IDENTIFICATION

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

PRODUCT NAME: RK8E DISKLESS CONTROL TEST

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MAINTAINER: DIAGNOSTIC ENGINEERING

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TABLE OF CONTENTS

1. ABSTRACT

2. REQUIREMENTS

2.1 HARDWARE

2.2 SPECIAL

2.3 STORAGE

3. PRELIMINARY PROGRAMS

4. SWITCH REGISTER SETTINGS

5. OPERATOR AND/OR PROGRAM ACTION

5.1 STANDARD TEST PROCEDURE

5.2 DISKLESS CONTROL TEST

5.3 MANUAL SCOPE TEST FOR 16 BIT COUNTER

5.4 CHANGE PROGRAM IOT CODES

6. ERRORS

6.1 USEFUL ERROR INFORMATION

6.2 NON-RECOVERABLE ERROR HALTS

6.3 RECOVERABLE ERROR HALT

6.4 ERROR TYPEOUTS

6.5 SCOPE LOOPS

6.6 TYPICAL ERROR TYPEOUTS

7. RESTRICTIONS

8. TROUBLE SHOOTING INFORMATION

9. PROGRAM DESCRIPTION

10. CONSOLE PACKAGE ADDENDUM

11. APT-8 HOOKS

12. PROGRAM LISTING

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 COMPLETION 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 CONTENTS 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 PROGPAM.
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 CONSISTANTLY 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 INFORMATION 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 TRANSFER 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
        ----
```

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

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**************************************************************

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 NOTIFIED 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

```
                        /
                        /PK8E DISKLESS CONTROL TEST
                        /
                        /MAINDEC-08-DHRKA-E-L
                        /
                        /COPYRIGHT (C) 1972, 1975 DIGITAL EQUIP. CORP.
                        /
                        /MAYNARD, MASS. 01754.
                        /
0001                    FIELD   1
                        /


                        /CONSOL SRC -V2-R0- CONSOLE PACKAGE


                        /LAB= CALL C8CKSW OR JMS XC8SW
                        /THIS WILL READ THE SWITCH REGISTER FROM THE PLACE SPECIFIED
                        /BY LOCATION 20 BIT 0.


                        /THE PROGRAM SHOULD CHECK FOR A CONTROL CHARACTER FROM THE TERMINAL
                        /EVERY FIVE(5) SECONDS OR SOONER.

                        /LOCATIONS THAT NEED TO BE SET UP FOR USING THE CONSOLE PACKAGE.

                        /CNTVAL IN XC8PASS    THIS LOCATION DETERMINDS THE NUMBER OF
                        /PROGRAM COMPLETIONS THAT ARE NEEDED BEFORE THE PASS MESSAGE IS TYPED
                        /THE VALUE SHOULD PUT THE PASS MESSAGE OUT IN THE RANGE OF 1 TO 5 MINUTES.
                        /THIS SHOULD BE A POSITIVE NUMBER.

                        /C8STRT   THIS IS FOUND IN CNTRL ROUTINE CONTROL R PART
                        /IT IS THE RETURN WHEN CONTROL R IS ENTERED (RESTART PROGRAM)
                        /THE RETURN JUMPS TO XDOSW WHICH CONTAINS C8STRT SO PUT THE LABEL C8STRT
                        /WHERE YOU WANT TO RESTART THE PROGRAM.


                        /SETUP1 IN XC8ERR    THIS IS THE MASK BIT FOR HALT ON ERROR
                        /PLACE THE CORRECT BIT IN THIS LOCATION FOR HALTING ON ERRORS.

                        /SETUP2 IN XC8PASS   THIS IS THE MASK FOR HALT A END OF PASS.

                        /THE CALL TABLE IS A CONDITIONAL ASSEMBLY.
                        /TO ASSEMBLE THE CALL REMOVE THE / BEFORE CONSOL=0.
                        /IN COMBINING THE CONSOL PACKAGE TO A DIAGNOSTIC,
                        /THE CALL TABLE IS TO BE AT THE BEGINNING OF A PROGRAM.

0000    CONSOL=0
6661            PSKF=   6661
6662            PCLF=   6662
6663            PSKE=   6663
6664            PSTB=   6664
6665            PSIE=   6665
6004            GTF=    6004
7701            ACL=    7701
```



```
6007            CAF=    6007
7321            MQL=    7421
7501            MQA=    7501
                /
0020    *20
                /
0020 0000 F1SWR,  0                     /PSEUDO SWITCH REGISTER
0021 0000 F1OP1,  0                     /CONTROL 1
0022 0000 F1OP2,  0                     /CONTROL 2
                /
                /
                IFDEF CONSOL <


0024    *24

                C8PASS= JMS I   .
0024 0200                XC8PAS         /C8 PASS COMPLETION ROUTINE
                C8CKSW= JMS I   .
0025 0262                XC8SW          /CHECK SW REG SETTING
                C8TTYI= JMS I   .
0026 0272                XC8TTY         /FETCH CONSOL CHAR
                C8CNTR= JMS I   .
0027 0400                XC8CNT         /CHECK FOR CONTROL CHAR
                C8PRNT= JMS I   .
0030 0303                XC8PNT         /C8 PRINT A BUFFER
                C8SWIT= JMS I   .
0031 0656                XC8PSW         /SET UP PSEUDO SW. REG
                C8OCT8= JMS I   .
0032 1000                XC8OCT         /CONVERT TO ASCII AND PRINT
                C8CRLF= JMS I   .
0033 1023                XC8CRL         /DO A CARRIGE RETUR + LINE FEED
                C8ECHO= JMS I   .
0034 1063                XC8ECH         /CHECK INPUT CHAR
                C8TYPE= JMS I   .
0035 1077                XC8TYP         /C8 PRINT ONE CHAR
                C8ERR=  JMS I   .
0036 1207                XC8ERR         /C8 ERROR  HANDLER
                C8INQU= JMS I   .
0037 0635                XC8INQ         /LOOK FOR OPERATOR INTERVENTION
                C8CKPA= JMS I   .
0040 1041                XC8CKP         /CHECK IF CONTROL CHAR
                C8PAUS= JMS I   .
0041 0337                XC8PAU         /IF CONSOL PACKAGE RETURN CALL PLUS ONE
                                        /IF NOT USING CONSOL REPLACE CALL WITH
                                        /A HLT AND THEN GO TO THE HALT


                /*****************************************************************
                                        /*20                    /PSEUDO SWITCH REGISTER

                                        /*21                    /HARDWARE INDICATORS
                                        /40000=USE FRONT PANEL SWITCH REGISTER
                                        /00000=USE THE PSEUDO SWITCH REGISTER LOC,20

                                        /*27                    /SYSTEM CONFIGURATION
```

```
                                        /400=CONSOL PACKAGE SET ACTIVE
                                        /0000=CONSOLE PACKAGE SET DEACTIVE

                                        /#23                    /RESERVED FOR FUTURE USE
                >
          0200  *200
                /*****************************************************************
                /C0PASS
                /THIS IS CALLED AT THE END OF EACH PROGRAM COMPLETION
                /THE VALUE OF** CNTVAL** WILL BE DETERMINED BY THE TIME IT TAKES
                /THE PROGRAM TO COMPLETE THIS MANY C0PASS TO BE IN THE 1 TO 4 MINUTE
                /RANGE
                /       C0PASS=JMS   XC0PAS
                /EX. OF CALL            C0PASS
                                        /               HLT             /HALT IF NON CONSOL PACKAGE
                /               JMP     START1          /CONTINUE RUNNING THIS PROGRAM


                /RETURN TO LOCATION CALL PLUS ONE WITH THE AC=0 IF NON CONSOL PACKAGE AND HLT
                /IF CONTINUE TO RUN THEN RETURN TO CALL PLUS2 AC=0
                /THE LOCATION SETUP2 IS THE MASK BIT FOR THE HALT AT END OF PASS
                /CHECK THAT IT IS CORRECT FOR THE CURRENT PROGRAM

                /CALLS USED BY XC0PAS ARE  CHKCLA=XC0CRLF=XC0OCTA=XC0SW=XC0PNT=XC0INQ=

0200  0000  XC0PAS, 0
0201  7200          CLA
0202  4777'         JMS     CHKCLA          /IS WORD 22 BIT 3 ACTIVE CONSOLE?
0203  5212          JMP     DOPACK          /IS CLASSIC
0204  4776'         JMS     C0GET           /GET ALL REGISTERS.
0205  4262          JMS     XC0SW           /DEACTIVE CONSOL CHECK SR SETTING
0206  0375          AND     (400            /FOR HALT ON END OF C0PASS
0207  7640          SZA CLA                 /1= HALT 0 CONTINUE
0210  5600          JMP I   XC0PAS          /GO TO HALT
0211  5230          JMP     C0BY1           /CONTINUE ON RUNNING PROGRAM
0212  4232  DOPACK, JMS     CKCOUT          /CLASS CHECK C0PASS COUNT
0213  5230          JMP     C0BY1           /C0PASS COUNT NOT DONE REDO PROGRAM
0214  2250          ISZ     PASCNT          /C0PASS COUNT DONE SET C0PASS COUNT
0215  4774'         JMS     XC0CRLF
0216  4303          JMS     XC0PNT          /C0PRNT BUFFER
0217  0253          MES0PAS                 /
0220  1250          TAD     PASCNT          /GET NUMBER
0221  4773'         JMS     XC0OCTA         /CONVERT IT TO ASCII
0222  4774'         JMS     XC0CRLF         /DO A CARRIAGE RETURN
0223  4776'         JMS     CRGET           /GET ALL REGISTERS.
0224  4262          JMS     XC0SW           /CHECK A HALT AT END OF C0PASS
0225  0375  SETUP2, AND     (400            /MASK BIT
0226  7640          SZA CLA                 /HALT =1 NO SKIP CONTINUE =0
0227  4772'         JMS     XC0INQ          /STOP PROGRAM EXECUTION-LOOK FOR INPUT
0230  2200  C0BY1,  ISZ     XC0PAS          /BUMP RETURN
0231  5600          JMP I   XC0PAS
0232  0000  CKCOUT, 0
0233  1251          TAD     DOSET           /CHECK IF SET UP NEEDED
0234  7640          SZA CLA                 /0=SET UP C0PASS COUNT VALUE
```



```
                                        /1=C0PASS COUNT VALUE OK
0235  5242          JMP     NOSET           /C0PASS COUNT VALUE ON
0236  1252          TAD     CNTVAL          /GET COUNT VALUE FOR THIS PROG
0237  7040          CMA                     /SET TO NEGATIVE
0240  3247          DCA     DOCNT           /STORE IN HERE
0241  2251          ISZ     DOSET           /INDICATE VALUE SET UP
0242  2247  NOSET,  ISZ     DOCNT           /COUNT THE NUMBER OF PASSES
0243  5230          JMP     C0BY1           /EXIT FOR ANOTHER PASS
0244  3251          DCA     DOSET           /SET TO C0PRNT C0PASS
0245  2232          ISZ     CKCOUT          /BUMP RETURN FOR
0246  5632          JMP I   CKCOUT          /C0PASS C0TYPE OUT
0247  0000  DOCNT,  0
0250  0000  PASCNT, 0                       /
0251  0000  DOSET,  0
0252  0000  CNTVAL, 0
0253  0410  MES0PAS, TEXT    "DHRKAE  PASS "
0254  2713
0255  0105
0256  4040
0257  2001
0260  2323
0261  4900


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

                /C0CKSW

                /THIS ROUTINE CAN BE USED INPLACE OF A READ THE SWITCHES LAS.
                /ROUTINE THAT WILL CHECK WHERE TO READ THE
                /C0 SWITCHES FROM IE. FROM PANEL OR PSEUDO SWITCH REGISTER
                /THE SELECTION IS DETERMINED BY THE STATE OF BIT 0 IN LOCATION 21.

                                        /C0CKSW=        JMS XC0SW
                                        /EX,    JMS     XC0SW           /READ THE C0SWIT REGISTER
                                        /RETURN WITH THE CONTENTS OF SWITCH REGISTER

                /RETURN TO NEXT LOCATION FOLLOWING CALL WITH THE AC= TO VALUE OF C0SWIT SETTING

                /CALLS USED ARE=XC0CKPA=

0262  0000  XC0SW,  0
0263  4771'         JMS     XC0CKPA         /GO CHECK THE IF ANY CONTRL
0264  7000          NOP
0265  1021          TAD     21              /GET WD FOR INDICATOR
0266  7710          SPA CLA                 /CHECK IF FROM PANEL 4000
0267  7614          7614                    /DO LAS AND SKIP GET FROM PANEL WITH LAS
0270  1020          TAD     20              /PSEUDO SWITCH
0271  5662          JMP I   XC0SW           /EXIT WITH STATUS BIT 14 AC.


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

```
                        /C8TTYI
                        /THIS ROUTINE WILL LOOK FOR A INPUT FROM THE TERMINAL
                        /AND REMOVE ANY PARITY BITS, THEN MAKE IT A 8 BIT ASCI.
                        /       C8TTYI= JMS XC8TTY
                        /EX,    JMS     XC8TTYI         /READ CHAR FROM THE CONSOL DEVICE
                                                        /                       /RETURN TO CALL PLUS ONE AC CONTAINS THE CHAR


                        /CALLS USED -NONE- BUT C8CHAR IS OFF PAGE AND IN ROUTINE CALLED XC8ECHO

                        /
                        /
0272  0000  XC8TTY, 0
0273  6031          KSF                     /LOOK FOR KEYBOARD FLAG
0274  5273          JMP     .-1
0275  6036          KRB                     /GET CHAR
0276  0370          AND     (177            /MASK FOR 7 BITS
0277  1367          TAD     (200            /ADD THE EIGTH BIT
0300  1766'         DCA     C8CHAR          /STORE IT
0301  1766'         TAD     C8CHAR
0302  5672          JMP I   XC8TTY          /EXIT


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

                        /C8PRNT

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

                        /       C8PRNT= JMS XC8PNT


                        /EX,    JMS     XC8PNT                  /C8PRNT THE CONTENTS OF THE FOLLOWING BUFFER
                        /       MES377                          /LOCATION OF C8PRNT BUFFER

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

                        /CALLS USED ARE-XC8TYPE-XC8PNT


0303  0000  XC8PNT, 0
0304  7300          CLA CLL
0305  1703          TAD I   XC8PNT          /GET C8PRNT BUFFERS STARTING LOCATION
0306  3336          DCA     PTSTOR          /STORE IN PTSTOR
0307  2303          ISZ     XC8PNT          /BUMP RETURN
0310  1736  C8D01,  TAD I   PTSTOR          /GET DATA WORD
0311  0365          AND     (7700           /MASK FOR LEFT BYTE
0312  7450          SNA                     /CHECK IF 00 TERMINATE
0313  5703          JMP I   XC8PNT          /EXIT
```



```
0314  7500          SMA                     /IS AC MINUS
0315  7020          CML                     /MAKE CHAR A 300 AFTER ROTATE
0316  7001          IAC                     /MAKE CHAR A 200 AFTER ROTATE
0317  7012          RTR
0320  7012          RTR
0321  7012          RTR                     /PUT CHAR IN BITS 4-11 MAKE IT A 8 BIT ASCII
0322  4764'         JMS     XC8TYPE         /C8PRNT IT ON CONSOLE
0323  1736          TAD I   PTSTOR          /GET DATA WORD
0324  0363          AND     (0377           /MASK FOR RIGHT BYTE
0325  7450          SNA                     /CHECK IF 00 TERMINATOR
0326  5703          JMP I   XC8PNT          //EXIT
0327  1362          TAD     (3740           /ADD FUDGE FACTOR TO DETERMINE IF 200
0330  7500          SMA                     /OR 300 IS TO BE ADD TO CHAR
0331  1361          TAD     (100            /ADD 100
0332  1360          TAD     (240            /ADD 200
0333  4764'         JMS     XC8TYPE         /C8TYPE ONLY BITS 4-11
0334  2336          ISZ     PTSTOR          /BUMP POINTER FOR NEXT WORD
0335  5310          JMP     C8D01           /DO AGAIN
0336  0000  PTSTOR, 0                      /STOR FOR C8PRNT BUFFER
                        /*****************************************************************


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

                        /       C8PAUS= JMS XC8PAU
                        /
                        /
                        /EX,            JMS     XC8PAUS         /CHECK IF ON ACTIVE CONSOL IF NOT HALT HERE
                        /               ANYTHING                /RETURN HERE IF ON ACTIVE CONSOL
                        /
                        /


                        /CALLS USED ARE -CHKCLA-


0337  0000  XC8PAU, 0
0340  7300          CLA CLL
0341  4777'         JMS     CHKCLA          /CHECK LOC 22 BIT 3 CONSOLE BIT
0342  5350          JMP     C8D03           /GO DO CONSOL PART RETURN CALL +1
0343  7740          CMA                     /DEACTIVE CONSOLE PACKAGE PUT HLT IN CALL
0344  1337          TAD     XC8PAU          /GET CORRECT RETURN ADDRS
0345  3337          DCA     XC8PAU          /SET UP RETURN
0346  1357          TAD     (7402           /GET CODE FOR HLT
0347  3737          DCA I   XC8PAU          /PUT HALT IN CALL LOCATION
0350  5737  C8D03,  JMP I   XC8PAU          /GO TO HALT OR RETURN TO NEXT LOCATION


0357  7402
0360  0240
0361  0100
```

```
 325   0362  3740
 326   0363  6477
 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                   /C0CNTR
 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                   /       C0CNTR= JMS XC0CNT
 346
 347                   /EX.    JMS     XC0CNTR                 /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-XC0TYPE-XC0CRLF-C0GET-UPAROW-XC0TYI-XC0PSW-
 359                   /
 360                   /
 361                   /
 362   0400  0000     XC0CNT, 0
 363   0401  3777*             DCA     AC0AVE          /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     AC0AVE          /DEACTIVE CONSOLEGET AC FOR RETURN
 367   0405  5600              JMP I   XC0CNT          /EXIT NOT ON ACTIVE CONSOLE
 368   0406  6004              GTF
 369   0407  3775*             DCA     FL0AVE
 370   0410  7501              MQA
 371   0411  3774*             DCA     MQ0AVE          /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     C0CHAR          /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     C0CHAR          /GET CHAR = NOT CONTROL + NOT EXPECTED
 388   0432  4771*             JMS     XC0TYPE         /C0PRNT CHAR
 389   0433  1370              TAD     (277            /GET CODE FOR "?"
 390   0434  4771*             JMS     XC0TYPE
 391   0435  4767*             JMS     XC0CRLF
 392   0436  2200              ISZ     XC0CNT          /BUMP RETURN
 393   0437  5600              JMP I   XC0CNT          /EXIT CALL+2
 394   0440  2200    EXITA,  ISZ     XC0CNT          /BUMP RETURN FOR MAIN PROGRAM CHECK OF CHAR
 395   0441  1773*             TAD     C0CHAR          /PUT CHAR IN AC.
 396   0442  5600              JMP I   XC0CNT          /EXIT
 397   0443  1773*   GOITA,  TAD     C0CHAR          /GET THE CONTENTS OF CHAR
 398   0444  1366              TAD     (100            /ADD 100 TO FORM A GOOD ASCII CHARACTER
 399   0445  3773*             DCA     C0CHAR          /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 PRINTTING DEVICE 214
 413   0463  7557            7557                    /CNTRL Q START DISPLAYING CHAR, AGAIN 221
 414   0464  7556            7556                    /CNTRL R BACK TO BEGINNING 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     INMODF          /SET SOFT FLAG FOR UNEXPECTED CHAR
```

```
                        TAD     C8SETS          /CHECK IF CONTROL S TYPED IN
                        SZA CLA
                        JMP     BYRETR          /CONTROL S TYPED IN
                        JMS     C8GET           /NO CONTROL S TYPED PREVIOUSLY
                        JMP I   XC8CNTR         /LEAVE VIA CNTR ENTRY ADDRESS
BYRETR, DCA             C8SETS                  /CLEAR THE SOFT FLAG
                        JMS     C8GET           /RESTORE REGISTERS
                        JMP I   C8RETR          /EXIT TO ADDRESS SET BY CONTROL S
                /
                /
                /CONTROL R
                /GO TO THE QUESTION C8SWIT
CNTRLR, DCA             TTYLPT                  /CLEAR THE TYPE FLAG SET TO TTY
                        DCA     C8SETS          /CLEAR SOFT FLAG FOR CNTRL S
                        DCA     INMODE
                        JMS     UPAROW          /PRINT THE ^ AND C8CHAR
C8BY4,  DCA             C8SWST                  /CLEAR FLAG FOR CNTRL D OR R
                        CDF CIF
                        JMP I   XDOSW           /GO TO ADDRS OF C8SWIT
XDOSW,  BGN                                     /DOSW IS LABEL FOR C8SWIT QUESTION
                /
                /
                /CONTROL S
                /STOP SENDING CHAR. TO DISPLAY UNTIL A ^Q IS RECEIVED
                /
                /
CNTRLS, TAD             C8SETS                  /IF1 DO NOT STORE IN C8RETR
                        SZA CLA
                        JMP     C8DO7           /DONT SET UP C8RETR
                        IAC                     /MAKE RETURN CALL PLUS 2
                        TAD     XC8CNT          /GET RETURN FOR THIS CALL
                        DCA     C8RETR          /STORE IT HERE FOR USE BE CNTROL Q
C8DO7,  ISZ             C8SETS                  /SET FLAG TO SAVE CALL
                        JMS     XC8TTYI         /LOOK FOR THE INPUT
                        JMS     C8GET           /GET REGISTERS
                        JMS     XC8CNTR         /CHECK FOR THE CONTROL CHAR
                        CLA
                        JMP     CNTRLS          /IF NOT A CNTRL Q R C REASK
C8SETS, 0
C8RETR, 0
                /
                /SWITCH OUTPUT FROM ONE OUTPUT DEVICE TO ANOTHER - THE TWO OUTPUTS ARE THE
                /CONSOLE AND THE PRINTER WITH DEVICE CODE 66.
                /
                /
CNTRLL, TAD             TTYLPT                  /GET PRESENT C8SWIT INDICATOR
                        CMA                     /COMPLEMENT IT
                        DCA     TTYLPT          /STOR NEW C8SWIT
                        JMS     UPAROW          /C8PRNT ^ AND CHAR ON NEW DEVICE
                        JMS     C8GET           /RESTORE THE REGISTERS
                        JMP I   XC8CNT          /EXIT
                /
                /CONTROL E
                /CONTINUE RUNNING FROM A INQUIRE OR ERROR
                /
```



```
                /
CNTRLE, JMS             UPAROW                  /PRINT THE CONTROL CHAR
                        DCA     C8SWST          /CLEAR FLAG.
                        JMS     C8GET           /GET THE REGISTERS
                        JMP I   XC8CNT          /RETURN TO CALL PLUS ONE
                /

                /CONTROL C
                /RETURN TO MONITOR CONTROL C
CNTRLC, DCA             TTYLPT                  /CLEAR THE LPT FLAG TO PRINT ON DISPLAY
                        DCA     C8SWST          /CLEAR FLAG.
                        JMS     UPAROW          /C8PRNT ^C AND LETTER IN CHAR
                        CDF CIF                 /GO TO 0 FLD
                        CAF                     /CLEAR THE WORLD
                        JMP I   (7600           /GO TO DIAGNOSTIC MONITOR
                /*****************************************************************
                /
                /
                /
0560  7600
0561  0272
0562  0745
0563  0615
0564  1121
0565  0624
0566  0100
0567  1023
0570  0277
0571  1077
0572  1076
0573  1075
0574  1346
0575  1347
0576  1200
0577  1345
      0600      PAGE
                /
                                                /CONTROL D
                                                /CHANGE THE SWITCH REGISTER ANYTIME CNTRL D AND RETURN TO
                                                /THE PROGRAM RUNNING.

0600  4215  CNTRLD, JMS     UPAROW
0601  1213          TAD     C8SETD          /CHECK IF THE RETURN ADDRS IS SAFE
0602  7640          SZA CLA
0603  5207          JMP     C8DO11          /DO NOT CHANGE THE RETURN ADDRS
0604  1777          TAD     XC8CNT          /GET THE RETURN ADDRS AND SAVE IT
0605  3214          DCA     C8RETD          /SAVE THE RETURN HERE
0606  2213          ISZ     C8SETD          /INDICATE RETURN SAVED DONT DISTROY
0607  4256  C8DO11, JMS     XC8PSW          /GO CHANGE THE SWITCH REGISTER
0610  3213          DCA     C8SETD          /CLEAR THE FLAG
0611  4224          JMS     C8GET           /RESTORE THE AC MQ LINK ETC
0612  5614          JMP I   C8RETD          /RETURN TO THE PROGRAM
                /
```

```
 543   0613  0000   C0SETD, 0
 544   0614  0000   C0RETD, 0
 545
 546
 547
 548                /THIS WILL TYPE A UP ARROW AND THE CHAR IN C0CHAR,
 549
 550   0615  0000   UPAROW, 0                        /C0PRNT THE "^" AND THE CHAR C0TYPED IN
 551   0616  1376          TAD     (336             /CODE FOR ^
 552   0617  4775'         JMS     XC0TYPE
 553   0620  1774'         TAD     C0CHAR           /C0TYPE THE CHAR
 554   0621  4775'         JMS     XC0TYPE
 555   0622  4773'         JMS     XC0CRLF
 556   0623  5615          JMP I   UPAROW           /EXIT
 557
 558
 559
 560                /*********************************************************************
 561
 562   0624  0000   C0GET,  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   C0GET            /GET THE REGISTERS
 571
 572
 573
 574                /*********************************************************************
 575
 576                /C0INQU
 577                /C0INQU 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                /       C0INQU =        JMS XC0INQ
 584
 585                /EX,    JMS     XC0INQ                  /C0 WILL PRINT A WAITINGAND WAIT FOR INPUT
 586                /       DO ANYTHING                     /RETURN IS CALL PLUS ONE AC =0 CONTINUE
 587
 588                /CALLS USED ARE -CHKCLA-XC0PNT-XC0TYI-C0GET-XC0CNTR-
 589
 590
 591   0635  0000   XC0INQ, 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   XC0INQ           /NOT CONSOLE LEAVE
 596   0642  4766'         JMS     XC0PNT
 597   0643  0651          WATMES                   /INQUIR WAITTING
```



```
 598   0644  4765'         JMS     XC0TTYI          /GET CHARACTER
 599   0645  4224          JMS     C0GET
 600   0646  4777'         JMS     XC0CNTR          /CHECK IF CONTROL CHARACTER
 601   0647  5635          JMP I   XC0INQ           /EXIT AND CONTINUE
 602   0650  5236          JMP     XC0INQ+1         /REASK
 603   0651  2781  WATMES, TEXT    "WAITING "
       0652  1124
       0653  1116
       0654  0740
       0655  0000
 604
 605
 606                /*********************************************************************
 607
 608                /C0SWIT
 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                /C0SWIT WILL SET UP THE PSEUDO SWITCH
 614                /REGISTER WITH THE NEW DATA ENTERED
 615                /
 616                /       C0SWIT =        JMS XC0PSW
 617
 618                /EX,            JMS     XC0PSW          /SET UP PSEUDO C0SWIT REGISTER IF
 619                                                        /ON THE CONSOL PACKAGE, RETURN IS CALL PLUS ONE AC = 0
 620
 621                /CALLS USED ARE -CHKCLA-XC0PSW-XC0PNT-XC0OCTA-XC0TYPE-
 622
 623
 624   0656  0000   XC0PSW, 0
 625   0657  4767'         JMS     CHKCLA           /CHECK LOC 22 BIT 3 CONSOLE BIT
 626   0660  7410          SKP                      /ACTIVE CONSOLE
 627   0661  5656          JMP I   XC0PSW           /DEACTIVE CONSOLE PACKAGE
 628                                                /RETURN WITHOUT ASKING PSEUDO SWITCH
 629   0662  1345          TAD     C0SWST           /IS THE SOFT FLAG SET FOR SWITCH?
 630   0663  7640          SZA CLA                  /SKIP IF ONE ENTRY AT ATIME OK
 631   0664  5764'         JMP     C0BY4            /SECOND ENTRY WITH OUT A EXIT GO TO SW QUESTION
 632   0665  2345          ISZ     C0SWST           /FIRST ENTRY SET FLAG
 633   0666  4766'  C0ROPS, JMS     XC0PNT           /C0PRNT SP=
 634   0667  0747          MESA
 635   0670  1020          TAD     20               /GET CONTENTS OF SW
 636   0671  4763'         JMS     XC0OCTA          /CONVERT IT TO ASCII
 637   0672  1362          TAD     (40              /GET SPACE
 638   0673  4775'         JMS     XC0TYPE
 639   0674  2761'         ISZ     INMODE           /SET FLAG FOR CHAR EXECTED
 640   0675  4760'         JMS     XC0ECHO          /LOOK FOR INPUT
 641   0676  4315          JMS     TSTCHA           /NOT CONTROL TEST IT IS LEGAL
 642   0677  1774'         TAD     C0CHAR           /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     XC0ECHO          /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 C8TYPED IN
657  0715  0000  T8TCHA, 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 POSITIVE 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   T8TCHA          /EXIT
675  0736  1352  ERR1,   TAD     (277            /C8PRNT
676  0737  4775'         JMS     XC8TYPE         /?
677  0740  4773'         JMS     XC8CRLF         /
678  0741  5266          JMP     C8RDP8          /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  MES8,   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  3321          DCA     C8TMP1          /SAVE CORRECT POSITIONED WORD HERE
728  1004  1377          TAD     (-4
729  1005  3322          DCA     C8CKP           /STORE COUNTER IN HERE
730  1006  1321  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  1321          TAD     C8TMP1          /
735  1013  7006          RTL
736  1014  7004          RAL                     /PUT NEXT NUMBER IN POSITION
737  1015  3321          DCA     C8TMP1          /STORE IT
738  1016  2322          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
```

```
1023 0000   XC8CRLF,0
1024 7300           CLA CLL
1025 1374           TAD     (215            /GET CODE FOR CR
1026 4277           JMS     XC8TYPE
1027 1237           TAD     FILLER
1030 7040           CMA
1031 3240           DCA     FILCNT          /STORE FILLER IN HERE
1032 1373           TAD     (212            /GET CODE FOR LF
1033 4277   C8DO2,  JMS     XC8TYPE
1034 2240           ISZ     FILCNT          /CHECK ON FILLER CHAR
1035 5233           JMP     C8DO2           /TYPE A NON PRINTING CHAR
1036 5623           JMP I   XC8CRL          /EXIT
1037 0004   FILLER, 0004                    /FILLER SET FOR 4 CHAR
1040 0000   FILCNT, 0                       /COUNTER FOR FILL



            //**************************************************************
            /C8CKPA
            /THIS ROUTINE WILL CHECK IF A CHARACTER WAS ENTERED FROM THE
            /TERMINAL. IFTHE FLAG IS SET AND THE CONSOLE PACKAGE IS
            /ACTIVE A CHECK IS MADE TO DETERMIND IF IT IS A CONTROL CHAR.
            /IF IT WAS A CONTROL CHAR THEN ITS CONTROL FUNCTION IS PERFORMED.
            /IF NOT A CONTROL CHARACTER OR A CONTROL E-D-L-O- IT WILL DO
            /THE CONTROL FUNCTION AND RETURN TO CALL PLUS 2.
            /A NON CONTROL CHARACTER WILL BE PRINTEDAND A "?" IT WILL RETURN TO
            /CALL PLUS 2.
            /IF NO FLAG IS SET OR THE CONSOL IS NOT ACTIVE THE RETURN IS TO
            /CALL PLUS 1.


            /       C8CKPA= JMS     XC8CKP


            /EX,    JMS     XC8CKPA                 /CALL TO CHECK IF CONTROL CHAR SET
            /       ANYTHING(SKIP)          /RETURN IF NOT FLAG OR NOT CONSOLE ACTIVE
            /       ANYTHING(JMP EXIT SKIP CHAIN)   /RETURN IF NOT CONTROL OR CONTINUE CONTROL

            /CALLS USED ARE -XC8TTYI-XC8CNTR-C8GET-


1041 0000   XC8CKP, 0
1042 3772'          DCA     ACSAVE          /SAVE THE AC
1043 6004           GTF                     /SAVE THE FLAGS
1044 3771'          DCA     FLSAVE          /SAVE THE FLAGS
1045 7501           MQA                     /PUT MQ IN AC
1046 3770'          DCA     MQSAVE          /SACE THE MQ
1047 6031           KSF                     /CHECK THE KEYBOARD FLAG
1050 5261           JMP     C8BY3           /EXIT TO CALL PLUS 1
1051 4767'          JMS     CHKCLA          /CHECK LOC 22 BIT 3 CONSOLE BIT
1052 7410           SKP                     /ACTIVE CONSOLE PACKAGE
1053 5261           JMP     C8BY3           /EXIT TO CALL PLUS 1
1054 4766'          JMS     XC8TTYI         /GET THE CHAR
```



```
1055 4765'          JMS     C8GET           /GET THE FLAGS
1056 4764'          JMS     XC8CNTR         /CHECK IF CONTROL  CHAR.
1057 7000           NOP                     /RETURN IF A CONTINUE CHAR.
1060 2241           ISZ     XC8CKP          /BUMP RETURN FOR CALL PLUS 2
1061 4765'  C8BY3,  JMS     C8GET           /GET REGISTERS
1062 5641           JMP I   XC8CKP          /SAY GOOD BY

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

            /C8ECHO
            /THIS ROUTINE WILL LOOK FOR A CHAR FROM THE KEYBOARD.  STORE IT IN LOCATION CHAR
            /CHECK IF IT WAS A CONTROL CHARACTER - SET INMODE - PRINT CHARACTER

            /       C8ECHO =        JMS XC8ECH
            /EX,    JMS     XC8ECHO         /LOOK FOR CONSOL CHAR C8PRNT IT
                                            /RETURN CALL PLUS ONE AC = CHAR C8TYPED IN

            /CALLS USED ARE -XC8TTYI-XC8CNTR-C8GET-XC8ECH-XC8TTYPE

            /
1063 0000   XC8ECH, 0
1064 4766'          JMS     XC8TTYI         /WAIT FOR CHAR FROM KEYBOARD
1065 4765'          JMS     C8GET           /RESTORE THE REGISTERS
1066 2276           ISZ     INMODE          /SET INMODE IDENTIFING THIS AS A EXPECTED CHAR
1067 4764'          JMS     XC8CNTR         /GO CHECK IF IT IS A CONTROL CHAR
1070 5663           JMP I   XC8ECH          /WAS A CONTROL CHAR - CONTINUE RUNNING
1071 4277           JMS     XC8TYPE         /NOT A CONTROL CHAR C8PRNT IT
1072 3276           DCA     INMODE          /CLEAR FLAG THAT CHAR EXPECTED
1073 1275           TAD     C8CHAR          /GET CHAR IN AC
1074 5663           JMP I   XC8ECH          /EXIT
1075 0000   C8CHAR, 0
1076 0000   INMODE, 0

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

            /C8TYPE
            /THIS ROUTINE WILL C8PRNT ON THE CONSOLE OR THE LPT WITH DEVICE CODE 66.
            /
            /       C8TYPE= JMS XC8TYP

            /EX,    JMS     XC8TYPE         /C8PRNT THE CHAR IN THE AC.
                                            /               /RETURN CALL PLUS ONE AC =0000
                                            /DO NOT CLEAR THE LINK IN THIS ROUTINE NEEDED BYC8OCT

            /CALLS USED ARE -C8HANG-XC8CNTR-XC8PNT-XC8CRLF-XC8INQU-


1077 0000   XC8TTP, 0
1100 3320           DCA     PNTBUF          /STORE CHAR
1101 1321           TAD     TTYLPT          /CHECK 0=TTY 7777=LPT
1102 7640           SZA CLA
1103 5312           JMP     XDOLPT          /DO OUT PUT ON LPT
1104 1320           TAD     PNTBUF
1105 6046           TLS
1106 6041           TSF
```

```
 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 CONSOLE 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-XC80CTA-
 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     C8D010          /DO NOT PRINT
 970   1236  4772'         JMS     XC8CRLF
```

```
 971   1237  4771'           JMS     XC8PNT
 972   1240  1328            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'  C8DO10,   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 HERE;!!!
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
```



```
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
```

```
                        /
                        /ALL KNOWN HLTS.
                        /
                        /
 1400  6031   ERHLT1                  /UNDEFINED INTERRUPT
 1401  6142   ERHLT2                  /SKIP TRAP FOR DCLR
 1402  6115   ERHLT3                  /SKIP TRAP FOR DLAG
 1403  6104   ERHLT4                  /SKIP TRAP FOR DLCA
 1404  6070   ERHLT5                  /SKIP TRAP FOR DRST
 1405  6126   ERHLT6                  /SKIP TRAP FOR DLDC
 1406  6151   ERHLT7                  /SKIP TRAP FOR DMAN
 1407  6726   ERHLT9                  /RECOVERABLE ERROR HALT
 1410  5716   ENDHLT                  /END OF TEST HALT
 1411  7014   STPHLT                  /HALT FROM SWR4=1
 1412  7126   CHNHLT                  /IOT CHANGE HALT
                        /
       6741   DSKP=6741               /SKIP ON TRANSFER DONE OR ERROR
       6742   DCLR=6742               /CLEAR DISK CONTROL LOGIC
       6743   DLAG=6743               /LOAD ADDRESS AND GO
       6744   DLCA=6744               /LOAD CURRENT ADDRESS
       6745   DRST=6745               /READ STATUS REGISTER
       6746   DLDC=6746               /LOAD COMMAND REGISTER
       6747   DMAN=6747               /LOAD MAINTENANCE
                        /
       4405   SET=JMS I       XSET
       4424   TICK=JMS I      XTICK
       4425   AERRO=JMS I     XAERRO
       4423   APT0A=JMS I     XAPT0A
       4404   LAS=JMS I       XLAS
       4406   CLASIC=JMS I    XCLAS
```



```
       5426   IOTCHN=JMP I    XCHANG
       5430   MANUAL=JMP I    MANTST
       4444   EMMAN1=JMS I    XMAIN1
       4445   EMMAN2=JMS I    XMAIN2
       4435   NERROR=JMS I    XNERRO
       4436   ERROR=JMS I     XERRO
       4437   IONMAT=JMS I    XIONMT
       4440   ACCMP1=JMS I    XCOMP1
       4441   ACCMP2=JMS I    XCOMP2
       4442   RDSTAT=JMS I    XRDST
       4443   RDCMD=JMS I     XRDCM
       4446   RDADD=JMS I     XRDAD
       4427   LDBUF=JMS I     XUPPER
       4452   LDADD=JMS I     XLDAD
       4447   DSKSKP=JMS I    XSDKP
       4450   LDCMD=JMS I     XLDCM
       4451   LDCUR=JMS I     XLDCA
       4453   CLRALL=JMS I    XCLDR
       4454   RDCRC=JMS I     XRDCR
       4455   LDMAN=JMS I     XLDMN
       4456   RDBUF=JMS I     XRDBF
       4457   PRNTER=JMS I    XPRN
       4460   OCTEL=JMS I     XFROCT
       4461   TWOCT=JMS I     XTOCT
       4434   TYPE=JMS I      XPRINT
       4462   CRLF=JMS I      XCRLF
                        /
       0000   .=0
                        /
 0000  0305             305                     /REV E
 0001  5001             5001
 0002  0002             0002
 0003  0003             0003
                        /
 0004  5764   XLAS,     MYLAS
 0005  7040   XSET,     SETUP
 0006  5732   XCLAS,    CLASIC
 0007  0000   SAVEND,   0
                        /
       0010   .=10
                        /
 0010  0000   AUTO10,   0
                        /
       0020   .=20
                        /
 0020  0000   SWR,      0
 0021  4000   OP1,      4000
 0022  0000   OP2,      0
                        /
 0023  7200   XAPT0A,   APT0
 0024  7220   XTICK,KTICK
 0025  7241   XAERRO,MAERRO
 0026  7101   XCHANG,   CHANG
 0027  7055   XUPPER,   UPPER
 0030  5723   MANTST,   MANUL
```

```
1130   0031  6411    INTRQ,  INTADD
1131   0032  5670    XEND,   ENDTST
1132   0033  6214    THSFLD, PRSFLD
1133   0034  6463    XPRINT, PRINT
1134   0035  7800    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  6248    XRDCM,  RDCM
1141   0044  6256    XMAIN1, MAIN1
1142   0045  6768    XMAIN2, MAIN2
1143   0046  6200    XRDAD,  RDAD
1144   0047  6138    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
```



```
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    M40,    -40
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
```

SEQ 0048

```
                        /
                0200    *200
                        /
                        /SETUP POINTERS FOR AMOUNT OF EXTENDED
                        /BANKS OF MEMORY, INTERRUPT SERVICE, CURRENT
                        /FIELD , AND TESTS FOR CLASSIC PACKAGE OR APT SYSYTEM.
                        /IF CONSOLE IS ACTIVE APT FUNTIONS OR NOP.
                        /
0200  5203    BGN,      JMP     .+3             /RUN DISKLESS.
0201  5430              MANUAL                  /TO MANUAL SCOPE TEST
0202  5426              IOTCHN                  /TO IOT CHANGE ROUTINE
0203  6224              RIF
0204  3175              DCA     HOMEMA
0205  1175              TAD     HOMEMA
0206  1150              TAD     KCDF            /MAKE HOMEDF
0207  3210              DCA     PRSFLD
0210  7402    PRSFLD,   HLT                     /MAKE DF=IF
0211  4405              SET                     /SETUP FIELD 0
0212  1176              TAD     FLDMAX          /GET FIRST PASS POINTER
0213  7640              SZA CLA                 /IS IT FIRST PASS
0214  5217              JMP     .+3             /NO, MUST BE A RESTART
0215  1532              TAD I   K7777           /GET LAST LOCATION
0216  3007              DCA     SAVEND          /SAVE IT FOR A RESTORE
0217  4423              APTSA                   /NOP CONSOLE IF ON APTSA
0220  4406              CLASIC                  /CHECK FOR CONSOLE CLASSIC
0221  4431              CSWSIT                  /CHECK FOR SWITCH SR=,
0222  7000              NOP
0223  4404              LAS
0224  0072              AND     K0007           /MASK 9-11
0225  7040              CMA
0226  3176              DCA     FLDMAX          /SAVE AMOUNT OF EXTENDED MEMORY
0227  1022              TAD     22
0230  0182              AND     K0400
0231  7640              SZA CLA                 /ON CLASSIC,
0232  6007              6007                    /YES, THEN CLEAR ALL FLAGS.
                        /
                        /VERIFY THAT THE DISK MOTOR IS OFF, THE
                        /STATUS REGISTER SHOULD ONLY CONTAIN NOT READY TO
                        /SEEK, READ, OR WRITE AND NOT DISK FILE READY,
                        /INITIALIZE SHOULD HAVE CLEARED ALL OTHER BITS
                        /
0233  3153              DCA     REG1
0234  1177              TAD     STCON           /GET EXPECTED STATUS
0235  3163              DCA     GDREG2          /SETUP TEST HANDLER
                        /
0236  1153    TST0,     TAD     REG1            /GET AC VALUE
0237  4442              RDSTAT                  /READ STATUS REGISTER
0240  4440              ACCMP1                  /CHECK RESULTS
0241  4435              NERROR                  /AC O.K. 4096 LOOPS
0242  4436              ERROR                   /ERROR, "INITIALIZE" CLEAR STATUS
                                                /REGISTER FAILED.
0243  0236              TST0                    /SCOPE LOOP POINTER
0244  5000              5000                    /TEXT POINTER
```


SEQ 0049

```
                        /
                        /VERIFY THAT SKIP CONDITIONS WERE CLEARED
                        /BY "INITIALIZE" ON START OF TEST.
                        /
0245  4447    TST1,     DSKSKP                  /ISSUE "DSKP" IOT
0246  4435              NERROR                  /DSKP O.K. 4096 LOOPS
0247  4436              ERROR                   /ERROR, "INITIALIZE" CLEAR
                                                /SKIP CONDITIONS
0250  0245              TST1                    /SCOPE LOOP POINTER
0251  0006              0006                    /TEXT POINTER
                        /
                        /VERIFY THAT INTERRUPT REQUESTS WERE
                        /CLEARED BY "INITIALIZE" AT START OF TEST
                        /
0252  4437    TST2,     IONWAT                  /GO WAIT FOR INT.
0253  4435              NERROR                  /INT. O.K. 4096 LOOPS
0254  4436              ERROR                   /ERROR, "INITIALIZE" CLEAR
                                                /INT. CONDITION
0255  0252              TST2                    /SCOPE LOOP POINTER
0256  0007              0007                    /TEXT POINTER
                        /
                        /VERIFY THAT COMMAND REGISTER WAS CLEARED
                        /BY "INITIALIZE" AT START OF TEST, READ COMMAND
                        /REGISTER WITH "DMAN" (MAINTENANCE IOT)
                        /
0257  3163              DCA     GDREG2          /SETUP COMPARE REGISTER
0260  4443    TST3,     RDCMD                   /READ COMMAND REGISTER
0261  7650              SNA CLA                 /AC SHOULD BE 0
0262  4435              NERROR                  /AC O.K. 4096 LOOPS
0263  4436              ERROR                   /ERROR, "INITIALIZE" CLEAR
                                                /COMMAND REGISTER
0264  0260              TST3                    /SCOPE LOOP POINTER
0265  4201              4201                    /TEXT POINTER
                        /
                        /VERIFY THAT ALL DRIVES ON CONTROL ARE OFF.
                        /THE STATUS SHOULD BE 2200 WHEN DRIVES ARE SELECTED.
                        /
0266  1177    TST4,     TAD     STCON           /EXPECTED STATUS
0267  3163              DCA     GDREG2          /SETUP COMPARE REGISTER
0270  7301              CLA CLL IAC             /ENABLE CLEAR CONTROL
0271  4453              CLRALL                  /DCLR "CLR ALL"
0272  1153              TAD     REG1            /GET AC VALUE
0273  4450              LDCMD                   /LOAD COMMAND
0274  4442              RDSTAT                  /READ STATUS
0275  4440              ACCMP1                  /CHECK RESULTS
0276  4435              NERROR                  /O.K. 4096 LOOPS
0277  4436              ERROR                   /ERROR, STATUS
0300  0266              TST4                    /SCOPE LOOP POINTER
0301  5000              5000                    /TEXT POINTER
                        /
                        /VERIFY THAT IOT "DSKP" DOES NOT AFFECT
                        /AC REGISTER, TRY ALL COMBINATIONS IN AC,
                        /
0302  1153    TST5,     TAD     REG1            /GET AC VALUE
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 THAT 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             /3741
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,
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```
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 OPOSITF
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
```



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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              LOADD                   /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 "DLAC"
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 "DLAC" 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
```

```
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
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
```



```
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, CRC 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 CRC
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 "DLCR",
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
```

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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                   /ERROP, 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                    /TEXT POINTER
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
```



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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
```

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 1900   1144  4444          ENMAN1                  /ENTER MAINTENANCE                    SEQ 0060
 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                     SEQ 0061
 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     K0400           /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          LOMAN                   /LOAD MAINTENANCE "LOMAN"
2011  1276  2156          ISZ     TCNTR1
2012  1277  5275          JMP     .-2             /12 COUNT
2013  1300  7301          CLA CLL IAC
2014  1301  4451          CLRALL                  /CLEAR ALL "DCLR"
2015  1302  1074          TAD     K0020
2016  1303  4455          LOMAN                   /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, LOMAN 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          LOMAN                   /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                  /ENTER MAINTENANCE 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          NERROR                  /AC 0,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 REGISTER, THEN READ CRC REGISTER,
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  7004          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          RDCRC                   /READ CRC REGISTER
2127  1423  4441          ACCMP2                  /CHECK RESULTS
2128  1424  4435          NERROR                  /0,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                /REGISTER, 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     GDREG2          /SETUP COMPARE REGISTER
2143  1434  1153          TAD     REG1
2144  1435  0145          AND     K0017
2145  1436  3162          DCA     GDREG1          /SETUP COMPARE REGISTER
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                 /SKIP 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                   /READ CRC REGISTER
2166  1463  4441          ACCMP2                  /CHECK RESULTS
2167  1464  4435          NERROR                  /0,K, 4096 LOOPS
2168  1465  4436          ERROR                   /ERROR, 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 REGISTER, TRY ALL COMBINATIONS IN CRC.
2174                /
2175  1470  7301    TST40,  CLA CLL IAC
2176  1471  4453          CLRALL                  /DCLR "CLR ALL"
2177  1472  3163          DCA     GDREG2
2178  1473  3162          DCA     GDREG1          /SETUP COMPARE 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 COUNTER
2183  1500  4444          ENMAN1                  /ENTER MAINTENANCE 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          LOADD                   /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                  /"DCLR" "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                /VERIFTY 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     TCNTP4
 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 CNMPARE
 2301   1634  1137          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  7000          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  1151          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     KP020           /ENABLE READ BUFFER
 2347   1705  4455          LDMAN                   /DMAN
 2348   1706  3167          DCA     DBREG           /SAVE RESULTS
```



```
 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                   /FROR 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
```

```
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     N48
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  6447          DSKSKP                  /"DSKP"
2496  2106  5314          JMP     T51E            /ERROR, "DSKP"
2497  2107  6447          DSKSKP                  /"DSKP"
2498  2110  5314          JMP     T51E            /ERROR, "DSKP"
2499  2111  4453          CLRALL                  /CLEAR STATUS "DCRL"
2500  2112  6447          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                   /SCOPE 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
```

```
 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                    /TEXTPOINTER
 2522
 2523                 /
 2524                 /VERIFY THAT "DRL" SHOULD CAUSE INT, RQ, ONLY
 2525                 /WHEN "INT, ENABLE BIT IS SET, DOES LOCMD 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, OCCURRED
 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 "LOCMD" 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  1870           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  5725           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  1866           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                   /SCOPE LOOP POINTER
 2622   2271  5000           5000                    /TEXT POINTER
 2623                 /
```

```
                        /VERIFY THAT "DRIVE STATUS ERROR" CAUSES INT. RQ.
                        / "DOES LOC"D CLEAR INT."
                        /
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
```



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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  4464              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  5744              JMP     T62E            /ERROR, SKIP
2730    2430  7126              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
```



```
 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  6456            LOMAN                   /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
```

```
2644  2622  7326          CLA CLL CML RTL
2645  2623  1077          TAD     K0100
2646  2624  1177          TAD     STCON           /EXPECTED STATUS
2647  2625  3163          DCA     GDREG2
2648  2626  4451          LDCUR                   /LOAD CURRENT ADDRESS
2649  2627  1154          TAD     REG2
2650  2630  4442          RDSTAT                  /READ STATUS REGISTER
2651  2631  4440          ACCMP1                  /CHECK RESULTS
2652  2632  4435          NERROR                  /O.K. 4096 LOOPS
2653  2633  4436  T65E,   ERROR                  /ERROR, STATUS REGISTER
2654  2634  2680          TST65                   /SCOPE LOOP POINTER
2655  2635  5000          5000                    /TEXT POINTER
2656                      /
2657                      /VERIFY THAT "RECALIBRATE" THEN "DLDC"
2658                      /DOES SET BUSY ERROR IN STATUS
2659                      /
2660  2636  7301  TST66,  CLA CLL IAC
2661  2637  4453          CLRALL                  /CLEAR CONTROL
2662  2640  4444          ENMAN1                  /ENTER MAINTENANCE
2663  2641  7326          CLA CLL CML RTL
2664  2642  4453          CLRALL
2665  2643  7326          CLA CLL CML RTL
2666  2644  1077          TAD     K0100
2667  2645  1177          TAD     STCON           /EXPECTED STATUS
2668  2646  3163          DCA     GDREG2
2669  2647  4450          LDCMD                   /LOAD COMMAND REGISTER
2670  2650  1154          TAD     REG2
2671  2651  4442          RDSTAT                  /READ STATUS REGISTER
2672  2652  4440          ACCMP1                  /CHECK RESULTS
2673  2653  4435          NERROR                  /O.K. 4096 LOOPS
2674  2654  4436          ERROR                   /ERROR, STATUS REGISTER
2675  2655  2636          TST66                   /SCOPE LOOP POINTER
2676  2656  5000          5000                    /TEXT POINTER
2677                      /
2678                      /VERIFY THAT RECALIBRATE THEN DIAG RESULTS IN
2679                      /BUSY AND DRIVE STATUS ERROR.
2680                      /
2681  2657  7301  TST67,  CLA CLL IAC
2682  2660  4453          CLRALL                  /CLEAR CONTROL
2683  2661  4444          ENMAN1                  /ENTER MAINTENANCE
2684  2662  7326          CLA CLL CML RTL
2685  2663  1077          TAD     K0100
2686  2664  1177          TAD     STCON           /EXPECTED STATUS
2687  2665  3163          DCA     GDREG2          /SETUP EXPECTED COMPARE
2688  2666  7326          CLA CLL CML RTL         /ENABLE RECALIBRATE
2689  2667  4453          CLRALL
2690  2670  4452          LDADD                   /LOAD DISK ADDRESS
2691  2671  4442          RDSTAT                  /READ STATUS
2692  2672  4440          ACCMP1                  /CHECK RESULTS
2693  2673  4435          NERROR                  /O.K. 4096 LOOPS
2694  2674  4436          ERROR                   /ERROR, BUSY OR DRIVE STATUS
2695  2675  2657          TST67                   /SCOPE LOOP POINTER
2696  2676  5000          5000                    /TEXT POINTER
2697                      /
2698                      /VERIFY THAT SKIP OCCURRES ON BUSY ERROR
```



```
2699                      /
2700  2677  7301  TST68,  CLA CLL IAC             /CLEAR CONTROL
2701  2700  4453          CLRALL                  /DSKP
2702  2701  4447          DSKSKP                  /SKIP O.K.
2703  2702  7610          SKP CLA                 /ERROR, DISK SKIP
2704  2703  5315          JMP     T68E            /ENTER MAINTENANCE
2705  2704  4444          ENMAN1
2706  2705  7326          CLA CLL CML RTL
2707  2706  4453          CLRALL                  /DCLR
2708  2707  4451          LDCUR                   /LOAD CURRENT ADDRESS
2709  2710  4447          DSKSKP                  /DSKP DISK SKIP
2710  2711  5315          JMP     T68E            /ERROR, NO SKIP
2711  2712  4447          DSKSKP                  /DSKP DISK SKIP
2712  2713  5315          JMP     T68E            /ERROR
2713  2714  4435          NERROR                  /O.K. 4096 LOOPS
2714  2715  4436  T68E,   ERROR                  /ERROR, DSKP
2715  2716  2677          TST68                   /SCOPE LOOP POINTER
2716  2717  0006          0006                    /TEXT POINTER
2717                      /
2718                      /VERIFY THAT DCLR CLEARS ALL OF STATUS REGISTER
2719                      /
2720  2720  7301  TST69,  CLA CLL IAC
2721  2721  4453          CLRALL                  /CLEAR CONTROL
2722  2722  4444          ENMAN1                  /ENTER MAINTENANCE
2723  2723  7326          CLA CLL CML RTL
2724  2724  4453          CLRALL                  /DCLR
2725  2725  7326          CLA CLL CML RTL
2726  2726  1177          TAD     STCON
2727  2727  1106          TAD     K4000
2728  2730  1070          TAD     K0004           /EXPECTED STATUS
2729  2731  3163          DCA GDREG2
2730  2732  1103          TAD     K1000           /ENABLE SHIFT
2731  2733  4455          LDMAN                   /LOAD MAINTENANCE SET DRL
2732  2734  1153          TAD     REG1
2733  2735  4442          RDSTAT                  /READ STATUS REGISTER
2734  2736  4440          ACCMP1                  /CHECK RESULTS
2735  2737  7610          SKP CLA                 /O.K
2736  2740  5350          JMP     T69E            /ERROR
2737  2741  4453          CLRALL                  /DCLR
2738  2742  1177          TAD     STCON
2739  2743  3163          DCA GDREG2              /SETUP COMPARE REGISTER
2740  2744  1154          TAD     REG2
2741  2745  4442          RDSTAT                  /READ STATUS
2742  2746  4440          ACCMP1                  /CHECK RESULTS
2743  2747  4435          NERROR                  /O.K. 4096 LOOPS
2744  2750  4436  T69E,   ERROR                  /ERROR, STATUS REGISTER
2745  2751  2720          TST69                   /SCOPE LOOP POINTER
2746  2752  5000          5000                    /TEXT POINTER
2747                      /
2748                      /VERIFY THAT INTERRUPT OCCURES ON BUSY ERROR
2749                      /
2750  2753  7301  TST70,  CLA CLL IAC
2751  2754  4453          CLRALL                  /CLEAR CONTROL
2752  2755  1102          TAD     K0400           /ENABLE INT. BIT
2753  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  1183          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  1186          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          LDCUR                   /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 SET 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
3030  3061  3160          DCA     TCNTR3                  /FOR EACH 12 BIT WORD
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
```

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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
```



```
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 ORL
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 "ORL"
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
3113    3254    4455            LDMAN                   /SHIFT IN LAST WORD
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                    /
```

SEQ 0004

```
                        /VERIFY THAT 12TH BIT O.K. H DOES INHIBIT
                        /SETTING DB CONT1=1, THIS IS WHAT STOPS
                        /HALF BLOCK DATA BREAKS ON A READ BREAK.
                        /
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  7325              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
```


SEQ 0005

```
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      T76R,   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
```

```
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                     /
3283                     /VERIFY THAT "DATA BREAK" WORKS FROM LOCATION 0
3284                     /OF CURRENT FIELD, DO   "A WRITE" AND USE DATA
3285                     /PATTERN "2525 AND 5252"
3286                     /
3287  3530 7301  TST78,  CLA CLL IAC
3288  3531 4453          CLRALL                          /DCLR "CLR ALL"
3289  3532 4444          ENMAN1                  /ENTER MAINTENANCE MODE
3290  3533 1153          TAD     REG1
3291  3534 7110          CLL RAR
3292  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   R7777                   /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  TST00,  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     HONEMA                  /CURRENT FIELD BITS
3360  3626  1126          TAD     K5000                   /FUNCTION "WRITE"
3361  3627  4458          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  T00E,   ERROR                           /ERROR, DATA BREAK
3372  3642  3612          TST00                           /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  TST01,  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     HONEMA                  /CURRENT FIELD BITS
3390  3655  1106          TAD     K4000                   /WRITE FUNCTION
3391  3656  4458          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     T01E            /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
```



```
3403  3672  4436  T01E,   ERROR                           /ERROR, DATA BREAK
3404  3673  3644          TST01                           /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  TST02,  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     HONEMA                  /CURRENT FIELD BITS
3425  3707  1126          TAD     K5000                   /WRITE FUNCTION
3426  3710  4458          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     T02E            /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  T02E,   ERROR                           /ERROR, DATA BREAK
3439  3725  3675          TST02                           /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  TST03,  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     HONEMA                  /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 #
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   X7777           /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   L CMA RA
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     MT385                   /SPECIAL POINTER FOR START OF
3565  4101  7650          SNA CLA                         /THIS TEST.
3566  4102  5305          JMP     T85OK           /TEST O.K.
3567  4103  2157          ISZ     TCNTR2
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3568    4184  5246            JMP     T85R1           /LOOP DO 0200 TO TST60
3569    4185  4435    T850K,  NERROR                          /THIS ADDRESS WORKED TRY NEXT
3570    4186  4436    T85E,   ERROR                           /ERROR, DATA BREAK
3571    4187  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    T8T86,  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     T85R2           /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    T8T87,  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
3686                                              /MAKE DATA WORD
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
3701  4357  3000          DCA     0               /STORE NOT OUTBOUND DATA
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,   ERROR                   /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                  /CLR "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          ERROR                           /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          T5T90                   /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    T5T91,  CLA CLL IAC
3812    4510  4453          CLRALL
3813    4511  1175          TAD     HONEMA          /CURRENT FIELD
3814    4512  4450          LDCMD                   /LOAD COMMAND
3815    4513  7240          CLA CMA
3816    4514  4451          LOCUR                   /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          T5T91                   /SCOPE LOOP POINTER
3835    4537  4263          4263                    /TEXT POINTER
3836                  /
3837    4540  5741          JMP I   .+1             /TO NEXT TEST
3838    4541  4600          T5T92
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    T5T92,  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     HONEMA                  /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          T5T92                   /SCOPE LOOP POINTER
3881    4643  4263          4263                    /TEXT POINTER
3882                  /
3883    4644  5645          JMP I   .+1             /TO NEXT TEST
3884    4645  4646          T5T93
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    T5T93,  CLA CLL IAC
3892    4647  4453          CLRALL                  /DCLR "CLR ALL"
3893    4650  1175          TAD     HONEMA          /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
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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,   ERROR                   /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,   ERROR                   /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,   ERROR                   /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
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SEQ 0180

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4008  5033  1154          TAD     REG2
4009  5034  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
4010  5035  1163          TAD     GDREG2
4011  5036  6427          LDBUF                   /LOAD UPPER BUFFER
4012  5037  1161          TAD     GDREG1
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    T99E, ERROR                   /ERROR, DATA BREAK
4030  5061  5031          T5T98                   /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 CMMPARE
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
```


SEQ 0181

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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  5863         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         LOCUR                    /LOAD CURPENT 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  7648         SZA CLA                  /ON CLASSIC SYSTEM?
4130  5204  5600         JMP I   TSTLAS           /BI-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   TRSFLD
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,  LOCUR                   /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     T1020           /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  T1020,  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          TST103                  /SCOPE LOOP POINTER
4293  5455  4263          4263                    /TEXT POINTER
4294                /
4295                /
4296                /
4297                /VERIFY THAT DATA BREAK WORKS WITH A WRITE 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                  /ENTER 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   TH8FLD
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          CIA
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                /VERIFY 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   TH8FLD
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 CURRENT 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     ADREG           /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           /ERROR
4399  5653  2163          ISZ     GDREG2          /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  1873          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          CHPASS                  /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          CHINQU                  /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  1877          TAD     K0100           /ENABLE SHIFT PULSES
 4453   5727  4455          LOMAN                   /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                /
```



```
 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          CHCKSW                  /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
               0000  PAGE
 4504                /
 4505                /SUBROUTINE TO WAIT FOR INTERRUPTS
 4506                /IF INTERRUPT OCCURES GO BACK +1
 4507                /
 4508   6000  0000  IONWT,  0
 4509   6001  7300          CLA CLL
 4510   6002  1112          TAD     K7700
```

```
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          CRERR                   /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
```



```
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          CRERR                   /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          CRERR                   /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  LOAD,   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   LOAD                    /EXIT
4600  6113  4406          CLASIC                  /CHECK FOR CLASSIC.
4601  6114  4436          CRERR                   /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          CRERR                   /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
```

```
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                    /DCLP "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
```

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 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    PPINT, 0
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                                                                                                SEQ 0116
4841  6464  4406          CLASIC                  /CHECK FOR CLASSIC,
4842  6465  4435          CSTYPE                  /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  0182          AND     K0400           /MASK SWITCH 3
4857  6501  7650          SNA CLA                 /WAS IT GFT 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
4863  6507  3263          DCA     PRINT           /12 BIT COUNTER
4864  6510  1180          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
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                                                                                                SEQ 0117
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          SKP CLA
4947  6674  3200  NTCRC,  DCA     ERRO
4948  6675  1342          TAD     XTEXT
4949  6676  3345          DCA     PCNTR2
```

```
4950  6677  1343          TAD     XREG
4951  6700  3010          DCA     AUTO10
4952  6701  1331          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                  /CHECK FOR NEXT XX:
4968  6721  5303          JMP     STRAUT          /GET CONSTANT SAVED
4969  6722  1007          TAD     SAVEND          /REPLACE LAST LOCATION
4970  6723  3532          DCA I   K7777           /CHECK FOR CLASSIC,
4971  6724  4406          CLASIC                  /ROUTINE TO EXECUTE!!!!
4972  6725  4436          CBERR                   /ALL RECOVERABLE ERROR HALTS
4973  6726  7402    ERHLT9, HLT                     /CHECK FOR GET ALL REGISTERS
4974  6727  4741          JMS I   XDUMP           /TRY SAME TEST AGAIN
4975  6730  5740          JMP I   SERRO           /GET ALL REGISTERS
4976  6731  5257          JMP     NTGO
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  7406    XTEXT,  TEXST
4987  6743  0165    XREG,   CRREG2
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                /
```



```
5005  6760  0000    MAIN2,  0
5006  6761  7330            CLA CLL CML RAR         /ENABLE SET MAINTENANCE MODE
5007  6762  4455            LOMAN                   /LOAD MAINTENANCE
5008  6763  7010            RAR                     /ENABLE SET DB4=1
5009  6764  4455            LOMAN                   /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            CBCKPA                  /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  5630            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 OF
5056  7042  3752            DCA     BANFLD
5057  7043  1151            TAD     KRMF            /GET RMF FOR INT. RETURN
5058  7044  6201            CDF     0               /SWITCH FIELD 0
5059  7045  3465            DCA I   KP001
```

SEQ 0120

```
 5060   7046  1254          TAD     K5403           /JMP I 3 FOR LOC. 2
 5061   7047  3466          DCA I   KP002
 5062   7050  1031          TAD     INTRQ           /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
```


SEQ 0121

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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  7648          SZA CLA                 /A ONE OR ZERO????
 5081   7067  1066          TAD     K0002           /A ONE!!!!
 5082   7070  1077          TAD     K0100           /ENABLE SHIFT
 5083   7071  4455          LOMAN                   /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          CHSWIT                  /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  CHANGP, 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          CHEPR                   /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          1077
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   ERTXI,  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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        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
        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
        7471  0401    ERTX4,  TEXT    "DATA BREAK ERROR"
        7472  2401
        7473  4002
        7474  2205
        7475  0113
        7476  4005
        7477  2222
        7500  1722
        7501  0000
        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
        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
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        7526  0411    ERTX7,  TEXT    "DISK SKIP ERROR"
        7527  2313
        7530  4023
        7531  1311
        7532  2040
        7533  0522
        7534  2217
        7535  2200
        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
        7551  0103    ERTX9,  TEXT    "AC REGISTER ERROR"
        7552  4022
        7553  0507
        7554  1123
        7555  2405
        7556  2240
        7557  0522
        7560  2217
        7561  2200
                      /
        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
                      /
                              $$$
```

```
0000  111111111 100000000 111111111 111111111 111111111 111111111 111111111 111111111
0100  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111

0200  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
0300  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111

0400  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
0500  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111

0600  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
0700  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111

1000  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
1100  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111

1200  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
1300  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111000

1400  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
1500  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111

1600  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
1700  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111100000

2000  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
2100  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111000000

2200  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
2300  111111111 111111111 111111111 111111111 111111111 111111111 100000000 000000000

2400  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
2500  111111111 111111111 111111111 111111111 111111111 100000000 000000000 000000000

2600  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
2700  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111

3000  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
3100  111111111 111111111 110000000 000000000 000000000 000000000 000000000 000000000

3200  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
3300  111111111 111111111 111111111 111111111 111111000 000000000 000000000 000000000

3400  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
3500  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111

3600  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
3700  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
```



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4000  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
4100  111111111 111000000 000000000 000000000 000000000 000000000 000000000 000000000

4200  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
4300  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111

4400  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
4500  111111111 111111111 111111111 111111111 110000000 000000000 000000000 000000000

4600  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
4700  111111111 111111111 111111111 111111111 111111111 111111000 000000000 000000000

5000  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
5100  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111000

5200  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
5300  111111111 111111111 111111111 111111111 110000000 000000000 000000000 000000000

5400  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
5500  111111111 111111111 111111111 111111110 000000000 000000000 000000000 000000000

5600  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
5700  111111111 111111111 111111111 111111111 111111111 111111111 111111111 110111111

6000  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
6100  111111111 111111111 111111111 111111111 111111111 111000000 000000000 000000000

6200  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
6300  111111111 111111111 111111111 111111111 100000000 000000000 000000000 000000000

6400  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
6500  111111111 111111111 111111000 000000000 000000000 000000000 000000000 000000111

6600  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
6700  111111111 111111111 111111111 111111111 111111111 111111111 111111110 000000000

7000  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
7100  111111111 111111111 111111111 111111111 111110000 000000000 000000000 000000000

7200  111111111 111111111 111111111 111111111 111111111 111111111 111111110 000000000
7300  000000000 000000000 000000000 000000000 000000000 000000000 000000000 000111111

7400  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111
7500  111111111 111111111 111111111 111111111 111111111 111111111 111111111 111111111

7600
7700
```

SEQ 0128

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A0770   7132        C8TTYI  4426        ENMAN2  4445        IOT4    6100
A7007   7131        C8TYPE  4435        ERHLT1  0031        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
AC8AVE  1345        CHKCLA  1200        ERHLT6  6126        K0001   0065
ADREG   0172        CHNHLT  7126        ERHLT7  6151        K0002   0066
AERRO   4425        CHNPOT  7134        ERHLT9  6726        K0003   0067
APT8    7280        CKCOUT  0232        ERR1    0736        K0004   0070
APT8A   4423        CLASIC  4406        ERRMES  1320        K0006   0071
AUTO10  0010        CLASIK  5732        ERRO    5600        K0007   0072
BAKFLD  7052        CLDR    6135        ERROR   4436        K0010   0073
BAKPNT  6720        CLKCNT  7266        ERTX1   7424        K0017   0145
BGN     0200        CLRALL  4453        ERTX2   7437        K0020   0074
BYRETR  0506        CLRTRN  1315        ERTX3   7453        K0037   0075
C8BY1   0230        CMREG   0170        ERTX4   7471        K0040   0076
C8BY2   1300        CNTRLC  0551        ERTX5   7502        K0070   0114
C8BY3   1061        CNTRLD  0600        ERTX6   7514        K0077   0115
C8BY4   0515        CNTRLE  0545        ERTX7   7526        K0100   0077
C8BY5   1116        CNTRLL  0537        ERTX8   7536        K0177   0117
C8CHAR  1075        CNTRLO  0500        ERTX9   7551        K0200   0100
C8CKP   1022        CNTRLR  0511        EXIT    6457        K0207   0101
C8CKPA  4440        CNTRLS  0521        EXITA   0440        K0212   0147
C8CK8W  4425        CNTVAL  0252        EXTFLD  5201        K0215   0146
C8CNTR  4437        COMP1   6033        F10P1   0021        K0240   6461
C8CONT  1145        COMP2   6044        F10P2   0022        K0260   0063
C8CRLF  4433        CONSOL  0000        F18NR   0020        K0377   0116
C8DO1   0310        CRERR   6660        FILCNT  1040        K0400   0102
C8DO10  1262        CRLF    4462        FILLER  1037        K1000   0103
C8DO11  0607        CRREG1  0164        FLDMAX  0176        K2000   0104
C8DO2   1033        CRREG2  0165        FLSAVE  1347        K2525   0120
C8DO3   0350        DAREG   0171        FROCT   6400        K3737   0122
C8DO4   1006        DBREG   0167        GDREG1  0162        K3740   6462
C8DO7   0527        DCLR    6742        GDREG2  0163        K3777   0105
C8ECHO  4434        DLAG    6743        GETCH1  0703        K4000   0106
C8ERP   4436        DLCA    6744        GETDAT  0456        K4100   0124
C8GET   0624        DLDC    6746        GOITA   0443        K5000   0126
C8HANG  1122        DMAN    6747        GOTOA   0454        K5252   0121
C8INQU  4437        DOCNT   0247        GTF     6004        K5403   7054
C8OCTA  4432        DONEA   0426        HEDLST  6747        K5777   0127
C8PASS  4424        DOPACK  0212        HEDTAD  6746        K7000   0107
C8PAUS  4441        DOSET   0251        HOMEMA  0175        K7377   7264
C8PRNT  4430        DRST    6745        INDEXA  0455        K7600   0125
C8RDPS  0666        DSKP    6741        INMODE  1076        K7700   0112
C8RETD  0614        DSKSKP  4447        INTADD  6011        K7717   0123
C8RETR  0536        DTREG   0173        INTRQ   0031        K7740   0113
C8SETD  0613        DUMP    6476        IONWAT  4437        K7771   0131
C8SETS  0535        ENDHLT  5716        IONWT   6000        K7774   0130
C8WAIT  4431        ENDIT   0742        IOT1    6131        K7775   0111
C8WSBT  0745        ENDTST  5670        IOT2    6136        K7776   0110
C8TMP1  1021        ENMAN1  4444        IOT3    6111        K7777   0132
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SEQ 0129

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KCDF    0150        NTCLAS  1270        SETUP2  0225        T71E    3041
KRMP    0151        NTCRC   6674        SNERRO  7037        T72E    3115
KTICK   7220        NTGD    6657        STCON   0177        T72P    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
M48     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
MAINTST 0030        RDBUF   4456        T40R    1501        T850K   4105
MANUAL  5030        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
MESMAN  1146        RDSTAT  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        ROUINS  1302        T51E    2114        T87R4   4356
MQSAVE  1346        ROUTMP  5762        T53E    2156        T92E    4041
MT685   0152        RTFLD1  5645        T54E    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   7765        T62E    2444        T99R1   5071
NEXFL4  5443        SBCNT1  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
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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
TH6FLD	0033	TST41	1526	TST89	4426	XLAS	0004
TICK	4424	TST42	1545	TST9	0344	XLOAD	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
TOYST	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	XC8ECM	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	0317		
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

```
A077@    5098    $122#
A7007    5107    $121#
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    4100    4173    4226    4290    4334    4396
ACCMP2   1083#   1690    1718    1743    1770    1810    2048    2088    2127    2166    2200
ACL        55#
ACREG    1236#   4539    4540
ACSAVE    363     366     569     800     946     979    1030#
ADREG    1234#   3478    3515    3558    3736    3895    4101    4385    4392    4503    4584
AERRO    1071#   4887
APT@     1124    5139#   5143    5149    5151    5154
APT@A    1072#   1264
AUTO1@   1116#   4951    4965    4981
BAKFLD   5056    5064#
BAKPNT   4967#   4982
BGN       453    1249#   5119
BYRETR    436     439#
C@BY1     146     148     161#    173
C@BY2     993     995    1005#
C@BY3     806     809     815#
C@BY4     450#    631
C@BY5     869     873#    881
C@CHAR    234     235     378     387     395     397     399     553     642     652     662     666     670     672
          839     841#
C@CKP     729     730     742#
C@CKPA     96#   5020
C@CKSW     74#   4493
C@CNTR     78#
C@CONT    886     898#
C@CRLF     86#
C@DO1     266#    287
C@DO10    969     990#
C@DO11    534     538#
C@DO2     765#    767
C@DO3     313     319#
C@DO4     730#    739
C@DO7     462     466#
C@ECHO     88#
C@ERR      92#   4532    4573    4588    4601    4614    4632    4643    4972    5114
C@GET     141     156     437     440     468     483     492     540     562#    570     599     811     815     833
          962     998     996    1003    1005
C@HANG    871     879#    885     891     897
C@INQU     94#   4434    5029
C@OCTA     84#
C@PASS     72#   4423
C@PAUS     90#
C@PRNT     80#
```



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C@ROPS    633#    678
C@RETD    536     541     544#
C@RETR    441     465     473#
C@SETD    532     537     539     543#
C@SETS    434     439     447     460     466     472#
C@SWIT     82#   1266    5095
C@SWST    450     491     499     629     632     680     682#
C@TMP1    727     730     734     737     741#
C@TYI      76#
C@TYPE     90#   4042
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
         1948    1956    1972    2001    2014    2028    2070    2109    2140    2176    2211    2232    2254    2271
         2297    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    3310    3349    3382    3415    3448    3469    3491    3531    3566    3607    3661    3723    3753
         3783    3912    3847    3892    3916    3944    3978    4007    4038    4082    4143    4195    4249    4302
         4365    4437    4450
CLRTRN   1015    1018    1020#
CMREG    1232#   4609    4610    4703    4704
CNTRLC    420     498#
CNTRLD    426     531#
CNTRLE    425     490#
CNTRLL    421     479#
CNTRLO    422     433#
CNTRLP    423     446#
CNTRLS    424     460#    471
CNTVAL    168     180#
COMP1    1137    4511    4513    4530#   4544    4546
COMP2    1138    4551#   4563    4565
CONSOL     48#     67
CRERR    4558    4563#
CRLF     1100#   4426    4874    4901    4902    4911
CRREG1   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
DCLP     1062#   4629
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DLAG      1063#   4598
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
          2685    2715    2727    2732    2735    2740    2902    2909    2911    2992    3198    3207    4518
DTREG     1235#   3399    3400    3434    3435    3738    3739    3770    3771    3799    3829    3830    3984    3985
          3932    3933    3961    3962    3995    3996    4025    4026    4061    4062    4106    4394    4395    4685
          4686
DUMP      4054#   4059    4076    4077    4985
ENDHLT    1057    4421    4435#
ENDIT      656     661     679#
ENDTST    1131    4126    4413#
ENMAN1    1077#   1900    1920    2039    2078    2117    2150    2183    2431    2462    2491    2513    2530    2562
          2700    2734    2757    2793    2834    2862    2883    2905    2922    2954    2976    3028    3079    3095
          3140    3190    3226    3258    3289    3319    3350    3383    3416    3449    3469    3498    3530    3589
          3615    3664    3848    4083    4144    4196    4250    4303    4366    4451    5077
ENMAN2    1078#   1520    1549    1979    2008    4652    4693    4722    4733
ERHLT1    1049    4533#
ERHLT2    1050    4633#
ERHLT3    1051    4602#
ERHLT4    1052    4589#
ERHLT5    1053    4574#
ERHLT6    1054    4615#
ERHLT7    1055    4644#
ERHLT9    1056    4973#
ERR1       665     669     675#
ERRMES     972    1024#
ERRO      1135    4085#   4088    4900    4903    4915    4917    4923    4926    4934    4935    4939    4947    4954
          4958    4978    5187
ERROR     1000#   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    1960    1892    1911    1932    1948    1964    1992    2018    2050    2091    2129    2168    2202
          2223    2244    2262    2279    2312    2356    2381    2407    2445    2483    2502    2519    2546    2570
          2603    2620    2638    2653    2668    2692    2718    2742    2778    2814    2853    2874    2894    2914
          2944    2967    3000    3059    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
ERTX1     4991    5219#
ERTX2     4992    5220#
ERTX3     4993    5221#
ERTX4     4994    5222#
ERTX5     4995    5223#
ERTX6     4996    5224#
ERTX7     4997    5225#
ERTX8     4998    5226#
ERTX9     4999    5227#
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EXIT      4012    4023    4032#
EXITA      386     394#
EXTFLD    4119    4127#
F1OP1      63#
F1OP2      64#
F1SWR      62#
FILCNT     763     766     770#
FILLER     761     769#
FLDMAX    1230#   1259    1271    4114    4147    4199    4253    4306    4358
FLSAVE     369     566     882     948     987    1032#
FROCT     1153    4781#   4799    4808    4809    4820    4829
GOREG1    1226#   1684    1685    1712    1713    1737    1738    1761    1762    1792    1793    2036    2075    2114
          2145    2178    4553    4929
GOREG2    1227#   1285    1320    1333    1349    1362    1416    1417    1428    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    1985    1922    1923
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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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TST89    3752#   3775
TST9     1398#   1403
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TST92    3838    3846#   3880
TST93    3884    3891#   3909
TST94    3915#   3937
TST95    3943#   3966
TST97    3970    3977#   4000
TST98    4006#   4030
TST99    4037#   4073
TSTCHA    641     648     657#   674
TSTLAB   4126#   4130
TTYLPT    446     479     481    490     860     876#    892
TWOCT    1090#   4930    4943
TYPE     1099#   4750    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    1120    5071#   5090   5101    5104    5118
UPPR1    5078#   5089
WAERRO   1126    5100#   5184   5197
WATMES    597     683#
XAERRO   1071    1126#
XAPTBA   1072    1124#
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     200     596     633     893     971     973     977     981
           985
XC8PSW     83     530     624#   627     691
XC8SN      75     142     157    204#    211     963     991     997
XC8TTY     77     220#    236    467     598     810     832
XC8TYP     91     276     285    300     390     552     554     638     676     733     760     765     837     858#
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XCHANG   1078    1127#
XCLAB    1074    1111#
XCLDR    1092    1140#
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#
XLAB     1073    1109#
XLDAD    1088    1147#
XLDCA    1091    1146#
XLDCM    1090    1145#
XLDMW    1094    1150#
XMAIN1   1077    1141#
XMAIN2   1078    1142#
XMILAB   5148    5199#
XNERRO   1079    1134#
XPRINT   1099    1133#
XPRN     1096    1152#
XRDAD    1086    1143#
XRDBF    1095    1151#
XRDCM    1085    1140#
XRDCR    1093    1149#
XRDBT    1084    1139#
XREG     4950    4987#
XSDXP    1089    1144#
XSET     1069    1110#
XTABLA    373     409#
XTABLB    400     410#
XTEXT    4940    4986#
XTICK    1070    1125#
XTOCI    1098    1154#
XUPPER   1087    1120#
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.L0362    281     325#
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.L0367    233     330#
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,L0766    596    633    700#
,L0767    593    625    701#
,L0770    569    702#
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,L0776    551    708#
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,L1163    893    902#
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,L1171    802    908#
,L1172    800    909#
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,L1174    759    911#
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,L1177    728    914#
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,L1366   1001   1035#
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,L1375    962    990    996   1003   1005   1042#
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,L7375   5187   5205#
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,L7377   5172   5207#
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,V0021   4477   4501#
,V0022   4479   4503#
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,V0077    278    326#
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,V0150   5190   5204#
,V0177    232    331#
,V0200    233    330#
,V0212    764    910#
,V0215    659    692#    759    911#
,V0240    284    323#
,V0260    732    912#
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,V0277    389    510#    675    688#
,V0303    596    633    700#    893    902#    971    973    977    981    985   1038#
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,V0400    143    158    336#    535    600    709#    812    835    890    903#    927   1044#   4467   4503#
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,V0615    449    482    490    500    511#
,V0624    141    156    337#    437    440    460    483    492    513#    811    815    833    904#    962
          999    996   1003   1005   1042#
,V0635    160    333#    696    901#    994   1036#
,V0745    450    491    499    510#
,V1000    153    334#    636    697#    976    980    984    988   1037#
,V1023    150    155    335#    391    515#    555    677    679    705#    970    989   1039#
,V1141    205    332#
,V1063    640    647    694#
,V1075    234    235    329#    378    387    395    397    399    519#    553    642    652    662    666
          679    672    706#
,V1076    304    433    440    518#    639    695#
,V1077    276    285    327#    388    390    517#    552    554#    630    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    707#    800    909#
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.V5001    5173    5206#
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