            TST86                   /SCOPE LOOP POINTER
3646    4300  4263            4263                    /TEXT POINTER
3647                  /
3648    4301  5702            JMP I   .+1             /TO NEXT TEST
3649    4302  4303            TST87
3650                  /
3651                  /
3652                          /VERIFY THAT B LAST BREAK SETS AFTER 128 BREAKS IF
3653                          /HALF BIT IS SET, ALSO MAKE SURE LOAD DISK ADDRESS LOADS
3654                          /THE INHIBIT COUNTER CORRECTLY.
3655                  /
3656    4303  7340    TST87,  CLA CLL CMA
3657    4304  3153            DCA     REG1            /SETUP FOR 1 PASS PER TEST
3658    4305  1143            TAD     M255
3659    4306  3156            DCA     TCNTR1          /SPECIAL COUNTER
3660    4307  7301    T87R1,  CLA CLL IAC
3661    4310  4453            CLRALL                  /CLEAR CONTROL
3662    4311  1156            TAD     TCNTR1
3663    4312  3157            DCA     TCNTR2          /AMOUNT OF BREAKS TO DO
3664    4313  4444            ENMAN1                  /ENTER MAINTENANCE MODE
3665    4314  1077            TAD     K0100           /HALF BIT
3666    4315  1175            TAD     HOMEMA          /CURRENT FIELD BITS
3667    4316  1106            TAD     K4000           /WRITE FUNCTION
3668    4317  4450            LDCMD                   /LOAD COMMAND
3669    4320  4451    T87R2,  LDCUR                   /LOAD CURRENT ADDRESS
3670    4321  7340            CLA CLL CMA
3671    4322  3000            DCA     0               /STORE OUTBOUND DATA
3672    4323  7340            CLA CLL CMA
3673    4324  3163            DCA     GDREG2          /SETUP COMPARE REGISTER
3674    4325  1076            TAD     K0040           /BREAK ENABLE BIT
3675    4326  4455            LDMAN                   /LOAD AND GO
3676    4327  4456            RDBUF                   /GET WORD
3677    4330  4440            ACCMP1                  /CHECK RESULTS
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3678    4331    7610            SKP CLA
3679    4332    5374            JMP     T87E                    /DATA ERROR
3680    4333    2157            ISZ     TCNTR2
3681    4334    5320            JMP     T87R2           /DO SO MANY BREAKS
3682    4335    4452            LDADD                   /LOAD ADDRESS AND INHIBIT COUNT
3683    4336    1141            TAD     M128
3684    4337    3157            DCA     TCNTR2          /128 BREAK COUNTER
3685    4340    7300    T87R3,  CLA CLL                 /MAKE DATA WORD
3686
3687    4341    3000            DCA     0               /STORE OUTBOUND DATA
3688    4342    3163            DCA     GDREG2          /SETUP COMPARE REGISTER
3689    4343    4451            LDCUR                   /LOAD CURRENT ADDRESS
3690    4344    1076            TAD     K0040           /ENABLE BREAK BIT
3691    4345    4455            LDMAN                   /LOAD MAINTENANCE
3692    4346    4456            RDBUF                   /GET WORD
3693    4347    4440            ACCMP1                  /CHECK RESULTS
3694    4350    7610            SKP CLA                 /WORD O.K.
3695    4351    5374            JMP     T87E            /DATA ERROR
3696    4352    2157            ISZ     TCNTR2
3697    4353    5340            JMP     T87R3           /DO 128 WRITE BREAKS
3698    4354    1107            TAD     K7000
3699    4355    3160            DCA     TCNTR3          /CLEAR COUNTER
3700    4356    7340    T87R4,  CLA CLL CMA             /STORE NOT OUTBOUND DATA
3701    4357    3000            DCA     0               /LOAD CURRENT ADDRESS
3702    4360    4451            LDCUR                   /LOAD CURRENT ADDRESS
3703    4361    1076            TAD     K0040           /ENABLE BREAK BIT
3704    4362    4455            LDMAN                   /LOAD "SHOULD NOT BREAK"
3705    4363    4456            RDBUF                   /GET DATA
3706    4364    4440            ACCMP1                  /CHECK IT
3707    4365    7610            SKP CLA                 /DATA O.K.
3708    4366    5374            JMP     T87E            /ERROR, DATA BREAK INHIBIT
3709    4367    2160            ISZ     TCNTR3
3710    4370    5356            JMP     T87R4                   /DO "1000 FAKE" BREAKS
3711    4371    2156            ISZ     TCNTR1
3712    4372    5307            JMP     T87R1           /START ALL OVER WITH ONE LESS
3713    4373    4435            NERROR                  /TO NEXT TEST
3714    4374    4436    T87E,   EPROR                   /ERROR, DATA BREAK
3715    4375    4303            TST87                   /SCOPE LOOP POINTER
3716    4376    4263            4263                    /TEXT POINTER
3717                    /
3718                    /VERIFY THAT "DATA BREAK" WORKS WITH A "READ"
3719                    /TO LOCATION 0 OF CURRENT FIELD, USE DATA
3720                    /PATTERN 0000 AND 7777.
3721                    /
3722    4377    7301    TST88,  CLA CLL IAC
3723    4400    4453            CLRALL                          /DCLR "CLR ALL"
3724    4401    1175            TAD     HOMEMA          /CURRENT FIELD
3725    4402    4450            LDCMD                   /LOAD COMMAND TO 0
3726    4403    1153            TAD     REG1
3727    4404    7110            CLL RAR
3728    4405    7630            SZL CLA
3729    4406    7240            CLA CMA
3730    4407    3163            DCA     GDREG2                  /SETUP COMPARE REGISTER
3731    4410    1163            TAD     GDREG2          /GET VALUE TO LOAD
3732    4411    4427            LDBUF                   /LOAD UPPER BUFFER
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3733    4412    1076            TAD     K0040
3734    4413    4455            LDMAN                   /LOAD AND GO
3735    4414    7300            CLA CLL
3736    4415    3172            DCA     ADREG           /ADDRESS FOR PRINTER
3737    4416    1000            TAD     0               /GET INBOUND WORD
3738    4417    3173            DCA     DTREG           /SAVE IT
3739    4420    1173            TAD     DTREG
3740    4421    4440            ACCMP1                  /CHECK
3741    4422    4435            NERROR                  /O.K. 4096 LOOPS
3742    4423    4436            ERROR                   /ERROR, DATA BREAK
3743    4424    4377            TST88                   /SCOPE LOOP POINTER
3744    4425    4263            4263                    /TEXT POINTER
3745
3746
3747                    /
3748                    /VERIFY WITH A "READ" THAT "DATA BREAK" WORKS
3749                    /FROM LOCATION "7777" OF CURRENT FIELD USE
3750                    /DATA PATTERN 0000 AND 7777.
3751                    /
3752    4426    7301    TST89,  CLA CLL IAC
3753    4427    4453            CLRALL
3754    4430    1103            TAD     K1000
3755    4431    1175            TAD     HOMEMA          /CURRENT FIELD
3756    4432    4450            LDCMD                   /LOAD COMMAND FOR READ
3757    4433    1153            TAD     REG1
3758    4434    7110            CLL RAR
3759    4435    7630            SZL CLA
3760    4436    7240            CLA CMA
3761    4437    3163            DCA     GDREG2                  /SETUP COMPARE REGISTER
3762    4440    7240            CLA CMA
3763    4441    4451            LDCUR                   /LOAD CURRENT ADDRESS
3764    4442    1163            TAD     GDREG2          /GET VALUE TO LOAD
3765    4443    4427            LDBUF                   /LOAD UPPER BUFFER
3766    4444    1076            TAD     K0040           /ENABLE BREAK BIT
3767    4445    4455            LDMAN                   /LOAD AND GO
3768    4446    7300            CLA CLL
3769    4447    1532            TAD I   K7777           /GET "WORD"
3770    4450    3173            DCA     DTREG           /SAVE INBOUND WORD
3771    4451    1173            TAD     DTREG
3772    4452    4440            ACCMP1                  /CHECK IT
3773    4453    4435            .       NERROR          /O.K. 4096 LOOPS
3774    4454    4436            EPROR                   /ERROR, DATA BREAK
3775    4455    4426            TST89                   /SCOPE LOOP POINTER
3776    4456    4263            4263                    /TEXT POINTER
3777                    /
3778                    /VERIFY THAT "DATA BREAK" WITH A "READ" TO
3779                    /CURRENT FIELD LOCATION 0 USE DATA PATTERN
3780                    /5252 + 2525
3781                    /
3782    4457    7301    TST90,  CLA CLL IAC
3783    4460    4453            CLRALL                          /DCLR
3784    4461    1175            TAD     HOMEMA          /CURRENT FIELD
3785    4462    4450            LDCMD                   /LOAD COMMAND TO READ
3786    4463    1153            TAD     REG1
3787    4464    7110            CLL RAR
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3788    4465  7630          SZL CLA               /WHAT DDATA
3789    4466  1120          TAD     K2525         /DATA 5252
3790    4467  1120          TAD     K2525
3791    4470  3163          DCA     GDREG2                /SETUP COMPARE REGISTER
3792    4471  1163          TAD     GDREG2        /GET VALUE TO LOAD
3793    4472  4427          LDBUF                 /LOAD UPPER BUFFER
3794    4473  4451          LDCUR                 /LOAD CURRENT ADDRESS TO 0
3795    4474  1076          TAD     K0040         /ENABLE BREAK
3796    4475  4455          LDMAN                 /LOAD AND GO
3797    4476  7300          CLA CLL
3798    4477  1000          TAD     0
3799    4500  3173          DCA     DTREG                 /SAVE DATA
3800    4501  1000          TAD     0
3801    4502  4440          ACCMP1                /CHECK
3802    4503  4435          NERROR                /O,K, 4096 LOOPS
3803    4504  4436          ERROR                 /ERROR, DATA BREAK
3804    4505  4457          TST90                 /SCOPE LOOP POINTER
3805    4506  4263          4263                  /TEXT POINTER
3806
3807                /VERIFY THAT "DATA BREAK" WORD WITH     A "READ"
3808                /TO CURRENT FIELD LOCATION LOCATION 7777,
3809                /USE DATA PATTERN 5252 + 2525
3810                /
3811    4507  7301  TST91,  CLA CLL IAC
3812    4510  4453          CLRALL
3813    4511  1175          TAD     HOMEMA        /CURRENT FIELD
3814    4512  4450          LDCMD                 /LOAD COMMAND
3815    4513  7240          CLA CMA
3816    4514  4451          LDCUR                 /LOAD CURRENT ADDRESS
3817    4515  1153          TAD     REG1
3818    4516  7110          CLL RAR
3819    4517  7630          SZL CLA               /WHAT DATA TO USE
3820    4520  1120          TAD     K2525         /DATA 5252
3821    4521  1120          TAD     K2525
3822    4522  3163          DCA     GDREG2                /SETUP COMPARE REGISTER
3823    4523  1163          TAD     GDREG2        /GET VALUE TO LOAD
3824    4524  4427          LDBUF                 /LOAD UPPER BUFFER
3825    4525  1076          TAD     K0040         /ENABLE BREAK BIT
3826    4526  4455          LDMAN                 /LOAD MAINTENANCE
3827    4527  7300          CLA CLL
3828    4530  1532          TAD I   K7777                 /GET BREAK WORD
3829    4531  3173          DCA     DTREG         /SAVE FOR ERROR PRINTER
3830    4532  1173          TAD     DTREG
3831    4533  4440          ACCMP1                /CHECK
3832    4534  4435          NERROR                /O,K, 4096 LOOPS
3833    4535  4436          ERROR                 /ERROR, DATA BREAK
3834    4536  4507          TST91                 /SCOPE LOOP POINTER
3835    4537  4263          4263                  /TEXT POINTER
3836                /
3837    4540  5741          JMP I   .+1           /TO NEXT TEST
3838    4541  4600          TST92
3839                /
3840                /
3841                /VERIFY THAT "DATA BUFFERS" CAN BE FILLED
3842                /ON A WRITE DATA BREAK FROM LOCATION
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3843                /0 OF CURRENT FIELD, USE ALL COMBINATIONS,
3844                /
3845          4600  PAGE
3846    4600  7301  TST92,  CLA CLL IAC
3847    4601  4453          CLRALL                        /DCLR "CLR ALL"
3848    4602  4444          ENMAN1                /ENTER MAINTENANCE MODE
3849    4603  1133          TAD     M4
3850    4604  3156          DCA     TCNTR1                /FOR FOUR WORDS
3851    4605  1153          TAD     REG1
3852    4606  3157          DCA     TCNTR2                /DATA START
3853    4607  1175          TAD     HOMEMA        /CURRENT FIELD
3854    4610  1106          TAD     K4000         /WRITE FUNCTION
3855    4611  4450          LDCMD                 /LOAD COMMAND
3856    4612  4451  T92R1,  LDCUR                 /LOAD CURRENT ADDRESS TO 0
3857    4613  1157          TAD     TCNTR2
3858    4614  3000          DCA     0             /STORE OUT BOUND DATA
3859    4615  1076          TAD     K0040         /ENABLE BREAK BIT
3860    4616  4455          LDMAN                 /LOAD AND GO
3861    4617  7300          CLA CLL
3862    4620  2157          ISZ     TCNTR2        /UPDATE DATA WORD
3863    4621  7000          NOP
3864    4622  2156          ISZ     TCNTR1
3865    4623  5212          JMP     T92R1         /FILL BUFFER
3866    4624  1133          TAD     M4
3867    4625  3156          DCA     TCNTR1
3868    4626  1153          TAD     REG1
3869    4627  3163          DCA     GDREG2
3870    4630  4456  T92R2,  RDBUF
3871    4631  4440          ACCMP1
3872    4632  7610          SKP     CLA
3873    4633  5241          JMP     T92E
3874    4634  2163          ISZ     GDREG2
3875    4635  7000          NOP
3876    4636  2156          ISZ     TCNTR1
3877    4637  5230          JMP     T92R2
3878    4640  4435          NERROR                /O,K, 4096 LOOPS
3879    4641  4436  T92E,   ERROR                 /ERROR, DATA BREAK
3880    4642  4600          TST92                 /SCOPE LOOP POINTER
3881    4643  4263          4263                  /TEXT POINTER
3882                /
3883    4644  5645          JMP I   .+1           /TO NEXT TEST
3884    4645  4646          TST93
3885                /
3886                /
3887                /VERIFY THAT "DATA BREAK" WORKS WITH
3888                /A "READ" TO CURRENT FIELD LOCATION 0
3889                /TRY ALL COMBINATIONS
3890                /
3891    4646  7301  TST93,  CLA CLL IAC
3892    4647  4453          CLRALL                        /DCLR "CLR ALL"
3893    4650  1175          TAD     HOMEMA        /CURRENT FIELD
3894    4651  4450          LDCMD                 /LOAD COMMAND FOR READ
3895    4652  3172          DCA     ADREG                 /SAVE ADDRESS
3896    4653  1154          TAD     REG2
3897    4654  3163          DCA     GDREG2                /SETUP COMPARE REGISTER
```

```
3898   4655  1163              TAD     GDREG2          /GET VALUE TO LOAD
3899   4656  4427              LDBUF                   /LOAD UPPER BUFFER
3900   4657  1076              TAD     K0040                   /BREAK ENABLE BIT
3901   4660  4455              LDMAN                   /LOAD AND GO
3902   4661  7300              CLA CLL
3903   4662  1000              TAD     0                       /GET DATA WORD
3904   4663  3173              DCA     DTREG           /SAVE FOR ERROR PRINTER
3905   4664  1173              TAD     DTREG
3906   4665  4440              ACCMP1                          /CHECK
3907   4666  4435              NERROR                  /O.K. 4096 LOOPS
3908   4667  4436              ERROR                   /ERROR, DATA BREAK
3909   4670  4646              TST93                   /SCOPE LOOP POINTER
3910   4671  4263              4263                    /TEXT POINTER
3911                   /
3912                   /VERIFY THAT A READ DATA BREAK DOES OCCUR
3913                   /WHEN FUNCTION = 2
3914                   /
3915   4672  7301      TST94,  CLA CLL IAC
3916   4673  4453              CLRALL                  /DCLR
3917   4674  1153              TAD     REG1            /GET VALUE TO LOAD
3918   4675  3163              DCA     GDREG2          /SETUP COMPARE REGISTER
3919   4676  1163              TAD     GDREG2
3920   4677  4427              LDBUF                   /LOAD UPPER BUFFER
3921   4700  1163              TAD     GDREG2
3922   4701  7040              CMA
3923   4702  3000              DCA     0
3924   4703  4451              LDCUR                   /SET CURRENT ADDRESS TO 0
3925   4704  1175              TAD     HOMEMA          /CURRENT FIELD
3926   4705  1104              TAD     K2000
3927   4706  4450              LDCMD                   /LOAD COMMAND REGISTER
3928   4707  1076              TAD     K0040           /ENABLE BREAK
3929   4710  4455              LDMAN                   /GO
3930   4711  7300              CLA CLL
3931   4712  1000              TAD     0
3932   4713  3173              DCA     DTREG           /SAVE FOR ERROR PRINTER
3933   4714  1173              TAD     DTREG
3934   4715  4440              ACCMP1                  /DID 0 CHANGE
3935   4716  4435              NERROR                  /ALL O.K.
3936   4717  4436      T94E,   EPROR                   /ERROR, DATA BREAK
3937   4720  4672              TST94                   /SCOPE LOOP POINTER
3938   4721  4263              4263                    /TEXT POINTER
3939                   /
3940                   /VERIFY THAT A READ DATA BREAK DOES OCCUR
3941                   /WHEN FUNCTION = 3
3942                   /
3943   4722  7301      TST95,  CLA CLL IAC
3944   4723  4453              CLRALL                  /DCLR
3945   4724  1154              TAD     REG2
3946   4725  3163              DCA     GDREG2          /SETUP COMPARE REGISTER
3947   4726  1163              TAD     GDREG2
3948   4727  4427              LDBUF                   /LOAD UPPER BUFFER
3949   4730  1163              TAD     GDREG2
3950   4731  7040              CMA
3951   4732  3000              DCA     0
3952   4733  4451              LDCUR                   /SET CURRENT ADDRESS TO 0
```

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3953   4734  1175              TAD     HOMEMA          /CURRENT FIELD
3954   4735  1103              TAD     K1000
3955   4736  1104              TAD     K2000
3956   4737  4450              LDCMD                   /LOAD COMMAND REGISTER
3957   4740  1076              TAD     K0040           /ENABLE BREAK
3958   4741  4455              LDMAN                   /GO
3959   4742  7300              CLA CLL
3960   4743  1000              TAD     0
3961   4744  3173              DCA     DTREG           /SAVE FOR ERROR PRINTER
3962   4745  1173              TAD     DTREG
3963   4746  4440              ACCMP1                  /DID 0 CHANGE
3964   4747  4435              NERROR                  /ALL O.K.
3965   4750  4436      T95E,   EPROR                   /ERROR, DATA BREAK
3966   4751  4722              TST95                   /SCOPE LOOP POINTER
3967   4752  4263              4263                    /TEXT POINTER
3968                   /
3969   4753  5754              JMP I   .+1             /TO NEXT TEST
3970   4754  5000              TST97
3971         5000      PAGE
3972                   /
3973                   /
3974                   /VERIFY THAT A READ DATA BREAK DOES OCCUR
3975                   /WHEN FUNCTION = 6
3976                   /
3977   5000  7301      TST97,  CLA CLL IAC
3978   5001  4453              CLRALL                  /DCLR
3979   5002  1153              TAD     REG1
3980   5003  3163              DCA     GDREG2          /SETUP COMPARE REGISTER
3981   5004  1163              TAD     GDREG2
3982   5005  4427              LDBUF                   /LOAD UPPER BUFFER
3983   5006  1163              TAD     GDREG2
3984   5007  7040              CMA
3985   5010  3000              DCA     0
3986   5011  4451              LDCUR                   /SET CURRENT ADDRESS TO 0
3987   5012  1175              TAD     HOMEMA          /CURRENT FIELD
3988   5013  1106              TAD     K4000
3989   5014  1104              TAD     K2000
3990   5015  4450              LDCMD                   /LOAD COMMAND REGISTER
3991   5016  1076              TAD     K0040           /ENABLE BREAK
3992   5017  4455              LDMAN                   /GO
3993   5020  7300              CLA CLL
3994   5021  1000              TAD     0
3995   5022  3173              DCA     DTREG           /SAVE FOR ERROR PRINTER
3996   5023  1173              TAD     DTREG
3997   5024  4440              ACCMP1                  /DID 0 CHANGE
3998   5025  4435              NERROR                  /ALL O.K.
3999   5026  4436      T97E,   EPROR                   /ERROR, DATA BREAK
4000   5027  5000              TST97                   /SCOPE LOOP POINTER
4001   5030  4263              4263                    /TEXT POINTER
4002                   /
4003                   /VERIFY THAT A READ DATA BREAK DOES OCCUR
4004                   /WHEN FUNCTION = 7
4005                   /
4006   5031  7301      TST98,  CLA CLL IAC
4007   5032  4453              CLRALL                  /DCLR
```

```
4008    5033    1154            TAD     REG2
4009    5034    3163            DCA     GDREG2          /SETUP COMPARE REGISTER
4010    5035    1163            TAD     GDREG2
4011    5036    4427            LDBUF                   /LOAD UPPER BUFFER
4012    5037    1163            TAD     GDREG2
4013    5040    7040            CMA
4014    5041    3000            DCA     0
4015    5042    4451            LDCUR                   /SET CURRENT ADDRESS TO 0
4016    5043    1175            TAD     HOMEMA          /CURRENT FIELD
4017    5044    1106            TAD     K4000
4018    5045    1103            TAD     K1000
4019    5046    1104            TAD     K2000
4020    5047    4450            LDCMD                   /LOAD COMMAND REGISTER
4021    5050    1076            TAD     K0040           /ENABLE BREAK
4022    5051    4455            LDMAN                   /GO
4023    5052    7300            CLA CLL
4024    5053    1000            TAD     0
4025    5054    3173            DCA     DTREG           /SAVE FOR ERROR PRINTER
4026    5055    1173            TAD     DTREG
4027    5056    4440            ACCMP1                  /DID 0 CHANGE
4028    5057    4435            NERROR                  /ALL O.K.
4029    5060    4436    T98E,   ERROR                   /ERROR, DATA BREAK
4030    5061    5031            TST98                   /SCOPE LOOP POINTER
4031    5062    4263            4263                    /TEXT POINTER
4032                    /
4033                    /VERIFY THAT ALL DATA BUFFERS CAN BE FULL
4034                    /AT ONCE. USE A READ BREAK AND PATTERN
4035                    /ALL COMBINATIONS.
4036                    /
4037    5063    7301    TST99,  CLA CLL IAC
4038    5064    4453            CLRALL                  /DCLR "CLR ALL"
4039    5065    1154            TAD     REG2
4040    5066    3161            DCA     TCNTR4
4041    5067    1133            TAD     M4
4042    5070    3160            DCA     TCNTR3          /COUNTER FOR # OF BUFFERS
4043    5071    1161    T99R1,  TAD     TCNTR4
4044    5072    4427            LDBUF                   /LOAD UPPER BUFFER
4045    5073    7340            CLA CLL CMA
4046    5074    1161            TAD     TCNTR4
4047    5075    3161            DCA     TCNTR4
4048    5076    2160            ISZ     TCNTR3
4049    5077    5271            JMP     T99R1           /4 COUNT, SKIP WHEN BUFFERS FULL
4050    5100    1154            TAD     REG2
4051    5101    3163            DCA     GDREG2          /SETUP FOR FIRST CNMPARE
4052    5102    1133            TAD     M4
4053    5103    3160            DCA     TCNTR3
4054    5104    1175            TAD     HOMEMA          /CURRENT FIELD
4055    5105    4450            LDCMD                   /LOAD COMMAND
4056    5106    4451    T99R2,  LDCUR                   /LOAD CURRENT ADDRESS
4057    5107    1076            TAD     K0040           /GET ENABLE BREAK
4058    5110    4455            LDMAN                   /LOAD MAINTENANCE
4059    5111    7300            CLA CLL
4060    5112    1000            TAD     0               /GET DATA
4061    5113    3173            DCA     DTREG           /SAVE FOR PRINTER
4062    5114    1173            TAD     DTREG
```

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4063    5115    4440            ACCMP1                  /CHECK
4064    5116    7610            SKP CLA                 /O.K. CHECK NEXT
4065    5117    5326            JMP     T99E            /ERROR DATA BUFFERS
4066    5120    7340            CLA CLL CMA
4067    5121    1163            TAD     GDREG2
4068    5122    3163            DCA     GDREG2          /SETUP FOR NEXT
4069    5123    2160            ISZ     TCNTR3
4070    5124    5306            JMP     T99R2
4071    5125    4435            NERROR                  /O.K. 4096 LOOPS
```

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4072    5126   4436    T99E,    ERROR                        /ERROR, DAT  BUFFERS
4073    5127   5063             TST99                        /SCOPE LOOP  JINTER
4074    5130   4263             4263                         /TEXT POINTER
4075                   /
4076                   /
4077                   /VERIFY A WRITE THEN READ BREAK FROM
4078                   /LOCATIONS 7777 THEN 0000 OF THE
4079                   /CURRENT FIELD.  USE PATTERS 0-7777.
4080                   /
4081    5131   7301    TST100,  CLA CLL IAC
4082    5132   4453             CLRALL                       /CLEAR CONTROL
4083    5133   4444             ENMAN1                       /ENTER MAINTENANCE
4084    5134   7340             CLA CLL CMA
4085    5135   4451             LDCUR                        /LOAD CURRENT ADDRESS
4086    5136   1154             TAD      REG2
4087    5137   3532             DCA I    K7777               /STORE OUT BOUND DATA
4088    5140   1175             TAD      HOMEMA              /CURRENT FIELD
4089
4090
4091    5141   1106             TAD      K4000               /WRITE FUNCTION
4092    5142   4450             LDCMD                        /LOAD COMMAND REGISTER
4093    5143   1076             TAD      K0040               /ENABLE BREAK
4094    5144   4455             LDMAN                        /ISSUE MAINTENANCE IOT
4095    5145   7300             CLA CLL                      /READ FUNCTION
4096    5146   1175             TAD      HOMEMA              /CURRENT FIELD
4097    5147   4450             LDCMD                        /LOAD COMMAND REGISTER
4098    5150   1076             TAD      K0040               /ENABLE BREAK
4099    5151   4455             LDMAN                        /ISSUE MAINTENANCE IOT
4100    5152   7300             CLA CLL
4101    5153   2172             ISZ      ADREG
4102    5154   7000             NOP
4103    5155   1154             TAD      REG2
4104    5156   3163             DCA      GDREG2              /SETUP COMPARE
4105    5157   1000             TAD      0
4106    5160   3173             DCA      DTREG               /STORE DATA READ FOR PRINTER
4107    5161   1000             TAD      0
4108    5162   4440             ACCMP1                       /CHECK RESULTS
4109    5163   4435             NERROR                       /O.K. 4096 LOOPS
4110    5164   4436             ERROR                        /ERROR, WRITE OR READ
4111    5165   5131             TST100                       /SCOPE POINTER
4112    5166   4263             4263
4113    5167   7301             CLA CLL IAC
4114    5170   1176             TAD      FLDMAX
4115    5171   7650             SNA CLA                       /IS IT TEST EXTENDED MEM.
4116    5172   5432             JMP I    XEND                 /NO, END OF TEST
4117                   /
4118    5173   5774             JMP I    .+1                  /TO NEXT TEST
4119    5174   5201             EXTFLD
4120                   /
4121           5200    PAGE
4122                   /
4123                   /ROUTINE TO CHECK IF CONSOLE PACKAGE ACTIVE.
4124                   /IF SO, THEN INHIBIT EXTENDED MEMORY TESTS.
4125                   /
4126    5200   5670    TSTLAS,  ENDTST
```

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4127    5201   1022    EXTFLD,  TAD      22
4128    5202   0102             AND      K0400               /MASK CLASSIC BIT
4129    5203   7640             SZA CLA                       /ON CLASSIC SYSTEM?
4130    5204   5600             JMP I    TSTLAS               /BY-PASS EXT. TESTS.
4131                   /
4132                   /VERIFY THAT DATA BREAK WORKS WITH A WRITE FROM
4133                   /LOCATION 0000 IN ALL EXISTING EXTENDED FIELDS.
4134                   /USE DATA PATTERN 0000 + 7777.
4135                   /
4136    5205   7301    TST101,  CLA CLL IAC
4137
4138
4139
4140
4141
4142
4143    5206   4453             CLRALL                       /DCLR
4144    5207   4444             ENMAN1                       /ENTER MAINTENANCE MODE
4145    5210   1150             TAD      KCDF
4146    5211   3232             DCA      TOFLD2              /START FIELD 0
4147    5212   1176             TAD      FLDMAX
4148    5213   3156             DCA      TCNTR1              /FIELDS TO TEST -1
4149    5214   1433             TAD I    THSFLD
4150    5215   3234             DCA      RTFLD2              /RETURN FIELD CDF
4151    5216   1153             TAD      REG1
4152    5217   7110             CLL RAR
4153    5220   7630             SZL CLA                       /USE DATA 7777 IF LINK IS SET
4154    5221   7240             CLA CMA
4155    5222   3163             DCA      GDREG2              /SETUP COMPARE REGISTER
4156    5223   4451    T101R,   LDCUR                        /SET CURRENT ADDRESS TO 0000
4157    5224   1232             TAD      TOFLD2
4158    5225   7041             CIA
4159    5226   1234             TAD      RTFLD2
4160    5227   7650             SNA CLA                       /CURRENT FIELD
4161    5230   5247             JMP      NEXFL2              /YES, NOT THIS ONE
4162    5231   1163             TAD      GDREG2              /OUTBOUND DATA
4163    5232   7402    TOFLD2,  HLT                          /MODIFIED CDF
4164    5233   3464             DCA I    K0000               /STORE DATA
4165    5234   7402    RTFLD2,  HLT                          /HOME CDF
4166    5235   1232             TAD      TOFLD2
4167    5236   0114             AND      K0070
4168    5237   1106             TAD      K4000               /WRITE
4169    5240   4450             LDCMD                        /LOAD COMMAND REGISTER
4170    5241   1076             TAD      K0040               /ENABLE WRITE BREAK
4171    5242   4455             LDMAN                        /GO
4172    5243   4456             RDBUF                        /GET RESULTS
4173    5244   4440             ACCMP1                       /CHECK RESULTS
4174    5245   7610             SKP CLA                       /O.K. TRY NEXT
4175    5246   5257             JMP      T101E               /ERROR
4176    5247   2156    NEXFL2,  ISZ      TCNTR1
4177    5250   7610             SKP CLA
4178    5251   5256             JMP      T101D               /DONE WITH ALL
4179    5252   1232             TAD      TOFLD2
4180    5253   1073             TAD      K0010
4181    5254   3232             DCA      TOFLD2              /SET TO NEXT FIELD
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4182    5255 5223              JMP     T101R           /TRY IT
4183    5256 4435     T101D,   NERROR                  /O.K 4096 LOOPS
4184    5257 4436     T101E,   ERROR                   /ERROR, DATA BREAK
4185    5260 5205              TST101                  /SCOPE LOOP POINTER
4186    5261 4263              4263                    /TEXT POINTER
4187                  /
4188                  /
4189                  /
4190                  /VERIFY THAT DATA BREAK WORKS WITH A WRITE FROM
4191                  /LOCATION 0000 IN ALL EXISTING EXTENDED FIELDS.
4192                  /USE DATA PATTERN 2525 + 5252.
4193                  /
4194    5262 7301     TST102,  CLA CLL IAC
4195    5263 4453              CLRALL                  /DCLR
4196    5264 4444              ENMAN1                  /ENTER MAINTENANCE MODE
4197    5265 1150              TAD     KCDF
4198    5266 3310              DCA     TOFLD3          /START FIELD 0
4199    5267 1176              TAD     FLDMAX
4200    5270 3156              DCA     TCNTR1          /FIELDS TO TEST -1
4201    5271 1433              TAD I   THSFLD
4202    5272 3312              DCA     RTFLD3          /RETURN FIELD CDF
4203    5273 1153              TAD     REG1
4204    5274 7110              CLL RAR
4205    5275 7630              SZL CLA                 /USE DATA 5252 IF LINK IS SET
4206    5276 1120              TAD     K2525
4207    5277 1120              TAD     K2525
4208    5300 3163              DCA     GDREG2          /SETUP COMPARE REGISTER
4209    5301 4451     T102R,   LDCUR                   /SET CURRENT ADDRESS TO 0000
4210    5302 1310              TAD     TOFLD3
4211    5303 7041              CIA
4212    5304 1312              TAD     RTFLD3
4213    5305 7650              SNA CLA                 /CURRENT FIELD
4214    5306 5325              JMP     NEXFL3          /YES, NOT THIS ONE
4215    5307 1163              TAD     GDREG2          /OUTBOUND DATA
4216    5310 7402     TOFLD3,  HLT                     /MODIFIED CDF
4217    5311 3464              DCA I   K0000           /STORE DATA
4218    5312 7402     RTFLD3,  HLT                     /HOME CDF
4219    5313 1310              TAD     TOFLD3
4220    5314 0114              AND     K0070
4221    5315 1106              TAD     K4000           /WRITE
4222    5316 4450              LDCMD                   /LOAD COMMAND REGISTER
4223    5317 1076              TAD     K0040           /ENABLE WRITE BREAK
4224    5320 4455              LDMAN                   /GO
4225    5321 4456              RDBUF                   /GET RESULTS
4226    5322 4440              ACCMP1                  /CHECK RESULTS
4227    5323 7610              SKP CLA                 /O.K. TRY NEXT
4228    5324 5335              JMP     T102E           /ERROR
4229    5325 2156     NEXFL3,  ISZ     TCNTR1
4230    5326 7610              SKP CLA
4231    5327 5334              JMP     T102D           /DONE WITH ALL
4232    5330 1310              TAD     TOFLD3
4233    5331 1073              TAD     K0010
4234    5332 3310              DCA     TOFLD3          /SET TO NEXT FIELD
4235    5333 5301              JMP     T102R           /TRY IT
4236    5334 4435     T102D,   NERROR                  /O.K 4096 LOOPS
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4237    5335 4436     T102E,   ERROR                   /ERROR, DATA BREAK
4238    5336 5262              TST102                  /SCOPE LOOP POINTER
4239    5337 4263              4263                    /TEXT POINTER
4240    5340 5741              JMP I   .+1
4241    5341 5400              TST103
4242         5400     PAGE
4243                  /
4244                  /VERIFY THAT DATA BREAK WORKS WITH A WRITE FROM
4245                  /LOCATION 7777 IN ALL EXISTING EXTENDED FIELDS.
4246                  /USE DATA PATTERN 0000 + 7777.
4247                  /
4248    5400 7301     TST103,  CLA CLL IAC
4249    5401 4453              CLRALL                  /DCLR
4250    5402 4444              ENMAN1                  /ENTER MAINTENANCE MODE
4251    5403 1150              TAD     KCDF
4252    5404 3226              DCA     TOFLD4          /START FIELD 0
4253    5405 1176              TAD     FLDMAX
4254    5406 3156              DCA     TCNTR1          /FIELDS TO TEST -1
4255    5407 1433              TAD I   THSFLD
4256    5410 3230              DCA     RTFLD4          /RETURN FIELD CDF
4257    5411 1153              TAD     REG1
4258    5412 7110              CLL RAR
4259    5413 7630              SZL CLA                 /USE DATA 7777 IF LINK IS SET
4260    5414 7240              CLA CMA
4261    5415 3163              DCA     GDREG2          /SETUP COMPARE REGISTER
4262    5416 7240     T103R,   CLA CMA
4263    5417 4451              LDCUR                   /SET CURRENT ADDRESS TO 7777
4264    5420 1226              TAD     TOFLD4
4265    5421 7041              CIA
4266    5422 1230              TAD     RTFLD4
4267    5423 7650              SNA CLA                 /CURRENT FIELD
4268    5424 5243              JMP     NEXFL4          /YES, NOT THIS ONE
4269    5425 1163              TAD     GDREG2          /OUTBOUND DATA
4270    5426 7402     TOFLD4,  HLT                     /MODIFIED CDF
4271    5427 3532              DCA I   K7777           /STORE DATA
4272    5430 7402     RTFLD4,  HLT                     /HOME CDF
4273    5431 1226              TAD     TOFLD4
4274    5432 0114              AND     K0070
4275    5433 1106              TAD     K4000           /WRITE
4276    5434 4450              LDCMD                   /LOAD COMMAND REGISTER
4277    5435 1076              TAD     K0040           /ENABLE WRITE BREAK
4278    5436 4455              LDMAN                   /GO
4279    5437 4456              RDBUF                   /GET RESULTS
4280    5440 4440              ACCMP1                  /CHECK RESULTS
4281    5441 7610              SKP CLA                 /O.K. TRY NEXT
4282    5442 5253              JMP     T103E           /ERROR
4283    5443 2156     NEXFL4,  ISZ     TCNTR1
4284    5444 7610              SKP CLA
4285    5445 5252              JMP     T103D           /DONE WITH ALL
4286    5446 1226              TAD     TOFLD4
4287    5447 1073              TAD     K0010
4288    5450 3226              DCA     TOFLD4          /SET TO NEXT FIELD
4289    5451 5216              JMP     T103R           /TRY IT
4290    5452 4435     T103D,   NERROR                  /O.K 4096 LOOPS
4291    5453 4436     T103E,   ERROR                   /ERROR, DATA BREAK
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4292   5454  5400          TST!03              /SCOPE LOOP POINTER
4293   5455  4263          4263                /TEXT POINTER
4294               /
4295               /
4296               /
4297               /VERIFY THAT DATA BREAK WORKS WITH A WRITF FROM
4298               /LOCATION 7777 IN ALL EXISTING EXTENDED FIELDS.
4299               /USE DATA PATTERN 2525 + 5252.
4300               /
4301   5456  7301   TST104, CLA CLL IAC
4302   5457  4453          CLRALL              /DCLR
4303   5460  4444          ENMAN1              /ENTEP MAINTENANCE MODE
4304   5461  1150          TAD     KCDF
4305   5462  3305          DCA     TOFLD5      /START FIELD 0
4306   5463  1176          TAD     FLDMAX
4307   5464  3156          DCA     TCNTR1      /FIELDS TO TEST -1
4308   5465  1433          TAD I   THSFLD
4309   5466  3307          DCA     RTFLD5      /RETURN FIELD CDF
4310   5467  1153          TAD     REG1
4311   5470  7110          CLL RAR
4312   5471  7630          SZL CLA             /USE DATA 5252 IF LINK IS SET
4313   5472  1120          TAD     K2525
4314   5473  1120          TAD     K2525
4315   5474  3163          DCA     GDREG2      /SETUP COMPARE REGISTER
4316   5475  7240   T104R,  CLA CMA
4317   5476  4451          LDCUR               /SET CURRENT ADDRESS TO 7777
4318   5477  1305          TAD     TOFLD5
4319   5500  7041          CTA
4320   5501  1307          TAD     RTFLD5
4321   5502  7650          SNA CLA             /CURRENT FIELD
4322   5503  5322          JMP     NEXFL5      /YES, NOT THIS ONE
4323   5504  1163          TAD     GDREG2      /OUTBOUND DATA
4324   5505  7402   TOFLD5, HLT                /MODIFIED CDF
4325   5506  3532          DCA I   K7777       /STORE DATA
4326   5507  7402   RTFLD5, HLT                /HOME CDF
4327   5510  1305          TAD     TOFLD5
4328   5511  0114          AND     K0070
4329   5512  1106          TAD     K4000       /WRITE
4330   5513  4450          LDCMD               /LOAD COMMAND REGISTER
4331   5514  1076          TAD     K0040       /ENABLE WRITE BREAK
4332   5515  4455          LDMAN               /GO
4333   5516  4456          RDBUF               /GET RESULTS
4334   5517  4440          ACCMP1              /CHECK RESULTS
4335   5520  7610          SKP CLA             /O.K. TRY NEXT
4336   5521  5332          JMP     T104E       /ERROR
4337   5522  2156   NEXFL5, ISZ     TCNTR1
4338   5523  7610          SKP CLA
4339   5524  5331          JMP     T104D       /DONE WITH ALL
4340   5525  1305          TAD     TOFLD5
4341   5526  1073          TAD     K0010
4342   5527  3305          DCA     TOFLD5      /SET TO NEXT FIELD
4343   5530  5275          JMP     T104R       /TRY IT
4344   5531  4435   T104D,  NERROR             /O.K 4096 LOOPS
4345   5532  4436   T104E,  ERROR              /ERROR, DATA BREAK
4346   5533  5456          TST104              /SCOPE LOOP POINTER
```

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4347   5534  4263          4263                /TEXT POINTER
4348   5535  5736          JMP I   .+1
4349   5536  5600          TST105
4350         5600   PAGE
4351               /
4352               /VEPIFY THAT DATA BREAK WORKS FROM ALL LOCATIONS
4353               /IN ALL EXISTING EXTENDED FIELDS.
4354               /USE DATA PATTERN ALL COMBINATIONS
4355               /
4356   5600  1150   TST105, TAD     KCDF
4357   5601  3221          DCA     TOFLD1
4358   5602  1176          TAD     FLDMAX
4359   5603  3156          DCA     TCNTR1
4360   5604  1433          TAD I   THSFLD
4361   5605  3245          DCA     RTFLD1
4362   5606  1153          TAD     REG1
4363   5607  3163          DCA     GDREG2      /SETUP COMPARE REGISTER
4364   5610  7301   T105R,  CLA CLL IAC
4365   5611  4453          CLRALL              /DCLR
4366   5612  4444          ENMAN1              /ENTER MAINTENANCE MODE
4367   5613  1221          TAD     TOFLD1
4368   5614  7041          CIA
4369   5615  1245          TAD     RTFLD1
4370   5616  7650          SNA CLA             /IS IT CURRENT FIELD
4371   5617  5255          JMP     NEXFL1      /YES, BYPASS
4372   5620  1163          TAD     GDREG2
4373   5621  0000   TOFLD1, 0                  /MODIFIED CDF
4374   5622  3554          DCA I   REG2        /STORE DATA WORD
4375   5623  1221          TAD     TOFLD1
4376   5624  0114          AND     K0070       /MASK DF BITS
4377   5625  1106          TAD     K4000
4378   5626  4450          LDCMD               /LOAD COMMAND REGISTER
4379   5627  1154          TAD     REG2
4380   5630  4451          LDCUR               /LOAD CURRFNT ADDRESS
4381   5631  1076          TAD     K0040       /ENABLE BREAK
4382   5632  4455          LDMAN               /GO
4383   5633  7301          CLA CLL IAC
4384   5634  1154          TAD     REG2
4385   5635  3172          DCA     ADRFG       /SETUP BREAK TO ADDRESS
4386   5636  1221          TAD     TOFLD1
4387   5637  0114          AND     K0070       /MASK FIELD BITS
4388   5640  4450          LDCMD               /LOAD COMMAND
4389   5641  1076          TAD     K0040
4390   5642  4455          LDMAN               /LOAD MAINTENANCE
4391   5643  7300          CLA CLL
4392   5644  1572          TAD I   ADREG       /GET DATA READ
4393   5645  0000   RTFLD1, 0                  /CURRENT FIELD CDF
4394   5646  3173          DCA     DTREG       /STORE FOR PRINTER
4395   5647  1173          TAD     DTREG
4396   5650  4440          ACCMP1              /CHECK RESULTS
4397   5651  7610          SKP CLA             /THIS FIELD O.K.
4398   5652  5265          JMP     T105E       /FRROR
4399   5653  2163          ISZ     GDREC2      /UPDATE WORD
4400   5654  7000          NOP
4401   5655  2156   NEXFL1, ISZ     TCNTR1
```

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4402    5656    7610            SKP CLA
4403    5657    5264            JMP       T105D             /ALL DONE
4404    5660    1221            TAD       TOFLD1
4405    5661    1073            TAD       K0010
4406    5662    3221            DCA       TOFLD1
4407    5663    5210            JMP       T105R             /TRY NEXT FIELD
4408    5664    4435    T105D,  NERROR                      /O.K. NEXT ADDRESS
4409    5665    4436    T105E,  ERROR                       /ERROR, DATA BREAK
4410    5666    5600            TST105                      /SCOPE LOOP POINTER
4411    5667    4263            4263                         /TEXT POINTER
4412                    /
4413    5670    4405    ENDTST, SET                         /SETUP FIELD 0
4414    5671    1007            TAD       SAVEND
4415    5672    3532            DCA I     K7777             /REPLACE BINARY
4416    5673    1022            TAD       22
4417    5674    0106            AND       K4000             /TEST FOR APT
4418    5675    7650            SNA CLA                     /APT??
4419    5676    5301            JMP       .+3               /NO, NORMAL RUN
4420    5677    2371            ISZ       PCOUNT
4421    5700    5317            JMP       ENDHLT+1          /LOOP PROGRAM
4422    5701    4406            CLASIC                      /CHECK FOR CONSOLE CLASSIC
4423    5702    4424            C0PASS                      /CHECK FOR PASS COMPLETE TYPEOUT.
4424    5703    7610            SKP CLA
4425    5704    5310            JMP       .+4               /BYPASS NORMAL TYPEOUT.
4426    5705    4462            CRLF
4427    5706    4457            PRNTER                      /PRINT END OF TEST MESSAGE
4428    5707    7562            TEXEND                      /POINTER
4429    5710    4404            LAS
4430    5711    7004            RAL
4431    5712    7710            SPA CLA
4432    5713    5317            JMP       .+4               /NO STOP.
4433    5714    4406            CLASIC                      /CHECK FOR CLASSIC.
4434    5715    4437            CRINQU                      /ROUTINE TO EXECUTE.
4435    5716    7402    ENDHLT, HLT                         /END OF TEST
4436    5717    7301            CLA CLL IAC
4437    5720    4453            CLRALL                      /DCLR
4438    5721    5722            JMP I     .+1               /LOOP ON PROGRAM
4439    5722    0766            TST4
4440                    /
4441
4442                    /MANUAL TEST FOR 16 BIT COUNTER.
4443                    /SET SWITCH REGISTER TO 0201 AND PRESS
4444                    /LOAD ADDRESS. SET THE SWITCH REGISTER TO 0000.
4445                    /THEN PRESS CLEAR AND CONTINUE.
4446                    /SCOPE THE 16TH CARRY OUTPUT TEST POINT
4447                    /FOR A GROUND TO +3 VOLT SIGNAL.
4448                    /
4449    5723    7301    MANUL,  CLA CLL IAC
4450    5724    4453            CLRALL                      /FIRST, CLEAR CONTROL
4451    5725    4444            ENMAN1                      /ENTER MAINTENANCE MODE
4452    5726    1077            TAD       K0100             /ENABLE SHIFT PULSES
4453    5727    4455            LDMAN                       /ISSUE MAINTENANCE IOT AND
4454    5730    5327            JMP       .-1               /CAUSE HI MAIN SHIFTS TO THE
4455    5731    5327            JMP       .-2               /INPUT OF THE 16 BIT COUNTER.
4456                    /
```

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4457                    /THIS ROUTINE WILL BE A SKIP INSTRUCTION FOR SYSTEMS WITHOUT CLASSIC
4458                    /OTHERWISE IT WILL EXECUTE THE NEXT INSTRUCTION IN FIELD 0 AND THEN
4459                    /SKIP THE INSTRUCTION AFTER THAT ONE.
4460                    /
4461    5732    0000    CLASIK, 0
4462    5733    3363            DCA       SAVAC             /SAVE CURRENT AC.
4463    5734    1732            TAD I     CLASIK            /GET INSTRUCTION
4464    5735    3362            DCA       ROUTMP            /SAVE THE CLASSIC ROUTINE.
4465    5736    2332            ISZ       CLASIK            /BUMP AFTER THE CALL.
4466    5737    1022            TAD       OP2
4467    5740    0377            AND       (400)
4468    5741    7640            SZA CLA                     /IS THIS A CLASSIC SYSTEM?
4469    5742    5345            JMP       .+3               /YES.
4470    5743    1363            TAD       SAVAC             /NO THEN RETURN TO PROGRAM.
4471    5744    5732            JMP I     CLASIK
4472    5745    2332            ISZ       CLASIK
4473    5746    6211            CDF       10
4474    5747    1020            TAD       SWR
4475    5750    3776            DCA I     (SWR)             /MOVE POINTERS TO FIELD 1.
4476    5751    1021            TAD       OP1
4477    5752    3775            DCA I     (OP1)
4478    5753    1022            TAD       OP2
4479    5754    3774            DCA I     (OP2)
4480    5755    1362            TAD       ROUTMP
4481    5756    3773            DCA I     (ROUINS)          /SAVE ROUTINE IN FIELD 1.
4482    5757    1363            TAD       SAVAC
4483    5760    6212            CIF       10
4484    5761    5773            JMP I     (ROUINS)          /GO EXECUTE ROUTINE.
4485                    /
4486    5762    0000    ROUTMP, 0
4487    5763    0000    SAVAC,  0
4488                    /
4489                    /ROUTINE TO GET SWITCHES.
4490                    /
4491    5764    0000    MYLAS,  0
4492    5765    4406            CLASIC                      /CHECK IF CLASSIC.
4493    5766    4425            C0CKSW                      /GET SWITCHES.
4494    5767    7604            7604                         /NOP IF ON APT
4495    5770    5764            JMP I     MYLAS             /EXIT
4496                    /
4497    5771    0000    PCOUNT, 0
4498                    /
4499    5773    1302
4500    5774    0022
4501    5775    0021
4502    5776    0020
4503    5777    0400
        6000            PAGE
4504                    /SUBROUTINE TO WAIT FOR INTERRUPTS
4505                    /IF INTERRUPT OCCURES GO BACK +1
4506                    /
4507
4508    6000    0000    IONWT,  0
4509    6001    7300            CLA CLL
4510    6002    1112            TAD       K7700
```

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4511    6003  3233          DCA     COMP1
4512    6004  6001          ION                         /TURN IT ON
4513    6005  2233          ISZ     COMP1
4514    6006  5205          JMP     .-1
4515    6007  6002          IOF                         /TURN IT OFF
4516    6010  5600          JMP I   IONWT                   /NO INT OCCURED
4517    6011  2200  INTADD, ISZ     IONWT
4518    6012  4447          DSKSKP                      /DISK SKIP IOT
4519    6013  7410          SKP                         /ERROR
4520    6014  5600          JMP I   IONWT               /EXIT.
4521    6015  7240          CLA CMA
4522    6016  1200          TAD     IONWT
4523    6017  3200          DCA     IONWT               /RESET RETURN ADDRESS.
4524    6020  1022          TAD     22
4525    6021  0102          AND     K0400               /MASK CLASSIC.
4526    6022  7640          SZA CLA                     /ON CLASSIC?
4527    6023  6031          KSF                         /IF SO ALLOW KEY FLAG.
4528    6024  5227          JMP     .+3                 /NO KEY!
4529    6025  6032          KCC                         /WAS CLEAR FLAG.
4530    6026  5201          JMP     IONWT +1            /RETURN AND WAIT.
4531    6027  4406          CLASIC                      /CHECK FOR CLASSIC.
4532    6030  4436          C@ERR                       /ROUTINE TO EXECUTE.
4533    6031  7402  ERHLT1, HLT                         /ERROR, ILLEGAL INTERRUPT
4534    6032  5227          JMP     .-3                 /NON-RECOVERABLE ERROR.
4535                        /
4536                        /ROUTINE TO COMPARE AC TO GDREG2
4537                        /
4538    6033  0000  COMP1,  0
4539    6034  3174          DCA     ACREG
4540    6035  1174          TAD     ACREG               /SAVE AC
4541    6036  7041          CIA
4542    6037  1163          TAD     GDREG2
4543    6040  7640          SZA CLA                     /SKIP IF O.K.
4544    6041  2233          ISZ     COMP1               /ERROR, DON'T COMPARE
4545    6042  4424          TICK                        /GENERATE TIMING IF NEEDED
4546    6043  5633          JMP I   COMP1
4547                        /
4548                        /ROUTINE TO COMPARE CRREG1 AND CRREG2 TO
4549                        /GDREG1 AND GDREG2.
4550                        /
4551    6044  0000  COMP2,  0
4552    6045  7300          CLA CLL
4553    6046  1162          TAD     GDREG1
4554    6047  0145          AND     K0017
4555    6050  7041          CIA
4556    6051  1164          TAD     CRREG1
4557    6052  7640          SZA CLA
4558    6053  5260          JMP     CRERR               /NOT THE SAME
4559    6054  1165          TAD     CRREG2
4560    6055  7041          CIA
4561    6056  1163          TAD     GDREG2
4562    6057  7640          SZA CLA
4563    6060  2244  CRERR,  ISZ     COMP2               /ERROR, NOT THE SAME
4564    6061  4424          TICK                        /TIMING FOR APT IF NEEDED
4565    6062  5644          JMP I   COMP2
```

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4566                        /
4567                        /SUBROUTINE TO READ STATUS REGISTER
4568                        /
4569    6063  0000  RDST,   0
4570    6064  6745          IOT5,   DRST                /READ STATUS IOT
4571    6065  5272          JMP     .+5                 /O.K. NO SKIP.
4572    6066  4406          CLASIC                      /CHECK FOR CLASSIC.
4573    6067  4436          C@ERR                       /ROUTINE TO EXECUTE.
4574    6070  7402  ERHLT5, HLT                         /SKIP TRAP
4575    6071  5266          JMP     .-3                 /NON-RECOVERABLE ERROR.
4576    6072  3166          DCA     STREG               /SAVE RESULTS
4577    6073  1166          TAD     STREG
4578    6074  5663          JMP I   RDST                /EXIT
4579                        /
4580                        /SUBROUTINE TO LOAD CURRENT ADDRESS REGISTER
4581                        /
4582    6075  0000  LDCA,   0
4583    6076  3172          DCA     ADREG               /SAVE IN ADDRESS
4584    6077  1172          TAD     ADREG
4585    6100  6744          IOT4,   DLCA                /LOAD CURRENT ADDRESS IOT
4586    6101  5675          JMP I   LDCA                /EXIT
4587    6102  4406          CLASIC                      /CHECK FOR CLASSIC.
4588    6103  4436          C@ERR                       /ROUTINE TO EXECUTE.
4589    6104  7402  ERHLT4, HLT                         /SKIP TRAP ERROR
4590    6105  5302          JMP     .-3                 /NON-RECOVERABLE ERROR.
4591                        /
4592                        /
4593                        /SUBROUTINE TO LOAD DISK ADDRESS REGISTER
4594                        /
4595    6106  0000  LDAD,   0
4596    6107  3171          DCA     DAREG               /SAVE OUTBOUND DATA
4597    6110  1171          TAD     DAREG
4598    6111  6743          IOT3,   DLAG                /LOAD DISK ADDRESS REGISTER
4599    6112  5706          JMP I   LDAD                /EXIT
4600    6113  4406          CLASIC                      /CHECK FOR CLASSIC.
4601    6114  4436          C@ERR                       /ROUTINE TO EXECUTE.
4602    6115  7402  ERHLT3, HLT                         /SKIP TRAP ERROR
4603    6116  5313          JMP     .-3                 /NON-RECOVERABLE ERROR.
4604                        /
4605                        /
4606                        /SUBROUTINE TO LOAD COMMAND REGISTER
4607                        /
4608    6117  0000  LDCM,   0
4609    6120  3170          DCA     CMREG               /SAVE OUTBOUND DATA
4610    6121  1170          TAD     CMREG
4611    6122  6746          IOT6,   DLDC                /LOAD COMMAND REGISTER
4612    6123  5717          JMP I   LDCM                /EXIT
4613    6124  4406          CLASIC                      /CHECK FOR CLASSIC.
4614    6125  4436          C@ERR                       /ROUTINE TO EXECUTE.
4615    6126  7402  ERHLT6, HLT                         /SKIP TRAP ERROR.
4616    6127  5324          JMP     .-3                 /NON-RECOVERABLE ERROR.
4617                        /
4618                        /SUBROUTINE TO ISSUE "DSKP" DISK SKIP IOT
4619                        /
4620    6130  0000  SDKP,   0
```

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4621    6131    6741    IOT1,   DSKP                            /DISK SKIP IOT
4622    6132    7410            SKP                             /DID NOT SKIP
4623    6133    2330            ISZ     SDKP
4624    6134    5730            JMP I   SDKP                    /EXIT
4625                    /
4626                    /SUBROUTINE TO ISSUE "DCLR" CLEAR IOT
4627                    /
4628    6135    0000    CLDR,   0
4629    6136    6742    IOT2,   DCLR                            /DCLR "CLEAR IOT"
4630    6137    5735            JMP I   CLDR                    /EXIT
4631    6140    4406            CLASIC                          /CHECK FOR CLASSIC.
4632    6141    4436            C8ERR                           /ROUTINE TO EXECUTE.
4633    6142    7402    ERHLT2, HLT                             /SKIP TRAP ERROR
4634    6143    5340            JMP     .-3                     /NON-RECOVERABLE ERROR.
4635
4636                    /
4637                    /SUBROUTINE TO ISSUE "DMAN" MAINTENANCE IOT
4638                    /
4639    6144    0000    LDMN,   0
4640    6145    6747    IOT7,   DMAN                            /"DMAN" MAINTENANCE IOT
4641    6146    5744            JMP I   LDMN                    /EXIT
4642    6147    4406            CLASIC                          /CHECK FOR CLASSIC.
4643    6150    4436            C8ERR                           /ROUTINE TO EXECUTE.
4644    6151    7402    ERHLT7, HLT                             /SKIP TRAP ERROR.
4645    6152    5347            JMP     .-3                     /NON-RECOVERABLE ERROR.
4646            6200    PAGE
4647                    /
4648                    /SUBROUTINE TO SHIFT, THEN READ DISK
4649                    /ADDRESS INTO DATA BUFFER, 12 SHIFTS
4650                    /
4651    6200    0000    RDAD,   0
4652    6201    4445            ENMAN2                          /ENTER MAINTENANCE MODE + DB4=1
4653    6202    1134            TAD     M5
4654    6203    3155            DCA     SBCNT1                  /SETUP COUNTER
4655    6204    1103            TAD     K1000                   /ENABLE SHIFT CRC
4656    6205    1100            TAD     K0200                   /ENABLE SHIFT SURFACE AND SECTOR
4657    6206    4455            LDMAN                           /LOAD MAINTENANCE
4658    6207    2155            ISZ     SBCNT1                  /FOUR SHIFTS
4659    6210    5206            JMP     .-2                     /MORE TO GO
4660    6211    7300            CLA CLL
4661    6212    1135            TAD     M7
4662    6213    3155            DCA     SBCNT1
4663    6214    1103            TAD     K1000                   /SHIFT CRC
4664    6215    4455            LDMAN                           /LOAD MAINTENANCE IOT
4665    6216    2155            ISZ     SBCNT1
4666    6217    5215            JMP     .-2                     /SHIFT 12 BITS
4667    6220    7300            CLA CLL
4668    6221    1074            TAD     K0020
4669    6222    4455            LDMAN                           /READ DATA BUFFER
4670    6223    3171            DCA     DAREG                   /SAVE RESULTS
4671
4672
4673    6224    1171            TAD     DAREG
4674    6225    5600            JMP I   RDAD                    /EXIT
4675                    /
```

```
4676                    /SUBROUTINE TO READ DATA BUFFER TO AC
4677                    /
4678    6226    0000    RDBF,   0
4679    6227    7330            CLA CLL CML RAR
4680    6230    4455            LDMAN                           /ENTER MAINTENANCE MODE
4681    6231    1074            TAD     K0020
4682    6232    4455            LDMAN                           /LOAD MAINTENANCE
4683    6233    3167            DCA     DBREG
4684    6234    1167            TAD     DBREG
4685    6235    3173            DCA     DTREG
4686    6236    1173            TAD     DTREG
4687    6237    5626            JMP I   RDBF                    /EXIT
4688                    /
4689                    /SUBROUTINE TO SHIFT COMMAND    REGISTER TO
4690                    /DATA BUFFER THEN READ DATA BUFFER
4691                    /
4692    6240    0000    RDCM,   0
4693    6241    4445            ENMAN2                          /ENTER MAINTENANCE MODE + DB4=1
4694    6242    1136            TAD     M12
4695    6243    3155            DCA     SBCNT1                  /12 BIT SHIFT
4696    6244    1102            TAD     K0400                   /ENABLE BIT FOR SHIFT COMMAND
4697    6245    4455            LDMAN                           /LOAD AND GO
4698    6246    2155            ISZ     SBCNT1
4699    6247    5245            JMP     .-2                     /SHIFT 12
4700    6250    7300            CLA CLL
4701    6251    1074            TAD     K0020                   /ENABLE READ BUFFER
4702    6252    4455            LDMAN                           /LOAD AND GO
4703    6253    3170            DCA     CMREG                   /SAVE IT
4704    6254    1170            TAD     CMREG
4705    6255    5640            JMP I   RDCM                    /EXIT
4706                    /
4707                    /ROUTINE TO ENTER MAINTENANCE MODE
4708                    /
4709    6256    0000    MAIN1,  0
4710    6257    7330            CLA CLL CML RAR                 /ENABLE MAINTENANCE BIT
4711    6260    4455            LDMAN                           /ENTER MAINTENANCE MODE
4712    6261    7300            CLA CLL
4713    6262    5656            JMP I   MAIN1
4714                    /
4715                    /
4716                    /
4717                    /
4718                    /SUBROUTINE TO SHIFT CRC REGISTER TO DATA
4719                    /BUFFER THEN READ IT.
4720                    /
4721    6263    0000    RDCR,   0
4722    6264    4445            ENMAN2                          /ENTER MAINTENANCE MODE + DB4=1
4723    6265    1136            TAD     M12
4724    6266    3155            DCA     SBCNT1                  /12 SHIFTER
4725    6267    1103            TAD     K1000                   /ENABLE SHIFT CRC
4726    6270    4455            LDMAN                           /LOAD AND GO
4727    6271    2155            ISZ     SBCNT1
4728    6272    5270            JMP     .-2                     /12 BIT SHIFT
4729    6273    7300            CLA CLL
4730    6274    1074            TAD     K0020                   /ENABLE READ BUFFER
```

```
4731    6275  4455              LDMAN
4732    6276  3165              DCA     CRREG2                          /SAVE IT
4733    6277  4445              ENMAN2                          /ENTER MAINTENANCE MODE + DB4=1
4734    6300  1136              TAD     M12
4735    6301  3155              DCA     SBCNT1                          /12 BIT SHIFTER
4736    6302  1103              TAD     K1000                           /ENABLE SHIFT CRC
4737    6303  4455              LDMAN                                   /LOAD AND GO
4738    6304  2155              ISZ     SBCNT1
4739    6305  5303              JMP     .-2                             /12 BIT SHIFT
4740
4741    6306  7300              CLA CLL
4742    6307  1074              TAD     K0020                           /ENABLE READ BUFFER
4743    6310  4455              LDMAN
4744    6311  0145              AND     K0017
4745    6312  3164              DCA     CRREG1                          /SAVE OTHER HALF
4746    6313  5663              JMP I   RDCR                            /EXIT
4747                    /
4748                    /
4749                    /SUBROUTINE TO PRINT TWO OCTAL
4750                    /
4751    6314  0000      TOCT,   0
4752    6315  3155              DCA     SBCNT1                          /SAVE AC
4753    6316  1155              TAD     SBCNT1
4754    6317  7010              RAR
4755    6320  7012              RTR
4756    6321  0072              AND     K0007
4757    6322  1063              TAD     K0260
4758    6323  4434              TYPE                                    /PRINT FIRST BYTE
4759    6324  1155              TAD     SBCNT1
4760    6325  0072              AND     K0007
4761    6326  1063              TAD     K0260
4762    6327  4434              TYPE                                    /PRINT SECOND BIT
4763    6330  5714              JMP I   TOCT                            /EXIT
4764                    /
4765                    /
4766                    /
4767                    /ROUTINE TO DO CRLF
4768                    /
4769    6331  0000      UPONE,  0
4770    6332  7300              CLA CLL
4771    6333  1146              TAD     K0215
4772    6334  4434              TYPE
4773    6335  1147              TAD     K0212
4774    6336  4434              TYPE
4775    6337  4434              TYPE                    /TYPE ONE NULL
4776    6340  5731              JMP I   UPONE
4777          6400      PAGE
4778                    /
4779                    /ROUTINE TO PRINT FOUR OCTAL
4780                    /
4781    6400  0000      FROCT,  0
4782    6401  7006              RTL
4783    6402  7006              RTL
4784    6403  3777'             DCA     UPONE
4785    6404  1130              TAD     K7774
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```
4786    6405  3776'             DCA     TOCT
4787    6406  1777'             TAD     UPONE
4788    6407  0072              AND     K0007
4789    6410  1063              TAD     K0260
4790    6411  4434              TYPE
4791    6412  1777'             TAD     UPONE
4792    6413  7006              RTL
4793    6414  7004              RAL
4794    6415  3777'             DCA     UPONE
4795    6416  2776'             ISZ     TOCT
4796    6417  5206              JMP     .-11
4797    6420  1261              TAD     K0240
4798    6421  4434              TYPE
4799    6422  5600              JMP I   FROCT
4800                    /
4801                    /SUBROUTINE TO PRINT TEXT
4802                    /
4803    6423  0000      PRN,    0
4804    6424  7300              CLA CLL
4805    6425  1623              TAD I   PRN                     /GET POINTER
4806
4807    6426  2223              ISZ     PRN
4808    6427  3200              DCA     FROCT
4809    6430  1600              TAD I   FROCT
4810    6431  0112              AND     K7700
4811    6432  7450              SNA
4812    6433  5257              JMP     EXIT
4813    6434  7500              SMA
4814    6435  7020              CML
4815    6436  7001              IAC
4816    6437  7012              RTR
4817    6440  7012              RTR
4818    6441  7012              RTR
4819    6442  4434              TYPE
4820    6443  1600              TAD I   FROCT
4821    6444  0115              AND     K0077
4822    6445  7450              SNA
4823    6446  5257              JMP     EXIT
4824    6447  1262              TAD     K3740
4825    6450  7500              SMA
4826    6451  1124              TAD     K4100
4827    6452  1261              TAD     K0240
4828    6453  4434              TYPE
4829    6454  2200              ISZ     FROCT
4830    6455  7300              CLA CLL
4831    6456  5230              JMP     PRN+5
4832    6457  7300      EXIT,   CLA CLL
4833    6460  5623              JMP I   PRN
4834                    /
4835    6461  0240      K0240,  0240
4836    6462  3740      K3740,  3740
4837                    /
4838                    /ROUTINE TO TYPE
4839                    /
4840    6463  0000      PRINT,  0
```

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4841    6464    4406            CLASIC                  /CHECK FOR CLASSIC.
4842    6465    4435            C8TYPE                  /ROUTINE TO EXECUTE.
4843    6466    7410            SKP
4844    6467    5663            JMP I    PRINT          /INHIBIT TYPE.
4845    6470    6046            TLS
4846    6471    6041            TSF
4847    6472    5271            JMP     .-1
4848    6473    6042            TCF
4849    6474    7200            CLA
4850    6475    5663            JMP I    PRINT
4851                    /
4852                    /ROUTINE TO GET ALL REGISTERS AFTER "ERHLT9"
4853                    /
4854    6476    0000    DUMP,    0
4855    6477    4404            LAS
4856    6500    0102            AND     K0400           /MASK SWITCH 3
4857    6501    7650            SNA CLA                 /WAS IT GET ALL
4858    6502    5676            JMP I    DUMP           /NO
4859    6503    4442            RDSTAT                  /GET STATUS
4860    6504    4456            RDBUF                   /READ BUFFER
4861    6505    7300            CLA CLL
4862    6506    1136            TAD     M12             /12 BIT COUNTER
4863    6507    3263            DCA     PRINT
4864    6510    1100            TAD     K0200           /ENABLE SHIFT SECTOR AND SURFACE
4865    6511    4455            LDMAN                   /LOAD MAINTENANCE
4866    6512    2263            ISZ     PRINT           /12 BIT SHIFT
4867    6513    5311            JMP     .-2
4868    6514    7300            CLA CLL
4869    6515    1074            TAD     K0020           /ENABLE READ BUFFER
4870    6516    4455            LDMAN                   /LOAD MAINTENANCE
4871    6517    3171            DCA     DAREG           /SAVE SURFACE AND SECTOR
4872    6520    4454            RDCRC                   /READ CRC
4873    6521    4443            RDCMD                   /READ COMMAND
4874    6522    4462            CRLF
4875    6523    1125            TAD     K7600
4876    6524    2276            ISZ     DUMP
4877    6525    5676            JMP I    DUMP           /REPORT
4878                    /
4879    6576    6314
4880    6577    6331
        6600            PAGE
4881                    /
4882                    /SUBROUTINE FOR "ERRORS," SCOPE LOOPS, AND
4883                    /ERROR TYPEOUTS.
4884                    /
4885    6600    0000    ERRO,    0
4886    6601    7300            CLA CLL
4887    6602    4425            AERRO                   /REPORT ERROR TO APT IF NEED BE.
4888    6603    1600            TAD I    ERRO                   /GET SCOPE LOOP POINTER
4889    6604    3340            DCA     SERRO                   /SAVE FOR RETURN
4890    6605    4404            LAS                             /GET SWR0
4891    6606    7700            SMA CLA                         /IS IT SCOPE LOOP
4892    6607    5217            JMP     .+10            /NO SCOPE
4893    6610    4404            LAS                     /GET SWITCH 2
4894    6611    7006            RTL
```

```
4895    6612    7710            SPA CLA                 /INHIBIT ERROR BELL
4896    6613    5740            JMP I    SERRO          /YES
4897    6614    1101            TAD     K0207
4898    6615    4434            TYPE
4899    6616    5740            JMP I    SERRO          /NO
4900    6617    2200            ISZ     ERRO
4901    6620    4462            CRLF
4902    6621    4462            CRLF
4903    6622    1600            TAD I    ERRO                   /GET TEXT POINTER
4904    6623    0145            AND     K0017                   /MASK 8-11
4905    6624    1346            TAD     HEDTAD          /MAKE ERROR HEADER TAD
4906    6625    3226            DCA     .+1
4907    6626    7402            HLT                     /MODIFIED HEADER TAD
4908    6627    3231            DCA     .+2
4909    6630    4457            PRNTER                          /MODIFIED HEADER POINTER
4910    6631    7402            HLT
4911    6632    4462            CRLF
4912    6633    4457            PRNTER                  /PRINT PC:
4913    6634    7400            TEXPC
4914    6635    7340            CLA CLL CMA
4915    6636    1200            TAD     ERRO                    /GET PC POINTER
4916    6637    4460            OCTEL                   /PRINT PC STORED
4917    6640    1600            TAD I    ERRO           /GET TEXT POINTER
4918    6641    7104            CLL RAL
4919    6642    7420            SNL
4920    6643    5257            JMP     NTGD                    /NOT GD: REGISTER
4921
4922
4923    6644    3200            DCA     ERRO
4924    6645    4457            PRNTER                          /PRINT GD:
4925    6646    7402            TEXGD
4926    6647    1200            TAD     ERRO
4927    6650    7700            SMA CLA                 /WAS IT A 6 BIT OCTAL BYTE
4928    6651    5254            JMP     .+3             /NO
4929    6652    1162            TAD     GDREG1          /GET DATA
4930    6653    4461            TWOCT                   /PRINT TWO OCTAL
4931    6654    1163            TAD     GDREG2
4932    6655    4460            OCTEL                   /PRINT FOUR OCTAL
4933    6656    7610            SKP CLA
4934    6657    3200    NTGD,    DCA     ERRO
4935    6660    1200            TAD     ERRO            /GET TEXT POINTER
4936    6661    7104            CLL RAL
4937    6662    7420            SNL
4938    6663    5274            JMP     NTCRC
4939    6664    3200            DCA     ERRO
4940    6665    4457            PRNTER                  /PRINT CR:
4941    6666    7404            TEXCR
4942    6667    1164            TAD     CRREG1
4943    6670    4461            TWOCT                   /PRINT
4944    6671    1165            TAD     CRREG2
4945    6672    4460            OCTEL                   /PRINT FOUR OCTAL
4946    6673    7610    NTCRC,   SKP CLA
4947    6674    3200            DCA     ERRO
4948    6675    1342            TAD     XTEXT
4949    6676    3345            DCA     PCNTR2
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4950    6677   1343            TAD     XREG
4951    6700   3010            DCA     AUTO10
4952    6701   1131            TAD     K7771
4953    6702   3344            DCA     PCNTR1                          /COUNTER FOR    # OF HEADS
4954    6703   1200    STRAUT, TAD     ERRO                            /GET TEXT POINTER
4955    6704   7500            SMA
4956    6705   5332            JMP     NOTEX                           /NOT THIS ONE
4957    6706   7104            CLL RAL
4958    6707   3200            DCA     ERRO
4959    6710   1345            TAD     PCNTR2                          /GET TEXT MESSAGE POINTER
4960    6711   2345            ISZ     PCNTR2
4961    6712   2345            ISZ     PCNTR2
4962    6713   3315            DCA     .+2                             /STORE FOR PRNTER
4963    6714   4457            PRNTER                                  /PRINT XX:
4964    6715   7402            HLT                                     /MODIFIED TEXT POINTER
4965    6716   1410            TAD I   AUTO10
4966    6717   4460            OCTEL                                   /PRINT FOUR OCTAL
4967    6720   2344    BAKPNT, ISZ     PCNTR1
4968    6721   5303            JMP     STRAUT                          /CHECK FOR NEXT XX:
4969    6722   1007            TAD     SAVEND                          /GET CONSTANT SAVED
4970    6723   3532            DCA I   K7777                           /REPLACE LAST LOCATION
4971    6724   4406            CLASIC                                  /CHECK FOR CLASSIC.
4972    6725   4436            C8ERR                                   /ROUTINE TO EXECUTE!!!!
4973    6726   7402    ERHLT9, HLT                                     /ALL RECOVERABLE ERROR HALTS
4974    6727   4741            JMS I   XDUMP                           /CHECK FOR GET ALL REGISTERS
4975    6730   5740            JMP I   SERRO                           /TRY SAME TEST AGAIN
4976    6731   5257            JMP     NTGD                            /GET ALL REGISTERS
4977    6732   7104    NOTEX,  CLL RAL
4978    6733   3200            DCA     ERRO
4979    6734   2345            ISZ     PCNTR2
4980    6735   2345            ISZ     PCNTR2
4981    6736   2010            ISZ     AUTO10
4982    6737   5320            JMP     BAKPNT
4983                          /
4984    6740   0000    SERRO,  0
4985    6741   6476    XDUMP,  DUMP
4986    6742   7436    XTEXT,  TEXST
4987    6743   0165    XREG,   CPREG2
4988    6744   0000    PCNTR1, 0
4989    6745   0000    PCNTR2, 0
4990    6746   1347    HEDTAD, TAD     HEDLST
4991    6747   7424    HEDLST, ERTX1
4992    6750   7437            ERTX2
4993    6751   7453            ERTX3
4994    6752   7471            ERTX4
4995    6753   7502            ERTX5
4996    6754   7514            ERTX6
4997    6755   7526            ERTX7
4998    6756   7536            ERTX8
4999    6757   7551            ERTX9
5000                          /
5001                          /
5002                          /ROUTINE TO ENTER MAINTENANCE MODE AND
5003                          /SET DB4=1 TO ENABLE SHIFT TO LOWER SILO
5004                          /
```

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5005    6760   0000    MAIN2,  0
5006    6761   7330            CLA CLL CML RAR                         /ENABLE SET MAINTENANCE MODE
5007    6762   4455            LDMAN                                   /LOAD MAINTENANCE
5008    6763   7010            RAR                                     /ENABLE SET DB4=1
5009    6764   4455            LDMAN                                   /LOAD MAINTENANCE
5010    6765   7300            CLA CLL
5011    6766   5760            JMP I   MAIN2
5012           7000    PAGE
5013                          /
5014                          /SUBROUTINE FOR "NO ERRORS" AND SCOPE
5015                          /LOOPS. UPDATE UP COUNTER "REG1" AND
5016                          /DOWN COUNT "REG2" ON EVERY ENTRY.
5017                          /
5018    7000   0000    NERRO,  0
5019    7001   4406            CLASIC                                  /CHECK FOR CLASSIC.
5020    7002   4440            C8CKPA                                  /ROUTINE TO EXECUTE.
5021    7003   7000            NOP
5022    7004   4404            LAS                                     /GET SWITCH 4
5023    7005   0100            AND     K0200                           /MASK
5024    7006   7650            SNA CLA                                 /WAS IT SET
5025    7007   5215            JMP     STPHLT +1                       /NO DON'T HALT
5026    7010   1007            TAD     SAVEND                          /GET BINARY END
5027    7011   3532            DCA I   K7777                           /REPLACE IT
5028    7012   4406            CLASIC                                  /CHECK FOR CLASSIC.
5029    7013   4437            CRINQU                                  /WAIT FOR OPERATOR.
5030    7014   7402    STPHLT, HLT                                     /STOP PROGRAM HALT
5031    7015   2200            ISZ     NERRO                           /UPDATE PC STORE
5032    7016   1600            TAD I   NERRO                           /GET SCOPE LOOP POINTER
5033    7017   3237            DCA     SNERRO                          /STORE FOR RETURN
5034    7020   4404            LAS                                     /GET SWITCH 0
5035    7021   7710            SPA CLA                                 /ENTER SCOPE LOOP
5036    7022   5637            JMP I   SNERRO                          /YES
5037    7023   2153            ISZ     REG1                            /UPDATE UPCOUNTER
5038    7024   7610            SKP CLA
5039    7025   5233            JMP     NEXTST                          /END OF PARTICULAR TEST
5040    7026   1153            TAD     REG1
5041    7027   7140            CLL CMA
5042    7030   3154            DCA     REG2                            /SETUP DOWN COUNTER
5043    7031   4424    NEXT,   TICK                                   /REPLACED WITH TIMING IF ON APT
5044    7032   5637            JMP I   SNERRO                          /BACK TO SAME TEST
5045    7033   2200    NEXTST, ISZ     NERRO                           /UPDATE          PC STORE
5046    7034   2200            ISZ     NERRO                           /UPDATE PC STORE
5047    7035   5600            JMP I   NERRO                           /TO NEXT SEQUENTIAL TEST
5048                          /
5049    7036   0000    TOTST,  0
5050    7037   0000    SNERRO, 0
5051                          /
5052                          /SUBROUTINE TO SETUP FIELD 0
5053                          /
5054    7040   0000    SETUP,  0
5055    7041   1433            TAD I   THSFLD                          /GET HOME DF
5056    7042   3252            DCA     BAKFLD
5057    7043   1151            TAD     KRMF                            /GET RMF FOR INT. RETURN
5058    7044   6201            CDF     0                               /SWITCH FIELD 0
5059    7045   3465            DCA I   K0001
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5060   7046  1254            TAD     K5403       /JMP I 3 FOR LOC. 2
5061   7047  3466            DCA I   K0002
5062   7050  1031            TAD     INTRO       /GET ADDRESS RETURN
5063   7051  3467            DCA I   K0003
5064   7052  7402   BAKFLD,  HLT                 /HOME DF
5065   7053  5640            JMP I   SETUP
5066                  /
5067   7054  5403   K5403,   5403
5068                  /
5069                  /ROUTINE TO LOAD UPPER BUFFER
5070                  /
5071   7055  0000   UPPER,   0
5072   7056  3236            DCA     TOTST       /SAVE DATA
5073   7057  7301            CLA CLL IAC
5074   7060  3237            DCA     SNERRO      /SETUP SHIFTER MASKER
5075   7061  1136            TAD     M12
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5076   7062  3200            DCA     NERRO       /SETUP COUNTER
5077   7063  4444            ENMAN1              /ENTER MAINTENANCE MODE
5078   7064  1236   UPPR1,   TAD     TOTST       /GET DATA
5079   7065  0237            AND     SNERRO      /MASK
5080   7066  7640            SZA CLA             /A ONE OR ZERO????
5081   7067  1066            TAD     K0002       /A ONE!!!!
5082   7070  1077            TAD     K0100       /ENABLE SHIFT
5083   7071  4455            LDMAN               /LOAD MAINTENANCE
5084   7072  7300            CLA CLL
5085   7073  1237            TAD     SNERRO
5086   7074  7104            CLL RAL
5087   7075  3237            DCA     SNERRO
5088   7076  2200            ISZ     NERRO       /COUNT BITS
5089   7077  5264            JMP     UPPR1       /MORE TO GO
5090   7100  5655            JMP I   UPPER       /UPPER BUFFER LOADED
5091                  /
5092                  /ROUTINE TO CHANGE PROGRAM DEVICE CODES
5093                  /
5094   7101  4406   CHANG,   CLASIC              /CHECK FOR CLASSIC.
5095   7102  4431            CBSWIT              /ROUTINE TO EXECUTE.
5096   7103  7000            NOP
5097   7104  4404            LAS
5098   7105  0332            AND     A0770
5099   7106  3236            DCA     TOTST       /SAVE DESIRED
5100   7107  1334            TAD     CHNPOT
5101   7110  3255            DCA     UPPER
5102   7111  1333            TAD     CCNTR1
5103   7112  3237            DCA     SNERRO      /A FEW POINTERS
5104   7113  1655   CHANGR,  TAD I   UPPER       /GET ADDRESS POINTER
5105   7114  3240            DCA     SETUP       /SAVE IT
5106   7115  1640            TAD I   SETUP       /GET OLD IOT CODE
5107   7116  0331            AND     A7007
5108   7117  1236            TAD     TOTST       /ADD IN DESIRED
5109   7120  3640            DCA I   SETUP       /CHANGE CODE
5110   7121  2255            ISZ     UPPER       /UPDATE POINTER
5111   7122  2237            ISZ     SNERRO      /UPDATE CHANGE COUNTER
5112   7123  5313            JMP     CHANGR
5113   7124  4406            CLASIC              /CHECK FOR CLASSIC.
5114   7125  4436            CBEPR               /ROUTINE TO EXECUTE.
5115   7126  7402   CHNHLT,  HLT                 /DEVICE CODES CHANGED, PRESS
5116   7127  5730            JMP I   XBGN        /CONTINUE OR IF ON CONSOLE
5117                                             /PACKAGE HIT CONTROL E.
5118                  /
5119   7130  0200   XBGN,    BGN
5120                  /
5121   7131  7007   A7007,   7007
5122   7132  0770   A0770,   0770
5123   7133  7771   CCNTR1,  7771
5124   7134  7135   CHNPOT,  CHNPOT +1
5125   7135  6131            IOT1
5126   7136  6136            IOT2
5127   7137  6111            IOT3
5128   7140  6100            IOT4
5129   7141  6064            IOT5
5130   7142  6122            IOT6
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5131    7143  6145          IOT7
5132                  /
5133          7200          PAGE
5134                  /THIS ROUTINE TEST FOR BEING ON THE APT OR ACT SYSTEMS.
5135                  /IF ON APT CONSOLE PACKAGE AND SWITCH REGISTER FUNCTIONS
5136                  /ARE NOP'S.
5137                  /
5138                  /
5139    7200  0000    APT8,   0
5140    7201  1022            TAD  22                   /HARWARE CONFIGURATION
5141    7202  0106            AND       K4000
5142    7203  7650            SNA CLA                   /SKIP IF ON ACT OR APT
5143    7204  5600            JMP I     APT8            /RETURN TO MAIN PROGRAM
5144    7205  1022            TAD       22
5145    7206  0264            AND       K7377           /MAKE SURE CONSOLE DISABLED
5146    7207  3022            DCA 22
5147    7210  1107            TAD       K7000
5148    7211  3663            DCA I     XMYLAS          /NOP SWITCH REGISTER FUNCTIONS
5149    7212  1200            TAD       APT8
5150    7213  1070            TAD       K0004
5151    7214  3200            DCA       APT8
5152    7215  1021            TAD       21              /GET MEMORY SIZE
5153    7216  7012            RTR                       /SET UP MEMORY SIZE
5154    7217  5600            JMP I APT8                /NOW ON APT.  RETURN IS PLUS 4.
5155                  /
5156                  /THIS ROUTINE WILL GENERATE THE TIMING REQUIRED BY
5157                  /APT OR ACT.
5158                  /
5159    7220  0000    KTICK,  0
5160    7221  1022            TAD       22
5161    7222  0106            AND       K4000           /SEE IF ON APT
5162    7223  7650            SNA CLA
5163    7224  5620            JMP I     KTICK           /NOT ON APT
5164    7225  2266            ISZ CLKCNT                /INCREMENT COUNTER
5165    7226  5620            JMP I KTICK               /NO
5166    7227  6002            IOF                       /DISABLE INTERUPTS
5167    7230  6214            RDF                       /GET PRESENT DATA FIELD
5168    7231  1150            TAD KCDF
5169    7232  3233            DCA .+1                   /ESTABLISHES CURRENT DATA FIELD
5170    7233  7402            HLT                       /REPLACED WITH CURRENT DATA FIELD
5171    7234  6272            CIF 70                    /FIELD 7. LOCATION OF UV PROM
5172    7235  4777            JMS I (6500
5173    7236  1376            TAD (-2777                /ABOUT 1.5 SEC ON MOST TESTS
5174    7237  3266            DCA CLKCNT
5175    7240  5620            JMP I KTICK
5176                  /
5177                  /THIS ROUTINE WILL NOTIFY APT OF AN ERROR AND SEND PC TO
5178                  /APT SYSTEM
5179                  /
5180    7241  0000    WAERRO, 0
5181    7242  1022            TAD       22
5182    7243  0106            AND       K4000           /SEE IF ON APT
5183    7244  7650            SNA CLA
5184    7245  5641            JMP I     WAERRO          /NO
5185    7246  6002            IOF                       /DISABLE INTERUPTS
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5186    7247  7200            CLA
5187    7250  1775            TAD I (ERRO               /GET PC
5188    7251  3265            DCA SAVPC
5189    7252  6214            RDF                       /GET CURRENT DATA FIELD
5190    7253  1774            TAD I (KCDF
5191    7254  3256            DCA .+2
5192    7255  1265            TAD SAVPC
5193    7256  7402            HLT                       /REPLACED WILL CURRENT DATA FIELD
5194    7257  6272            CIF       70              /FIELD OF UVPROM
5195    7260  5773            JMP I (6520               /NOTIFIES APT OF ERROR
5196    7261  7200            CLA
5197    7262  5641            JMP I WAERRO
5198                  /
5199    7263  5767    XMYLAS, MYLAS+3
5200    7264  7377    K7377,  7377
5201    7265  0000    SAVPC,  0
5202    7266  5001    CLKCNT, -2777
5203    7373  6520
5204    7374  0150
5205    7375  6600
5206    7376  5001
5207    7377  6500
              7400          PAGE
5208    7400  2003    TEXPC,  TEXT      "PC:"
        7401  7200
5209    7402  0704    TEXGD,  TEXT      "GD:"
        7403  7200
5210    7404  0322    TEXCR,  TEXT      "CR:"
        7405  7200
5211    7406  2324    TEXST,  TEXT      "ST:"
        7407  7200
5212    7410  0402    TEXDB,  TEXT      "DB:"
        7411  7200
5213    7412  0315    TEXCM,  TEXT      "CM:"
        7413  7200
5214    7414  0401    TEXDA,  TEXT      "DA:"
        7415  7200
5215    7416  0104    TEXAD,  TEXT      "AD:"
        7417  7200
5216    7420  0424    TEXDT,  TEXT      "DT:"
        7421  7200
5217    7422  0103    TEXAC,  TEXT      "AC:"
        7423  7200
5218                  /
5219    7424  2324    ERTX1,  TEXT      "STATUS REGISTER ERROR"
        7425  0124
        7426  2523
        7427  4022
        7430  0507
        7431  1123
        7432  2405
        7433  2240
        7434  0522
        7435  2217
        7436  2200
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5220    7437    0317    ERTX2,  TEXT    "COMMAND REGISTER ERROR"
        7440    1515
        7441    0116
        7442    0440
        7443    2205
        7444    0711
        7445    2324
        7446    0522
        7447    4005
        7450    2222
        7451    1722
        7452    0000
5221    7453    0411    ERTX3,  TEXT    "DISK ADDRESS REGISTER ERROR"
        7454    2313
        7455    4001
        7456    0404
        7457    2205
        7460    2323
        7461    4022
        7462    0507
        7463    1123
        7464    2405
        7465    2240
        7466    0522
        7467    2217
        7470    2200
5222    7471    0401    ERTX4,  TEXT    "DATA BREAK ERROR"
        7472    2401
        7473    4002
        7474    2205
        7475    0113
        7476    4005
        7477    2222
        7500    1722
        7501    0000
5223    7502    0322    ERTX5,  TEXT    "CRC REGISTER ERROR"
        7503    0340
        7504    2205
        7505    0711
        7506    2324
        7507    0522
        7510    4005
        7511    2222
        7512    1722
        7513    0000
5224    7514    0401    ERTX6,  TEXT    "DATA REGISTER ERROR"
        7515    2401
        7516    4022
        7517    0507
        7520    1123
        7521    2405
        7522    2240
        7523    0522
        7524    2217
        7525    2200
```

```
5225    7526    0411    ERTX7,  TEXT    "DISK SKIP ERROR"
        7527    2313
        7530    4023
        7531    1311
        7532    2040
        7533    0522
        7534    2217
        7535    2200
5226    7536    0411    ERTX8,  TEXT    "DISK INTERRUPT ERROR"
        7537    2313
        7540    4011
        7541    1624
        7542    0522
        7543    2225
        7544    2024
        7545    4005
        7546    2222
        7547    1722
        7550    0000
5227    7551    0103    ERTX9,  TEXT    "AC REGISTER ERROR"
        7552    4022
        7553    0507
        7554    1123
        7555    2405
        7556    2240
        7557    0522
        7560    2217
        7561    2200
5228                    /
5229    7562    2213    TEXEND, TEXT    "RK8E DISKLESS PASS COMPLETE"
        7563    7005
        7564    4004
        7565    1123
        7566    1314
        7567    0523
        7570    2340
        7571    2001
        7572    2323
        7573    4003
        7574    1715
        7575    2014
        7576    0524
        7577    0500
5230                    /
5231                        $$$
```

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

0200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111


1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111000

1400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11110000


2000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11111111  11111111  11111111  11111111  11100000  00000000

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  11111111  11111111  10000000  00000000

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  10000000  00000000  00000000

2600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111


3000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3100  11111111  11111111  11000000  00000000  00000000  00000000  00000000  00000000

3200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3300  11111111  11111111  11111111  11111111  11111000  00000000  00000000  00000000

3400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

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

```
4000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4100  11111111  11100000  00000000  00000000  00000000  00000000  00000000  00000000

4200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

4400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4500  11111111  11111111  11111111  11111111  11000000  00000000  00000000  00000000

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


5000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111000

5200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5300  11111111  11111111  11111111  11111111  11000000  00000000  00000000  00000000

5400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5500  11111111  11111111  11111111  11111110  00000000  00000000  00000000  00000000

5600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11011111


6000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6100  11111111  11111111  11111111  11111111  11111111  11100000  00000000  00000000

6200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6300  11111111  11111111  11111111  11111111  10000000  00000000  00000000  00000000

6400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6500  11111111  11111111  11111100  00000000  00000000  00000000  00000000  00000011

6600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6700  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00000000


7000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7100  11111111  11111111  11111111  11111111  11110000  00000000  00000000  00000000

7200  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00000000
7300  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00011111

7400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

7600
7700
```

Symbol	Value	Symbol	Value	Symbol	Value	Symbol	Value
A0770	7132	C8TTYI	4426	ENMAN2	4445	IOT4	6100
A7007	7131	C8TYPE	4435	ERHLT1	6031	IOT5	6064
ACCMP1	4440	CAF	6007	ERHLT2	6142	IOT6	6122
ACCMP2	4441	CCNTR1	7133	ERHLT3	6115	IOT7	6145
ACL	7701	CHANG	7101	ERHLT4	6104	IOTCHN	5426
ACREG	0174	CHANGR	7113	ERHLT5	6070	K0000	0064
ACSAVE	1345	CHKCLA	1200	ERHLT6	6126	K0001	0065
ADREG	0172	CHNHLT	7126	ERHLT7	6151	K0002	0066
AERRO	4425	CHNPOT	7134	ERHLT8	6726	K0003	0067
APT8	7200	CKCOUT	0232	ERHLT9	6726	K0004	0070
APT8A	7423	CLASIC	4406	ERR1	0736	K0006	0071
AUTO10	0010	CLASIK	5732	EPRMES	1320	K0007	0072
BAKFLD	7052	CLDR	6135	ERRO	6600	K0010	0073
BAKPNT	6720	CLKCNT	7266	ERROR	4436	K0017	0145
BGN	0200	CLRALL	4453	ERTX1	7424	K0020	0074
BYRETR	0506	CLRTRN	1315	ERTX2	7437	K0037	0075
C8BY1	0230	CMREG	0170	ERTX3	7453	K0040	0076
C8BY2	1300	CNTPLC	0551	ERTX4	7471	K0070	0114
C8BY3	1061	CNTRLD	0600	ERTX5	7502	K0077	0115
C8BY4	0515	CNTRLE	0545	ERTX6	7514	K0100	0077
C8BY5	1116	CNTRLL	0537	ERTX7	7526	K0177	0117
C8CHAR	1075	CNTRLQ	0500	ERTX8	7536	K0200	0100
C8CKP	1022	CNTRLR	0511	ERTX9	7551	K0207	0101
C8CKPA	4440	CNTRLS	0521	EXIT	6457	K0212	0147
C8CKSW	4425	CNTVAL	0252	EXITA	0440	K0215	0146
C8CNTR	4427	COMP1	6033	EXTFLD	5201	K0240	6461
C8CONT	1145	COMP2	6044	F10P1	0021	K0260	0063
C8CRLF	4433	CONSOL	0000	F10P2	0022	K0377	0116
C8DO1	0310	CRERR	6060	F1SWR	0020	K0400	0102
C8DO10	1262	CRLF	4462	FILCNT	1040	K1000	0103
C8DO11	0607	CRREG1	0164	FILLER	1037	K2000	0104
C8DO2	1033	CRREG2	0165	FLDMAX	0176	K2525	0120
C8DO3	0350	DAREG	0171	FLSAVE	1347	K3737	0122
C8DO4	1006	DBREG	0167	FROCT	6400	K3740	6462
C8DO7	0527	DCLR	6742	GDREG1	0162	K3777	0105
C8ECHO	4434	DLAG	6743	GDREG2	0163	K4000	0106
C8ERP	4436	DLCA	6744	GETCH1	0703	K4100	0124
C8GET	0624	DLDC	6746	GETDAT	0456	K5000	0126
C8HANG	1122	DMAN	6747	GOITA	0443	K5252	0121
C8INQU	4437	DOCNT	0247	GOTOA	0454	K5403	7054
C8OCTA	4432	DONEA	0426	GTF	6004	K5777	0127
C8PASS	4424	DOPACK	0212	HEDLST	6747	K7000	0107
C8PAUS	4441	DOSET	0251	HEDTAD	6746	K7600	0125
C8PRNT	4430	DRST	6745	HOMEMA	0175	K7700	0112
C8RDPS	6666	DSKP	6741	INDEXA	0455	K7717	0123
C8RETD	0614	DSKSKP	4447	INMODE	1076	K7740	0113
C8RETR	0536	DTREG	0173	INTADD	6011	K7771	0131
C8SETD	0613	DUMP	6476	INTRQ	0031	K7774	0130
C8SETS	0535	ENDHLT	5716	IONWAT	4437	K7775	0111
C8SWIT	4431	ENDIT	0742	IONWT	6000	K7776	0110
C8WST	0745	ENDTST	5670	IOT1	6131	K7777	0132
C8TMP1	1021	ENMAN1	4444	IOT2	6136		
				IOT3	6111		

Symbol	Value	Symbol	Value	Symbol	Value	Symbol	Value
KCDF	0150	NTCLAS	1270	SETUP2	0225	T71E	3041
KRMF	0151	NTCRC	6674	SNERRO	7037	T72E	3115
KTICK	7220	NTGD	6657	STCON	0177	T72R	3060
LAS	4404	OCTEL	4460	STPHLT	7014	T73E	3266
LDAD	6106	OP1	0021	STRAUT	6703	T73R1	3204
LDADD	4452	OP2	0022	STREG	0166	T73R2	3210
LDBUF	4427	PASCNT	0250	SWR	0020	T73R3	3233
LDCA	6075	PCLF	6662	T101D	5256	T74E	3340
LDCM	6117	PCNTR1	6744	T101E	5257	T74R1	3302
LDCMD	4450	PCNTR2	6745	T101R	5223	T74R1A	3303
LDCUR	4451	PCOUNT	5771	T102D	5334	T74R2	3305
LDMAN	4455	PCSAVE	1344	T102E	5335	T74R3	3322
LDMN	6144	PNTBUF	1120	T102R	5301	T75E	3434
M12	0136	PRINT	6463	T103D	5452	T75R	3411
M128	0141	PRN	6423	T103E	5453	T76E	3475
M16	0137	PRNTER	4457	T103R	5416	T76R	3452
M191	0142	PRSFLD	0210	T104D	5531	T77E	3525
M255	0143	PSIE	6665	T104E	5532	T78E	3556
M300	0144	PSKE	6663	T104R	5475	T79E	3607
M4	0133	PSKF	6661	T105D	5664	T80E	3641
M40	0140	PSTB	6664	T105E	5665	T81E	3672
M5	0134	PTSTOR	0336	T105R	5610	T82E	3724
M7	0135	RDAD	6200	T37R	1355	T83E	3771
MAIN1	6256	RDADD	4446	T38R	1412	T84E	4033
MAIN2	6760	RDBF	6226	T39R	1444	T85E	4106
MANTST	0030	RDBUF	4456	T40R	1501	T85OK	4105
MANUAL	5430	RDCM	6240	T45E	1647	T85R1	4046
MANUL	5723	RDCMD	4443	T45R1	1623	T86E	4276
MESA	0747	RDCR	6263	T45R3	1636	T86R1	4204
MESAC	1333	RDCRC	4454	T46A1	1660	T86R2	4214
MESFL	1341	RDST	6063	T46A2	1703	T86R3	4236
MESHAN	1146	RDPSTAT	4442	T46E	1716	T86R4	4260
MESMQ	1336	REALPC	1316	T47E	1742	T87E	4374
MESPAS	0253	REDOA	0415	T48E	1767	T87R1	4307
MESPC	1330	REG1	0153	T49E	2032	T87R2	4320
MQA	7501	REG2	0154	T50E	2074	T87R3	4340
MQL	7421	POUINS	1302	T51E	2114	T87R4	4356
MQSAVE	1346	ROUTMP	5762	T53E	2156	T92E	4641
MTS85	0152	RTFLD1	5645	T54F	2225	T92R1	4612
MYAC	1317	RTFLD2	5234	T55E	2252	T92R2	4630
MYLAS	5764	RTFLD3	5312	T57E	2305	T94E	4717
NERRO	7000	RTFLD4	5430	T58E	2320	T95E	4750
NERROR	4435	RTFLD5	5507	T59E	2333	T97E	5026
NEXFL1	5655	SAVAC	5763	T60E	2354	T98E	5060
NEXFL2	5247	SAVEND	0007	T61E	2420	T99E	5126
NEXFL3	5325	SAVPC	7265	T62E	2444	T99R1	5071
NEXFL4	5443	SRCNT1	0155	T63E	2504	T99R2	5106
NEXFL5	5522	SDKP	6130	T64E	2544	TABLA	0461
NEXT	7031	SERRO	6740	T65E	2633	TABLB	0471
NEXTST	7033	SFT	4405	T68E	2715	TCNTR1	0156
NOSET	0242	SETUP	7040	T69E	2750	TCNTR2	0157
NOTEX	6732	SETUP1	1233	T70E	2774	TCNTR3	0160

TCNTR4	0161	TST30	1142	TST78	3530	XCLAS	0006
TEXAC	7422	TST31	1162	TST79	3561	XCLDR	0053
TEXAD	7416	TST32	1203	TST8	0333	XCOMP1	0040
TEXCM	7412	TST33	1217	TST80	3612	XCOMP2	0041
TEXCR	7404	TST34	1233	TST81	3644	XCRLF	0062
TEXDA	7414	TST35	1263	TST82	3675	XDOLPT	1112
TEXDB	7410	TST36	1311	TST83	3727	XDOSW	0520
TEXDT	7420	TST37	1343	TST84	3774	XDUMP	6741
TEXEND	7562	TST38	1400	TST85	4036	XEND	0032
TEXGD	7402	TST39	1430	TST86	4200	XERRO	0036
TEXPC	7400	TST4	0266	TST87	4303	XFROCT	0060
TEXST	7406	TST40	1470	TST88	4377	XIONWT	0037
THSFLD	0033	TST41	1526	TST89	4426	XLAS	0004
TICK	4424	TST42	1545	TST9	0344	XLDAD	0052
TMPCNT	0746	TST43	1565	TST90	4457	XLDCA	0051
TOCT	6314	TST44	1601	TST91	4507	XLDCM	0050
TOFLD1	5621	TST45	1615	TST92	4600	XLDMN	0055
TOFLD2	5232	TST46	1652	TST93	4646	XMAIN1	0044
TOFLD3	5310	TST47	1722	TST94	4672	XMAIN2	0045
TOFLD4	5426	TST48	1746	TST95	4722	XMYLAS	7263
TOFLD5	5505	TST49	2000	TST97	5000	XNERRO	0035
TOTST	7036	TST5	0302	TST98	5031	XPRINT	0034
TST0	0236	TST50	2035	TST99	5063	XPRN	0057
TST1	0245	TST51	2077	TSTCHA	0715	XRDAD	0046
TST10	0353	TST52	2117	TSTLAS	5200	XRDBF	0056
TST100	5131	TST53	2134	TTYLPT	1121	XRDCM	0043
TST101	5205	TST54	2200	TWOCT	4461	XRDCR	0054
TST102	5262	TST55	2230	TYPE	4434	XRDST	0042
TST103	5400	TST56	2255	UPAROW	0615	XREG	6743
TST104	5456	TST57	2272	UPONE	6331	XSDKP	0047
TST105	5600	TST58	2310	UPPER	7055	XSET	0005
TST11	0375	TST59	2323	UPPR1	7064	XTABLA	0457
TST12	0420	TST6	0315	WAERRO	7241	XTABLB	0460
TST13	0434	TST60	2336	WATMES	0651	XTEXT	6742
TST14	0452	TST61	2400	XAERRO	0025	XTICK	0024
TST15	0464	TST62	2423	XAPTBA	0023	XTOCT	0061
TST16	0517	TST63	2447	XBGN	7130	XUPPER	0027
TST17	0547	TST64	2507	XC8CKP	1041		
TST18	0571	TST65	2600	XC8CNT	0400		
TST19	0614	TST66	2636	XC8CRL	1023		
TST2	0252	TST67	2657	XC8ECH	1063		
TST20	0626	TST68	2677	XC8ERR	1207		
TST21	0643	TST69	2720	XC8INQ	0635		
TST22	0657	TST7	0324	XC8OCT	1000		
TST23	0703	TST70	2753	XC8PAS	0200		
TST24	0730	TST71	2777	XC8PAU	0337		
TST25	0752	TST72	3044	XC8PNT	0303		
TST26	0777	TST73	3200	XC8PSW	0656		
TST27	1040	TST74	3271	XC8SW	0262		
TST28	1057	TST75	3400	XC8TTY	0272		
TST29	1107	TST76	3437	XC8TYP	1077		
TST3	0260	TST77	3500	XCHANG	0026		

ERRORS DETECTED: 0

LINKS GENERATED: 115

RUN-TIME: 11 SECONDS

3K CORE USED

```
A0770    5098    5122#
A7007    5107    5121#
ACCMP1   1082#   1289    1339    1353    1365    1376    1389    1400    1423    1447    1464    1482    1530    1559
         1584    1610    1627    1645    1662    1829    1858    1890    1909    1930    1946    1962    1990    2017
         2221    2242    2260    2277    2304    2350    2372    2398    2425    2436    2443    2457    2469    2481
         2568    2576    2592    2601    2618    2754    2764    2776    2790    2800    2812    2831    2841    2851
         2872    2892    2934    2942    2999    3006    3037    3047    3056    3104    3117    3150    3165    3275
         3307    3337    3369    3395    3401    3430    3436    3464    3480    3512    3519    3560    3601    3623
         3636    3677    3693    3706    3740    3772    3801    3831    3871    3906    3934    3963    3997    4027
         4063    4108    4173    4226    4280    4334    4396
ACCMP2   1083#   1690    1718    1743    1770    1810    2048    2088    2127    2166    2200
ACL        55#
ACREG    12236#   4539    4540
ACSAVE    363     366     569     800     946     979    1030#
ADREG    12234#   3470    3515    3558    3736    3895    4101    4385    4392    4583    4584
AERRO    1071#    4887
APT8     1124     5139#   5143    5149    5151    5154
APT8A    1072#    1264
AUTO10   1116#    4951    4965    4981
BAKFLD   5056     5064#
BAKPNT   4967#    4982
BGN       453     1249#   5119
BYRETR    436      439#
C8BY1     146      148     161#    173
C8BY2     993      995    1005#
C8BY3     806      809     815#
C8BY4     450#     631
C8BY5     868      873#    881
C8CHAR    234      235     378     387     395     397     399     553     642     652     662     666     670     672
          839      841#
C8CKP     729      738     742#
C8CKPA     96#     5020
C8CKSW     74#     4493
C8CNTR     78#
C8CONT    886      898#
C8CRLF     86#
C8D01     266#     287
C8D010    969      990#
C8D011    534      538#
C8D02     765#     767
C8D03     313      319#
C8D04     730#     739
C8D07     462      466#
C8ECHO     88#
C8ERR      92#     4532    4573    4588    4601    4614    4632    4643    4972    5114
C8GET     141      156     437     440     468     483     492     540     562#    570     599     811     815     833
          962      990     996    1003    1005
C8HANG    871      879#    885     891     897
C8INQU    944      4434    5029
C8OCTA     84#
C8PASS     72#     4423
C8PAUS     98#
C8PRNT     80#
```

```
C8RDPS    633#     678
C8RETD    536      541     544#
C8RETR    441      465     473#
C8SETD    532      537     539     543#
C8SETS    434      439     447     460     466     472#
C8SWIT    82#     1266     5095
C8SWST    450      491     499     629     632     680     682#
C8TMP1    727      730     734     737     741#
C8TTYI     76#
C8TYPE     90#     4842
CAF        56#     502
CCNTR1   5102     5123#
CHANG    1127     5094#
CHANGR   5104     5112
CHKCLA    139      312     364     593     625     807     924#    929     931     959
CHNHLT   1059     5115#
CHNPOT   5100     5124#    5124
CKCOUT    147      163#    175     176
CLASIC   1074#    1265    4422    4433    4492    4531    4572    4587    4600    4613    4631    4642    4841    4971
         5019     5028    5094    5113
CLASIK    956     1014    1111    4461#    4463    4465    4471    4472
CLDR     1148     4628#    4630
CLKCNT   5164     5174    5202#
CLRALL   1092#    1335    1386    1399    1411    1434    1480    1496    1509    1541    1572    1597    1643    1660
         1676     1703    1768    1783    1820    1856    1869    1886    1888    1899    1902    1904    1919    1926
         1940     1956    1972    2001    2014    2028    2070    2109    2140    2176    2211    2232    2254    2271
         2287     2321    2342    2366    2391    2420    2441    2452    2490    2499    2510    2529    2558    2586
         2588     2599    2610    2628    2646    2661    2665    2679    2703    2726    2731    2739    2750    2762
         2769     2786    2798    2827    2839    2861    2864    2882    2889    2901    2907    2921    2924    2937
         2951     2956    2960    2963    2975    2978    3002    3020    3074    3088    3133    3185    3219    3257
         3288     3318    3349    3382    3415    3448    3468    3491    3531    3586    3607    3661    3723    3753
         3783     3812    3847    3892    3916    3944    3978    4007    4038    4082    4143    4195    4249    4302
         4365     4437    4450
CLRTPN   1015     1018    1020#
CMREG    1232#    4609    4610    4703    4704
CNTRLC    420      498#
CNTRLD    426      531#
CNTRLE    425      490#
CNTRLL    421      479#
CNTRLQ    422      433#
CNTRLR    423      446#
CNTRLS    424      460#    471
CNTVAL    168      180#
COMP1    1137     4511    4513    4538#    4544    4546
COMP2    1138     4551#    4563    4565
CONSOL    48#      67
CRERR    4558     4563#
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CPREG1   1228#    4556    4745    4942
CRREG2   1229#    4559    4732    4944    4987
DAREG    1233#    1517    1528    1529    1557    1558    4596    4597    4670    4673    4871
DBREG    1231#    1988    1989    2348    2349    4683    4684
DCLR     1062#    4629
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DLCA      1064#    4585
DLDC      1066#    4611
DMAN      1067#    4640
DOCNT      170      172      177#
DONEA      377      384#
DOPACK     140      147#
DOSET      164      171      174      179#
DRST      1065#    4570
DSKP      1061#    4621
DSKSKP    1089#    1299     1351     1800     1849     1879     2338     2495     2497     2500     2648     2650     2663     2666
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DTREG     1235#    3399     3400     3434     3435     3738     3739     3770     3771     3799     3829     3830     3904     3905
          3932     3933     3961     3962     3995     3996     4025     4026     4061     4062     4106     4394     4395     4685
          4686
DUMP      4854#    4858     4876     4877     4985
ENDHLT    1057     4421     4435#
ENDIT      656      661      679#
ENDTST    1131     4126     4413#
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          3140     3190     3226     3258     3289     3319     3350     3383     3416     3449     3469     3498     3538     3589
          3615     3664     3848     4083     4144     4196     4250     4303     4366     4451     5077
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ERHLT1    1049     4533#
ERHLT2    1050     4633#
ERHLT3    1051     4602#
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ERHLT5    1053     4574#
ERHLT6    1054     4615#
ERHLT7    1055     4644#
ERHLT9    1056     4973#
ERR1       665      669      675#
ERRMES     972     1024#
ERRO      1135     4885#    4888     4900     4903     4915     4917     4923     4926     4934     4935     4939     4947     4954
          4958     4978     5187
ERROR     1080#    1291     1301     1311     1324     1341     1355     1367     1378     1391     1402     1425     1449     1466
          1484     1500     1532     1561     1586     1612     1629     1647     1664     1692     1720     1745     1773     1812
          1831     1860     1892     1911     1932     1948     1964     1992     2019     2050     2091     2129     2168     2202
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          2603     2620     2638     2653     2668     2692     2718     2742     2778     2814     2853     2874     2894     2914
          2944     2967     3008     3058     3123     3171     3210     3246     3278     3309     3339     3371     3403     3438
          3482     3521     3570     3644     3714     3742     3774     3803     3833     3879     3908     3936     3965     3999
          4029     4072     4110     4184     4237     4291     4345     4409
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ERTX2     4992     5220#
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ERTX8     4998     5226#
ERTX9     4999     5227#
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F10P2       64#
F1SWR       62#
FILCNT     763      766      770#
FILLER     761      769#
FLDMAX    1238#    1259     1271     4114     4147     4199     4253     4306     4358
FLSAVE     369      566      802      948      987     1032#
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          2145     2178     4553     4929
GDREG2    1227#    1285     1320     1333     1349     1362     1416     1417     1420     1440     1441     1444     1460     1477
          1492     1519     1546     1577     1578     1581     1603     1604     1607     1623     1638     1656     1682     1687
          1710     1715     1735     1740     1759     1764     1790     1795     1821     1840     1871     1905     1922     1923
          1943     1944     1959     1960     2003     2033     2034     2072     2073     2111     2112     2142     2177
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          2422     2430     2440     2454     2477     2561     2573     2590     2597     2614     2752     2760     2773     2788
          2796     2807     2829     2837     2847     2868     2887     2929     2939     2985     3004     3022     3052     3090
          3111     3141     3266     3267     3295     3296     3324     3325     3356     3357     3385     3386     3419     3420
          3451     3452     3475     3510     3517     3546     3547     3597     3614     3673     3688     3730     3731     3761
          3764     3791     3792     3822     3823     3869     3874     3897     3898     3918     3919     3921     3946     3947
          3949     3980     3981     3983     4009     4010     4012     4051     4067     4068     4104     4155     4162     4208
          4215     4261     4269     4315     4323     4363     4372     4399     4542     4561     4931
GETCH1     647#     655
GETDAT     374      375      382      408#
GOITA      380      397#
GOTOA      402      403      404      405      406#
GTF        54#      36#      801      947
HEDLST    4990     4991#
HEDTAD    4905     4990#
HOMEMA    1237#    1253     1254     3259     3298     3331     3359     3389     3424     3456     3471     3500     3549     3590
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          4096
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INMODE     384      433      448      639      834      838      842#
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          3243
IONWT     1136     4508#    4516     4517     4520     4522     4523     4530
IOT1      4621#    5125
IOT2      4629#    5126
IOT3      4598#    5127
IOT4      4585#    5128
IOT5      4570#    5129
IOT6      4611#    5130
IOT7      4640#    5131
IOTCHN    1075#    1251
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K0001     1158#    5059
K0002     1159#    2042     2082     2121     2154     2187     2613     5061     5081
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K0010    1164#   4180   4233   4287   4341   4405
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K0020    1165#   1526   1555   1986   2002   2015   2346   4668   4681   4701   4730   4742   4869
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K0040    1167#   3272   3304   3334   3366   3392   3427   3461   3476   3504   3552   3598   3620   3633
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K0212    1214#   4773
K0215    1213#   4771
K0240    4797   4827   4835#
K0260    1156#   4757   4761   4789
K0377    1183#
K0400    1171#   1273   1980   2009   2511   2536   2629   2634   2682   2706   2952   3224   4128   4525
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K2525    1185#   1438   1439   1601   1602   1707   1708   1787   1788   2110   2236   2237   3293   3294
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K3740    4824   4836#
K3777    1174#   2335
K4000    1175#   2805   2927   2984   3260   3332   3390   3457   3550   3591   3667   3854   3988   4017
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K4100    1189#   4826
K5000    1191#   3299   3360   3425   3472   3499   3617
K5252    1186#   2071
K5403    5060   5067#
K5777    1192#   1844
K7000    1176#   3628   3698   5147
K7377    5145   5200#
K7600    1190#   4875
K7700    1179#   4510   4810
K7717    1188#   1958
K7740    1180#   1681   1709   1734   1758   1789
K7771    1194#   4952
K7774    1193#   4785
K7775    1178#   1767
K7776    1177#   2768   3453
K7777    1195#   1262   3326   3358   3421   3433   3495   3769   3828   4087   4271   4325   4415   4970
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KRMF     1216#   5057
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         2662   2684   2890   2994   3539   3682
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LDCA     1146    4582#   4586
LDCM     1145    4608#   4612
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         3763   3794   3816   3856   3924   3952   3986   4015   4056   4085   4156   4209   4263   4317
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         3691   3704   3734   3767   3796   3826   3860   3901   3929   3958   3992   4022   4058   4094
         4099   4171   4224   4278   4332   4382   4390   4453   4657   4664   4669   4680   4682   4697
         4702   4711   4726   4731   4737   4743   4865   4870   5007   5009   5083
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M191     1206#
M255     1207#   3026   3071   3093   3186   3220   3583   3609   3658
M300     1208#
M4       1199#   2290   2301   2324   2343   3849   3866   4041   4052
M48      1204#   2460
M5       1200#   4653
M7       1201#   4661
MAIN1    1141    4709#   4713
MAIN2    1142    5005#   5011
MANTST   1076    1129#
MANUAL   1076#   1250
MANUL    1129    4449#
MESA     634     685#
MESAC    978     1026#
MESFL    986     1028#
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                  2943     2966     3007     3057     3122     3170     3209     3245     3276     3308     3338     3370     3402     3437
                  3481     3520     3569     3643     3713     3741     3773     3802     3832     3878     3907     3935     3964     3998
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PCOUNT   4420     4497#
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PRNTER   1096#    4427     4909     4912     4924     4940     4963
PRSFLD   1132     1256     1257#
PSIE       53#
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PSTB       52#     870
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RDCR     1149     4721#    4746
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                  5037     5040
REG2     1219#    1387     1457     1476     1478     1639     1754     1766     1797     1799     1803     1805     1826     1843
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SETUP    1110     5054#    5065     5105     5106     5109
SETUP1    965#
SETUP2    158#
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STRAUT   4954#    4968
STREG    1230#    4576     4577
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T101E    4175     4184#
T101R    4156#    4182
T102D    4231     4236#
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T102R    4209     4235
T103D    4285     4290#
T103E    4282     4291#
T103R    4262#    4289
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T45R3    2303#  2310
T46A1    2326#  2329
T46A2    2345#  2354
T46E     2352   2356#
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T49E     2427   2439   2445#
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T51E     2496   2498   2502#
T53E     2535   2540   2546#
T54E     2570   2578#
T55E     2594   2603#
T57E     2633   2638#
T58E     2649   2651   2653#
T59E     2664   2668#
T60E     2681   2686   2688   2692#
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T62E     2729   2733   2737   2742#
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T64E     2792   2802   2814#
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T72E     3039   3049   3058#
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T73R2    3077#  3086
T73R3    3096#  3108
T74E     3152   3167   3171#
T74R1    3141#  3154
T74R1A   3142#
T74R2    3144#
T74R3    3157#  3169
T75E     3200   3210#
T75R     3191#  3202
T76E     3236   3246#
T76R     3227#  3238
T77E     3278#
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T79E     3339#
T80E     3371#
T81E     3397   3403#
T82E     3432   3438#
T83E     3466   3482#
T84E     3514   3521#
T85E     3562   3570#
T85OK    3566   3569#
T85R1    3538#  3568
T86E     3603   3625   3638   3644#
T86R1    3585#  3642
T86R2    3593#  3605
T86R3    3611#  3627
T86R4    3630#  3640
T87E     3679   3695   3708   3714#
T87R1    3660#  3712
T87R2    3669#  3681
T87R3    3685#  3697
T87R4    3700#  3710
T92E     3873   3879#
T92R1    3956#  3865
T92R2    3870#  3877
T94E     3936#
T95E     3965#
T97E     3999#
T98E     4029#
T99E     4065   4072#
T99R1    4043#  4049
T99R2    4056#  4070
TABLA    409    411#
TABLB    410    420#
TCNTR1   1221#  1511   1523   1543   1552   1978   1982   2007   2011   2038   2045   2077   2080   2085
         2116   2119   2124   2147   2152   2158   2160   2180   2185   2191   2193   2325   2328   2344
         2353   2364   2367   2369   2375   2379   2389   2392   2401   2405   2461   2465   3025   3044
         3076   3085   3092   3114   3139   3153   3156   3168   3187   3201   3221   3237   3503   3506
         3541   3555   3584   3587   3641   3659   3662   3711   3850   3864   3867   3876   4148   4176
         4200   4229   4254   4283   4307   4337   4359   4401
TCNTR2   1222#  2149   2163   2182   2196   3027   3040   3078   3082   3094   3107   3143   3147   3158
         3162   3189   3205   3223   3241   3535   3540   3542   3548   3556   3557   3563   3567   3588
         3604   3610   3626   3663   3680   3684   3696   3852   3857   3862
TCNTR3   1223#  2291   2297   2302   2309   3030   3033   3097   3100   3192   3195   3228   3231   3629
         3639   3699   3709   4042   4048   4053   4069
TCNTR4   1224#  2289   2292   2295   2296   3072   3075   3120   4040   4043   4046   4047
TEXAC    5217#
TEXAD    5215#
TEXCM    5213#
TEXCR    4941   5210#
TEXDA    5214#
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TEXEND   4428   5229#
TEXGD    4925   5209#
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TEXST     4986    5211#
THSFLD    1132#   4149    4201    4255    4308    4360    5055
TICK      1070#   4545    4564    5043
TMPCNT     646     654     684#
TOCT      1154    4751#   4763    4786    4795
TOFLD1    4357    4367    4373#   4375    4386    4404    4406
TOFLD2    4146    4157    4163#   4166    4179    4181
TOFLD3    4198    4210    4216#   4219    4232    4234
TOFLD4    4252    4264    4270#   4273    4286    4288
TOFLD5    4305    4318    4324#   4327    4340    4342
TOTST     5049#   5072    5078    5099    5108
TST0      1287#   1293
TST1      1299#   1303
TST10     1410#   1426
TST100    4081#   4111
TST101    4136#   4185
TST102    4194#   4238
TST103    4241    4248#   4292
TST104    4301#   4346
TST105    4349    4356#   4410
TST11     1433#   1450
TST12     1457#   1468
TST13     1474#   1486
TST14     1493#   1502
TST15     1508#   1533
TST16     1540#   1562
TST17     1571#   1587
TST18     1596#   1613
TST19     1622#   1631
TST2      1309#   1313
TST20     1637#   1649
TST21     1655#   1666
TST22     1675#   1693
TST23     1702#   1721
TST24     1730#   1747
TST25     1754#   1775
TST26     1782#   1813
TST27     1819#   1832
TST28     1839#   1861
TST29     1868#   1893
TST3      1321#   1326
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TST31     1910#   1933
TST32     1939#   1949
TST33     1955#   1965
TST34     1971#   1993
TST35     2000#   2020
TST36     2027#   2051
TST37     2069#   2092
TST38     2096    2108#   2130
TST39     2139#   2169
TST4      1332#   1342    4439
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TST41     2210#   2224
TST42     2231#   2245
TST43     2253#   2263
TST44     2270#   2280
TST45     2286#   2313
TST46     2320#   2357
TST47     2365#   2382
TST48     2390#   2408
TST49     2412    2419#   2446
TST5      1348#   1356
TST50     2451#   2484
TST51     2489#   2503
TST52     2509#   2520
TST53     2528#   2547
TST54     2551    2557#   2579
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TST57     2627#   2639
TST58     2645#   2654
TST59     2660#   2669
TST6      1363#   1368
TST60     2678#   2693
TST61     2697    2702#   2719
TST62     2725#   2743
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TST64     2785#   2815
TST65     2819    2826#   2854
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TST68     2900#   2915
TST69     2920#   2945
TST7      1374#   1379
TST70     2950#   2968
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TST72     3017#   3059
TST73     3063    3069#   3124
TST74     3132#   3172
TST75     3176    3182#   3211
TST76     3216#   3247
TST77     3256#   3279
TST78     3287#   3310
TST79     3317#   3340
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TST80     3348#   3372
TST81     3381#   3404
TST82     3414#   3439
TST83     3447#   3483
TST84     3490#   3522
TST85     1217    3530#   3571
TST86     3575    3581#   3645
TST87     3649    3656#   3715
TST88     3722#   3743
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TST9     1398#   1403
TST9A    3782#   3804
TST91    3811#   3834
TST92    3838   3946#   3880
TST93    3884   3891#   3909
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TST95    3943#   3966
TST97    3970   3977#   4000
TST98    4006#   4030
TST99    4037#   4073
TSTCHA   641    648    657#   674
TSTLAS   4126#   4130
TTYLPT   446    479    481    498    860    876#   892
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TYPE     1099#   4758   4762   4772   4774   4775   4790   4798   4819   4828   4898
UPAROW   449    482    490    500    531    550#   556
UPONE    1155   4769#   4776   4784   4787   4791   4794
UPPER    1128   5071#   5090   5101   5104   5110
UPPR1    5078#   5089
WAERRO   1126   5180#   5184   5197
WATMES   597    603#
XAERRO   1071   1126#
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XBGN     5116   5119#
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XC8CNT   79     362#   367    392    393    394    396    438    464    469    484    493    535    600
         812    835    890
XC8CRL   87     150    155    391    555    677    679    757#   768    895    970    989
XC8ECH   89     640    647    831#   836    840
XC8ERR   93     944#   952    1000   1006
XC8INQ   95     160    591#   595    601    602    896    994
XC8OCT   85     154    636    724#   740    976    980    984    988
XC8PAS   73     137#   145    161    162
XC8PAU   99     310#   315    316    318    319
XC8PNT   81     151    261#   263    265    269    280    596    633    893    971    973    977    981
         985
XC8PSW   83     538    624#   627    681
XC8SW    75     142    157    204#   211    963    991    997
XC8TTY   77     228#   236    467    598    810    832
XC8TYP   91     276    285    388    390    552    554    638    676    733    760    765    837    858#
         874
XCHANG   1075   1127#
XCLAS    1074   1111#
XCLDR    1092   1148#
XCOMP1   1082   1137#
XCOMP2   1083   1138#
XCRLF    1100   1155#
XDOLPT   862    869#
XDOSW    452    453#
XDUMP    4974   4985#
XEND     1131#   4116
XERRO   1080   1135#
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XIONWT   1081   1136#
XLAS     1073   1109#
XLDAD    1088   1147#
XLDCA    1091   1146#
XLDCM    1090   1145#
XLDMN    1094   1150#
XMAIN1   1077   1141#
XMAIN2   1078   1142#
XMYLAS   5148   5199#
XNERRO   1079   1134#
XPRINT   1099   1133#
XPRN     1096   1152#
XRDAD    1086   1143#
XRDBF    1095   1151#
XRDCM    1085   1140#
XRDCP    1093   1149#
XRDST    1084   1139#
XREG     4950   4987#
XSDKP    1089   1144#
XSET     1069   1110#
XTABLA   373    409#
XTABLB   400    410#
XTEXT    4948   4986#
XTICK    1070   1125#
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.L0372   160    333#
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.L0566   398    514#
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.L0757    645     693#
.L0760    640     647     694#
.L0761    639     695#
.L0762    637     696#
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.L1163    893     902#
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.L1167    807     906#
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.L1172    800     909#
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.L1174    759     911#
.L1175    732     912#
.L1176    731     913#
.L1177    728     914#
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.L1366    1001    1035#
.L1367    994     1036#
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.V0021    4477    4501#
.V0022    4479    4500#
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.V0077    278     326#
.V0100    283     324#    398     514#
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.V0200    233     330#
.V0212    764     910#
.V0215    659     692#    759     911#
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.V0260    732     912#
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.V0277    389     510#    675     688#
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.V0615    449     482     490     500     511#
.V0624    141     156     337#    437     440     468     483     492     513#    811     815     833     904#    962
          990     996     1003    1005    1042#
.V0635    160     333#    896     901#    994     1036#
.V0745    450     491     499     510#
.V1000    154     334#    636     697#    976     980     984     988     1037#
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.V1063    640     647     694#
.V1075    234     235     329#    378     387     395     397     399     519#    553     642     652     662     666
          670     672     706#
.V1076    384     433     448     518#    639     695#
.V1077    276     285     327#    388     390     517#    552     554     638     676     707#
.V1121    446     479     481     498     512#
.V1200    139     312     338#    364     522#    593     625     701#    807     906#
.V1302    4481    4484    4499#
.V1345    363     366     523#    569     702#    800     909#
.V1346    371     520#    564     704#    804     907#
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.V7402    317    322#   1001   1035#
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.V7520    663    691#
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.V7700    267    328#
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