IDENTIFICATION

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

PRODUCT NAME: RK8E DISKLESS CONTROL TEST

DATE RELEASED: JANUARY, 1977

MAINTAINER: DIAGNOSTIC ENGINEERING

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1. ABSTRACT

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

2. REQUIREMENTS

2.1 HARDWARE

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

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

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

2.2 SPECIAL

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

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

2.3 STORAGE

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

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

3. PRELIMINARY PROGRAMS

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

4. SWITCH REGISTER SETTINGS

SWR0=1	ENTER SCOPE LOOP, AFTER AN ERROR HALT AT LOCATION "ERHLT9" RAISING THIS SWITCH AND PRESSING KEY CONTINUE WILL CAUSE A SCOPE LOOP ON THE CURRENT TEST. IF SWR2=0 AND THE TEST IS STILL FAILING, THE ERROR BELL SHOULD RING INDICATING AN ERROR.
SWR1=1	INHIBIT END OF TEST HALT. AT THE 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 RKBE 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

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

11.3 APT-8 INTERFACES

11.3.1. TIMING

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

11.3.2 ERRORS

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

PROGRAMED HALTS ARE EXPLAINED EARLIER IS THIS DOCUMENT.

12. PROGRAM LISTING

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                /
                /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


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


                /THE PROGRAN SHOULD CHECK FOR A CONTROL CHARACTER FRON 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 DETEPMINDS 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 NUNBER.

                /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 XC8ERP    THIS IS THE MASK BIT FOR HALT ON ERROR
                /PLACE THE CORRECT BIT IN THIS LOCATION FOR HALTING ON ERROPS.

                /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
7421            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

4424            C8PASS= JMS I   .
0024 0200               XC8PAS          /C8 PASS COMPLETION ROUTINE
4425            C8CKSW= JMS I   .
0025 0262               XC8SW           /CHECK SW REG SETTING
4426            C8TTYI= JMS I   .
0026 0272               XC8TTY          /FETCH CONSOL CHAR
4427            C8CNTR= JMS I   .
0027 0400               XC8CNT          /CHECK FOR CONTROL CHAR
4430            C8PRNT= JMS I   .
0030 0303               XC8PNT          /C8 PRINT A BUFFER
4431            C8SWIT= JMS I   .
0031 0656               XC8PSW          /SET UP PSEUDO SW. REG
4432            C8OCTA= JMS I   .
0032 1000               XC8OCT          /CONVERT TO ASCII AND PRINT
4433            C8CRLF= JMS I   .
0033 1023               XC8CRL          /DO A CARRIGE RETUR + LINE FEED
4434            C8ECHO= JMS I   .
0034 1063               XC8ECH          /CHECK INPUT CHAR
4435            C8TYPE= JMS I   .
0035 1077               XC8TYP          /C8 PRINT ONE CHAP
4436            C8ERR=  JMS I   .
0036 1207               XC8ERR          /C8 ERROR  HANDLER
4437            C8INQU= JMS I   .
0037 0635               XC8INQ          /LOOK FOR OPERATOR INTERVENTION
4440            C8CKPA= JMS I   .
0040 1041               XC8CKP          /CHECK IF CONTPOL CHAR
4441            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
                                        /4000=USE FRONT PANEL SWITCH REGISTER
                                        /0000=USE THE PSEUDO SWITCH REGISTER LOC.20

                                        /*22                    /SYSTEM CONFIGURATION
```

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

                                        /*23                     /RESERVED FOR FUTURE USE
                >
          0200  *200
                /*********************************************************************
                /C8PASS
                /THIS IS CALLED AT THE END OF EACH PROGRAM COMPLETION
                /THE VALUE OF** CNTVAL** WILL BE DETERMINED BY THE TIME IT TAKES
                /THE PROGRAM TO COMPLETE THIS MANY C8PASS TO BE IN THE 1 TO 4 MINUTE
                /RANGE
                /       C8PASS=JMS   XC8PAS
                /EX, OF CALL            C8PASS
                                        /              HLT             /HALT IF NON CONSOL PACKAGE
                /               JMP     START1          /CONTINUE RUNNING THIS PROGRAM


                /RETURN TO LOCATION CALL PLUS ONE WITH THE AC=0 IF NON CONSOL PACKAGE AND HLT
                /IF CONTINUE TO RUN THEN RETURN TO CALL PLUS2 AC=0
                /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 XC8PAS ARE  CHKCLA=XC8CRLF=XC80CTA=XC8SW=XC8PNT=XC8INQ=

  0200  0000    XC8PAS, 0
  0201  7200            CLA
  0202  4777'           JMS     CHKCLA          /IS WORD 22 BIT 3 ACTIVE CONSOLE?
  0203  5212            JMP     DOPACK          /IS CLASSIC
  0204  4776'           JMS     C8GET           /GET ALL REGISTERS,
  0205  4262            JMS     XC8SW           /DEACTIVE CONSOL CHECK SR SETTING
  0206  0375            AND     (400            /FOR HALT ON END OF C8PASS
  0207  7640            SZA CLA                 /1= HALT 0 CONTINUE
  0210  5600            JMP I   XC8PAS          /GO TO HALT
  0211  5230            JMP     C8BY1           /CONTINUE ON RUNNING PROGRAM
  0212  4232    DOPACK, JMS     CKCOUT          /CLASS CHECK C8PASS COUNT
  0213  5230            JMP     C8BY1           /C8PASS COUNT NOT DONE REDO PROGRAM
  0214  2250            ISZ     PASCNT          /C8PASS COUNT DONE SET C8PASS COUNT
  0215  4774'           JMS     XC8CRLF
  0216  4303            JMS     XC8PNT          /C8PRNT BUFFER
  0217  0253            MESPAS                  /
  0220  1250            TAD     PASCNT          /GET NUMBER
  0221  4773'           JMS     XC80CTA         /CONVERT IT TO ASCII
  0222  4774'           JMS     XC8CRLF         /DO A CARRIAGE RETURN
  0223  4776'           JMS     C8GET           /GET ALL REGISTERS,
  0224  4262            JMS     XC8SW           /CHECK A HALT AT END OF C8PASS
  0225  0375    SETUP2, AND     (400            /MASK BIT
  0226  7640            SZA CLA                 /HALT =1 NO SKIP CONTINUE =0
  0227  4772'           JMS     XC8INQ          /STOP PROGRAM EXECUTION-LOOK FOR INPUT
  0230  2200    C8BY1,  ISZ     XC8PAS          /BUMP RETURN
  0231  5600            JMP I   XC8PAS
  0232  0000    CKCOUT, 0
  0233  1251            TAD     DOSET           /CHECK IF SET UP NEEDED
  0234  7640            SZA CLA                 /0=SET UP C8PASS COUNT VALUE
```



```
                                        /1=C8PASS COUNT VALUE OK
  0235  5242            JMP     NOSET           /C8PASS 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     C8BY1           /EXIT FOR ANOTHER PASS
  0244  3251            DCA     DOSET           /SET TO C8PRNT C8PASS
  0245  2232            ISZ     CKCOUT          /BUMP RETURN FOR
  0246  5632            JMP I   CKCOUT          /C8PASS C8TYPE OUT
  0247  0000    DOCNT,  0
  0250  0000    PASCNT, 0                       /
  0251  0000    DOSET,  0
  0252  0000    CNTVAL, 0
  0253  0410    MESPAS, TEXT    "DHRKAE  PASS "
  0254  2213
  0255  0105
  0256  4040
  0257  2001
  0260  2323
  0261  4000


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

                /C8CKSW

                /THIS ROUTINE CAN BE USED INPLACE OF A READ THE SWITCHES LAS.
                /ROUTINE THAT WILL CHECK WHERE TO READ THE
                /C8 SWITCHES FROM IE, FROM PANEL OR PSEUDO SWITCH REGISTER
                /THE SELECTION IS DETERMINED BY THE STATE OF BIT 0 IN LOCATION 21.

                                        /CRCKSW=        JMS XC8SW
                                        /EX,    JMS     XC8SW           /READ THE C8SWIT REGISTER
                                        /RETURN WITH THE CONTENTS OF SWITCH REGISTER

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

                /CALLS USED ARE-XC8CKPA-


  0262  0000    XC8SW,  0
  0263  4771'           JMS     XC8CKPA         /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   XC8SW           /EXIT WITH STATUS BIT IN AC,


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

```
                        /C8TTYI
                        /THIS ROUTINE WILL LOOK FOR A INPUT FROM THE TERMINAL
                        /AND REMOVE ANY PARITY BITS, THEN MAKE IT 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  3766'             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
                        /       MESS77                          /LOCATION OF C8PRNT BUFFER

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

                        /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 8 BIT ASCII
0322  4764'             JMS     XC8TYPE         /C8PRNT IT ON CONSOLE
0323  1736              TAD I   PTSTOR          /GET DATA WORD
0324  0363              AND     (0077           /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  7040              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  0077
 327   0364  1077
 328   0365  7700
 329   0366  1075
 330   0367  0200
 331   0370  0177
 332   0371  1041
 333   0372  0635
 334   0373  1000
 335   0374  1023
 336   0375  0400
 337   0376  0624
 338   0377  1200
             0400     PAGE
 339                  /*********************************************************************
 340
 341
 342                  /C8CNTR
 343                  /THIS ROUTINE WILL CHECK FOR THE PRESENCE OF CONTROL CHARACTERS
 344                  /IT WILL CHECK FOR THE FOLLOWING CHAR C=R=Q=L=S
 345                  /       C8CNTR= JMS XC8CNT
 346
 347                  /EX,    JMS     XC8CNTR                 /CHECK FOR CONTROL CHARACTER
 348                  /       JMP     ANYTHING                /LOC FOLLOWING CALL IS FOR CONTINUING THE PROGRAM
 349                  /       JMP     ANYTHING                /LOC, IS FOR RETURN IF INMODE SET AND NOT CNTRL CHAR
 350                  /
 351
 352                  /RETURN IS TO CALL PLUS ONE IF CONTINUE
 353                  /RETURN IS TO CALL PLUS TWO IF INMODE SET AND NOT CONTROL CHAR
 354                  /RETURN IS TO CALL PLUS TWO IF INMODE IS NOT SET AND NO
 355                  /CONTROL CHAR ..THIS WILL PRINT THE CHARACTER AND A ?
 356                  /CLEAR THE AC AND RETURN CALL+2.
 357
 358                  /CALLS USED ARE=CHKCLA=XC8TYPE=XC8CRLF=C8GET=UPAROW=XC8TYI=XC8PSW=
 359                  /
 360                  /
 361                  /
 362   0400  0000     XC8CNT, 0
 363   0401  3777'            DCA     ACSAVE          /SAVE THE AC
 364   0402  4776'            JMS     CHKCLA          /CHECK LOC,22 BIT3 FOR CONSOLE BIT
 365   0403  5206            JMP     .+3             /ON ACTIVE CONSOLE
 366   0404  1777'            TAD     ACSAVE          /DEACTIVE CONSOLEGET AC FOR RETURN
 367   0405  5600            JMP I   XC8CNT          /EXIT NOT ON ACTIVE CONSOLE
 368   0406  6004            GTF
 369   0407  3775'            DCA     FLSAVE
 370   0410  7501            MQA
 371   0411  3774'            DCA     MQSAVE          /SAVE THE MQ
 372   0412  3255            DCA     INDEXA          /SET DISPLACEMENT INTO TABLE B
 373   0413  1257            TAD     XTABLA          /GET ADDRS OF TABLE A
 374   0414  3256            DCA     GETDAT          /CONTAINS POINTER TO CONTROL CHAR
 375   0415  1656    REDOA,  TAD I   GETDAT          /GET CONTROL CHAR FROM TABLE
 376   0416  7450            SNA                     /CHECK FOR A 0 END OF TABLE
 377   0417  5226            JMP     DONEA           /END OF TABLE NO CONTROL CHAR
 378   0420  1773'            TAD     C8CHAR          /COMPARE CHAR TO CONTROL CHAR
```



```
 379   0421  7650            SNA CLA                 /0 IF MATCH
 380   0422  5243            JMP     GOITA           /MATCH
 381   0423  2255            ISZ     INDEXA          /NO MATCH NOT END OF TABLE REDO
 382   0424  2256            ISZ     GETDAT          /BUMP INDEX FOR EXIT WHEN CONTROL FOUND
 383   0425  5215            JMP     REDOA           /BUMP GETDAT FOR COMPARE OF NEXT CNTRL CHAR.
 384   0426  1772'  DONEA,   TAD     INMODE          /CHECK IF PROGRAM EXPECTS CHAR
 385   0427  7640            SZA CLA                 /1=CHAR EXPECTED  0= NO CHAR EXPECTED
 386   0430  5240            JMP     EXITA           /CHAR EXPECTED
 387   0431  1773'            TAD     C8CHAR          /GET CHAR = NOT CONTROL + NOT EXPECTED
 388   0432  4771'            JMS     XC8TYPE         /C8PRNT CHAR
 389   0433  1370            TAD     (277            /GET CODE FOR "?"
 390   0434  4771'            JMS     XC8TYPE
 391   0435  4767'            JMS     XC8CRLF
 392   0436  2200            ISZ     XC8CNT          /BUMP RETURN
 393   0437  5600            JMP I   XC8CNT          /EXIT CALL+2
 394   0440  2200    EXITA,  ISZ     XC8CNT          /BUMP RETURN FOR MAIN PROGRAM CHECK OF CHAR
 395   0441  1773'            TAD     C8CHAR          /PUT CHAR IN AC.
 396   0442  5600            JMP I   XC8CNT          /EXIT
 397   0443  1773'  GOITA,   TAD     C8CHAR          /GET THE CONTENTS OF CHAR
 398   0444  1366            TAD     (100            /ADD 100 TO FORM A GOOD ASCII CHARACTER
 399   0445  3773'            DCA     C8CHAR          /RESTORE COFFECT CHAR
 400   0446  1260            TAD     XTABLB          /GET START OF TABLE B
 401   0447  1255            TAD     INDEXA          /GET NOW FAR INTO TABLE
 402   0450  3254            DCA     GOTOA           /STORE IT
 403   0451  1654            TAD I   GOTOA           /GET THE ROUTINE STARTTING ADDRESS
 404   0452  3254            DCA     GOTOA           /STORE IT IN HERE
 405   0453  5654            JMP I   GOTOA           /GOTO CONTROL CHAR ROUTINE
 406   0454  0000  GOTOA,   0000                    /ADD OF CNTRL ROUTINE TO EXECUTE
 407   0455  0000  INDEXA,  0000                    /DISPLACEMENT INTO CNTRL TABLE
 408   0456  0000  GETDAT,  0000                    /LOCATION OF ADDRS OF CONTROL CHAR.
 409   0457  0461  XTABLA,  TABLA                   /ADDRS OF TABLEA
 410   0460  0471  XTABLB,  TABLB                   /ADDRS OF TABLEB
 411   0461  7575  TABLA,   7575                    /CNTRL C BACK TO MONITOR 203
 412   0462  7564            7564                  /CNTRL L SWITCH ERROR PRINTTING DEVICE 214
 413   0463  7557            7557                  /CNTRL O 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     INMODE          /SET SOFT FLAG FOR UNEXPECTED CHAR
```

```
                        /
                        /CONTROL R
                        /GO TO THE QUESTION C8SWIT
0511 3764' CNTRLR, DCA  TTYLPT          /CLEAR THE TYPE FLAG SET TO TTY
0512 3335          DCA  C8SETS          /CLEAR SOFT FLAG FOR CNTRL S
0513 3772'         DCA  INMODF
0514 4763'         JMS  UPAROW          /PRINT THE " AND C8CHAR
0515 3762' C8BY4,  DCA  C8SWST          /CLEAR FLAG FOR CNTRL D OR R
0516 6203          CDF CIF
0517 5720          JMP I XDOSW          /GO TO ADDRS OF C8SWIT
0520 0200 XDOSW,   BGN                  /DOSW IS LABEL FOR C8SWIT QUESTION
                        /
                        /
                        /CONTROL S
                        /STOP SENDING CHAR. TO DISPLAY UNTIL A ^Q IS RECEIVED
                        /
                        /
0521 1335 CNTRLS, TAD   C8SETS          /IF1 DO NOT STORE IN C8RETR
0522 7640         SZA CLA
0523 5327         JMP   C8D07           /DONT SET UP C8RETR
0524 7001         IAC                   /MAKE RETURN CALL PLUS 2
0525 1200         TAD   XC8CNT          /GET RETURN FOR THIS CALL
0526 3336         DCA   C8RETR          /STORE IT HERE FOR USE BE CNTROL Q
0527 2335 C8D07,  ISZ   C8SETS          /SET FLAG TO SAVE CALL
0530 4761'        JMS   XC8TTYI         /LOOK FOR THE INPUT
0531 4765'        JMS   C8GET           /GET REGISTERS
0532 4200         JMS   XC8CNTR         /CHECK FOR THE CONTROL CHAR
0533 7200         CLA
0534 5321         JMP   CNTRLS          /IF NOT A CNTRL Q R C REASK
0535 0000 C8SETS, 0
0536 0000 C8RETR, 0
                        /
                        /SWITCH OUTPUT FROM ONE OUTPUT DEVICE TO ANOTHER - THE TWO OUTPUTS ARE THE
                        /CONSOLE AND THE PRINTER WITH DEVICE CDOE 66.
                        /
                        /
0537 1764' CNTRLL, TAD  TTYLPT          /GET PRESENT C8SWIT INDICATOR
0540 7040          CMA                  /COMPLEMENT IT
0541 3764'         DCA  TTYLPT          /STOR NEW C8SWIT
0542 4763'         JMS  UPAROW          /C8PRNT " AND CHAR ON NEW DEVICE
0543 4765'         JMS  C8GET           /RESTORE THE REGISTERS
0544 5600          JMP I XC8CNT         /EXIT
                        /
                        /CONTROL E
                        /CONTINUE RUNNING FROM A INQUIRE OR ERROR
                        /
```



```
                        /
0545 4763' CNTRLE, JMS  UPAROW          /PRINT THE CONTROL CHAR
0546 3762'         DCA  C8SWST          /CLEAR FLAG.
0547 4765'         JMS  C8GET           /GET THE REGISTERS
0550 5600          JMP I XC8CNT         /RETURN TO CALL PLUS ONE
                        /
                        /CONTROL C
                        /RETURN TO MONITOR CONTROL C
0551 3764' CNTRLC, DCA  TTYLPT          /CLEAR THE LPT FLAG TO PRINT ON DISPLAY
0552 3762'         DCA  C8SWST          /CLEAR FLAG.
0553 4763'         JMS  UPAROW          /C8PRNT A" AND LETTER IN CHAR
0554 6203          CDF CIF              /GO TO 0 FLD
0555 6007          CAF                  /CLEAR THE WORLD
0556 5760          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   C8D011          /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 C8D011, 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
                        /
```

```
0613  0000    C8SETD, 0
0614  0000    C8RETD, 0


                /THIS WILL TYPE A UP ARROW AND THE CHAR IN C8CHAR.

0615  0000    UPAROW, 0                       /C8PRNT THE "^" AND THE CHAR C8TYPED IN
0616  1376            TAD     (336            /CODE FOR ^
0617  4775'           JMS     XC8TYPE
0620  1774'           TAD     C8CHAR          /C8TYPE THE CHAR
0621  4775'           JMS     XC8TYPE
0622  4773'           JMS     XC8CRLF
0623  5615            JMP I   UPAROW          /EXIT


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

0624  0000    C8GET,  0
0625  7200            CLA
0626  1772'           TAD     MQSAVE
0627  7421            MQL                     /RESTORE MQ
0630  1771'           TAD     FLSAVE
0631  7004            RAL                     /RESTORE THE LINK
0632  7200            CLA
0633  1770'           TAD     ACSAVE          /RESTORE THE AC
0634  5624            JMP I   C8GET           /GET THE REGISTERS


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

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

                /       C8INQU =        JMS XC8INQ

                /EX.    JMS     XC8INQ                  /C8 WILL PRINT A WAITINGAND WAIT FOR INPUT
                /       DO ANYTHING                     /RETURN IS CALL PLUS ONE AC =0 CONTINUE

                /CALLS USED ARE -CHKCLA-XC8PNT-XC8TYI-C8GET-XC8CNTR-

0635  0000    XC8INQ, 0
0636  7300            CLA CLL
0637  4767'           JMS     CHKCLA          /CHECK LOC 22 BIT 3 CONSOLE BIT
0640  7410            SKP                     /ACTIVE CONSOLE PACKAGE
0641  5635            JMP I   XC8INQ          /NOT CONSOLE LEAVE
0642  4766'           JMS     XC8PNT
0643  0651            WATMES                  /INQUIR WAITTING
```



```
0644  4765'           JMS     XC8TTYI         /GET CHARACTER
0645  4224            JMS     C8GET
0646  4777'           JMS     XC8CNTR         /CHECK IF CONTROL CHARACTER
0647  5635            JMP I   XC8INQ          /EXIT AND CONTINUE
0650  5236            JMP     XC8INQ+1        /REASK
0651  2701    WATMES, TEXT    "WAITTING "
      0652  1124
      0653  1116
      0654  0740
      0655  0000


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

                /C8SWIT

                /ROUTINE WILL CHECK IF CONSOL IS ACTIVE IF IT IS ACTIVE DISPLAY
                /SW QUESTION , IN NOT ACTIVE IT WILL NOT PRINT THE SW QUESTION BUT
                /RETURN TO CALL PLUS ONE AC=0.
                /C8SWIT WILL SET UP THE PSEUDO SWITCH
                /REGISTER WITH THE NEW DATA ENTERED
                /
                /       C8SWIT =        JMS XC8PSW

                /EX.            JMS     XC8PSW          /SET UP PSEUDO C8SWIT REGISTER IF
                                                /ON THE CONSOL PACKAGE, RETURN IS CALL PLUS ONE AC = 0

                /CALLS USED ARE -CHKCLA-XC8PSW-XC8PNT-XC80CTA-XC8TYPE-

0656  0000    XC8PSW, 0
0657  4767'           JMS     CHKCLA          /CHECK LOC 22 BIT 3 CONSOLE BIT
0660  7410            SKP                     /ACTIVE CONSOLE
0661  5656            JMP I   XC8PSW          /DEACTIVE CONSOLE PACKAGE
                                              /RETURN WITHOUT ASKING PSEUDO SWITCH
0662  1345            TAD     C8SWST          /IS THE SOFT FLAG SET FOR SWITCH?
0663  7640            SZA CLA                 /SKIP IF ONE ENTRY AT ATIME OK
0664  5764'           JMP     C8BY4           /SECOND ENTRY WITH OUT A EXIT GO TO SW QUESTION
0665  2345            ISZ     C8SWST          /FIRST ENTRY SET FLAG
0666  4766'   C8RDPS, JMS     XC8PNT          /C8PRNT SPe
0667  0747            MESA
0670  1720            TAD     20              /GET CONTENTS OF SW
0671  4763'           JMS     XC80CTA         /CONVERT IT TO ASCII
0672  1362            TAD     (40             /GET SPACE
0673  4775'           JMS     XC8TYPE
0674  2761'           ISZ     INMODF          /SET FLAG FOR CHAR EXECTED
0675  4760'           JMS     XC8ECHO         /LOOK FOR INPUT
0676  4315            JMS     TSTCHA          /NOT CONTROI TEST IT IS LEGAL
0677  1774'           TAD     C8CHAR          /STORE NEW CHAR IN Sw REG
0700  3420            DCA     20
0701  1357            TAD     (-3             /GET A MINUS 3
0702  3346            DCA     TMPCNT          /STORE IN TEMP COUNT
0703  4760'   GETCH1, JMS     XC8ECHO         /GET NEXT CHAR
0704  4315            JMS     TSTCHA          /CHECK IF CP + GOOD CHAR
```

```
0649  0705  1020          TAD     20              /GET C8SWIT REGISTER
0650  0706  7106          RTL CLL                 /ROTATE IT LEFT 3 PLACES
0651  0707  7004          RAL
0652  0710  1774'         TAD     C8CHAR          /GET CHAR + ADD IT TO PREVIOUS CONTENTS
0653  0711  3020          DCA     20              /SAVE NEW CONTENTS
0654  0712  2346          ISZ     TMPCNT          /BUMP COUNT
0655  0713  5303          JMP     GETCH1          /JMP BACK + GET NEXT CHAR
0656  0714  5342          JMP     ENDIT           /END 4 CHAR C8TYPED IN
0657  0715  0000    TSTCHA, 0
0658  0716  7041          CIA                     /CMPL CHAR IN AC
0659  0717  1356          TAD     (215            /TEST IF IT IS A CARRIAGE RETURN
0660  0720  7650          SNA CLA                 /SKIP IN NOT CR,
0661  0721  5342          JMP     ENDIT           /WAS CARRIAGE RETURN
0662  0722  1774'         TAD     C8CHAR          /NOT CR, GET CHAR
0663  0723  1355          TAD     (-260           /CHECK IF IT IS IN RANGE
0664  0724  7710          SPA CLA                 /IF NOT POSITIVE C8ERR CHAR SMALLER THEN 260
0665  0725  5336          JMP     ERR1            /C8ERR - CHAR TOO SMALL
0666  0726  1774'         TAD     C8CHAR          /GET CHAR
0667  0727  1354          TAD     (-270           /GET A -270 + CHECK IF IT IS LARGER THEN 7
0668  0730  7700          SMA CLA                 /SKIP IF LESS THEN 7
0669  0731  5336          JMP     ERR1            /C8ERR ON CHAR NOT IN RANGE
0670  0732  1774'         TAD     C8CHAR          /GET CHAR
0671  0733  0353          AND     (7              /MASK FOR RIGHT BYTE
0672  0734  3774'         DCA     C8CHAR          /STORE IN CHAR
0673                                              /GET CHAR IN AC
0674  0735  5715          JMP I   TSTCHA          /EXIT
0675  0736  1352    ERR1, TAD     (277            /C8PRNT
0676  0737  4775'         JMS     XC8TYPE         /?
0677  0740  4773'         JMS     XC8CRLF         /
0678  0741  5266          JMP     C8RDPS          /EXIT + ASK AGAIN
0679  0742  4773'   ENDIT, JMS     XC8CRLF         /DO A CR LF
0680  0743  3345          DCA     C8SWST          /CLEAR THE PSW ENTRY FLAG
0681  0744  5656          JMP I   XC8PSW          /EXIT ROUTINE
0682  0745  0000    C8SWST, 0
0683
0684  0746  0000    TMPCNT, 0
0685  0747  2322    MESA,   TEXT    "SR= "
      0750  7540
      0751  0000
0686
0687
0688  0752  0277
0689  0753  0007
0690  0754  7510
0691  0755  7520
0692  0756  0215
0693  0757  7775
0694  0760  1063
0695  0761  1076
0696  0762  0040
0697  0763  1000
0698  0764  0515
0699  0765  0272
0700  0766  0303
0701  0767  1200
```



```
0702  0770  1345
0703  0771  1347
0704  0772  1346
0705  0773  1023
0706  0774  1075
0707  0775  1077
0708  0776  0336
0709  0777  0400
      1000        PAGE
0710
0711              /C8OCTA
0712
0713              /OCTAL TO ASCII CONVERSION
0714              /THIS ROUTINE WILL TAKE THE OCTAL NUMBER IN THE AC AND CONVERT IT TO ASCII
0715              /THE RESULT WILL BE PRINTED ON THE CONSOL TERMINAL
0716              /       C8OCTA= JMS XC8OCT
0717              /
0718              /EX,    JMS     XC8OCTA         /AC CONTAINS NUMBER TO BE CHANGE
0719              /       RETURN IS TO CALL PLUS ONE AC=0
0720              /
0721              /CALLS USED ARE -XC8TYPE-
0722
0723
0724  1000  0000  XC8OCT, 0
0725  1001  7106          CLL RTL
0726  1002  7006          RTL                     /POSITION THE FIRST CHAR FOR PRINTING
0727  1003  3221          DCA     C8TMP1          /SAVE CORRECT POSITIONED WORD HERE
0728  1004  1377          TAD     (-4
0729  1005  3222          DCA     C8CKP           /STORE COUNTER IN HERE
0730  1006  1221    C8DO4,  TAD     C8TMP1          /GET FIRST NUMBER
0731  1007  0376          AND     (0007           /MASK
0732  1010  1375          TAD     (260            /ADD THE PRINT CONSTANT
0733  1011  4277          JMS     XC8TYPE         /TYPE THE NUMBER
0734  1012  1221          TAD     C8TMP1          /
0735  1013  7006          RTL
0736  1014  7004          RAL                     /PUT NEXT NUMBER IN POSITION
0737  1015  3221          DCA     C8TMP1          /STORE IT
0738  1016  2222          ISZ     C8CKP           /DONE YET WITH FOUR NUMBERS
0739  1017  5206          JMP     C8DO4           /NOT YET DO MORE
0740  1020  5600          JMP I   XC8OCT          /DONE WITH FOUR
0741  1021  0000    C8TMP1, 0
0742  1022  0000    C8CKP,  0
0743
0744
0745              /*****************************************************************
0746
0747              /C8CRLF
0748              /C8TYPE CR AND LF WITH FILLERS FOLLOWING EACH LF AND CR
0749              /
0750              /       C8CRLF= JMS XC8CRL
0751              /
0752              /EX,    JMS     XC8CRLF         /C8PRNT A CR AND LF WITH FILL
0753              /                               /RETURN TO CALL PLUS ONE AC =0
0754              /CALLS USED ARE -XC8TYPE-
0755
```

```
                                                                                
                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-XC81NQU-
                                                                                
                                                                                
                1077  0000    XC8TYP, 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 CONSOLR PACKAGE AC=0
 921               /IF NOT SET THEN TO CALL PLUS ONE FOR A DEACTIVE CONSOLE PACKAGE.
 922
 923
 924   1200  0000  CHKCLA, 0
 925   1201  7200          CLA
 926   1202  1022          TAD     22              /GET THE COTENTA OF LOCATION 22
 927   1203  0377          AND     (400            /MASK FOR BIT 3 (400
 928   1204  7650          SNA CLA                 /
 929   1205  2200          ISZ     CHKCLA          /ACTIVE CONSOLE PACKAGE RETURN
 930                                               /CALL PLUS ONE (1) FOR ACTIVE
 931   1206  5600          JMP I   CHKCLA          /DEACTIVE CONSOLE PACKAGE RETURN
 932                                               /CALL PLUS TWO (2)
 933
 934               /C8ERR
 935               /THIS ROUTINE WILL DETERMINE WHAT TO DO WHEN A C8ERR IS ENCOUNTERED
 936               /WILL CHECK IF CLASSIC SYSTEM, WILL CHECK C8SWIT REGISTERS,
 937               /       C8ERR=  JMS XC8ERR
 938               /EX,    JMS     XC8ERR          /GO TO C8ERR CALL IF NOT CONSOL
 939               /                               /RETURN IS CALL PLUS ONE AC =0000
 940
 941               /CALLS USED ARE =CHKCLA=XC8CRLF=XC8SW=XC8INQU=XC8PNT=XC8OCTA=
 942
 943
 944   1207  0000  XC8ERR, 0
 945   1210  6002          IOF
 946   1211  3345          DCA     ACSAVE          /SAVE AC
 947   1212  6004          GTF
 948   1213  3347          DCA     FLSAVE          /SAVE THE FLAGS
 949   1214  7501          MQA
 950   1215  3346          DCA     MQSAVE          /SAVE THE MQ
 951   1216  7340          CLA CLL CMA             /SUBTRACT A 1 FOR TRUE LOCATION
 952   1217  1207          TAD     XC8ERR          /GET RETTURN LOCATION
 953   1220  3344          DCA     PCSAVE          /SAVE ADD OF C8ERR CALL
 954   1221  6201          CDF
 955   1222  7340          CLA CLL CMA
 956   1223  1776          TAD I   (CLASIK)
 957   1224  3316          DCA     REALPC          /SAVE REAL PC,
 958   1225  6211          CDF     10
 959   1226  4200          JMS     CHKCLA          /CHECK LOC,22 BIT 3 CONSOL BIT
 960   1227  7410          SKP                     /ACTIVE CONSOLE PACKAGE
 961   1230  5270          JMP     NTCLAS          /NOT CLASSIC SYSTEM
 962   1231  4775'         JMS     C8GET           /GET ALL REGISTERS,
 963   1232  4774'         JMS     XC8SW           /CHECK SWITCH REG FOR BIT THAT INDICATES
 964                                               /NO ERROR MESSAGE
 965   1233  0373  SETUP1, AND     (0000           /MASK FOR BIT FOR NO ERROR PRINTING
 966                                               /IF THIS ERROR MESSAGE IS TO ALWAYS
 967                                               /BE PRINTED LEAVE AND VALUE AT 0000
 968   1234  7640          SZA CLA                 /SKIP IF BIT IS 0 PRINT ERROR MESSAGE
 969   1235  5262          JMP     C8DO10          /DO NOT PRINT
 970   1236  4772'         JMS     XC8CRLF
```

```
 971   1237  4771'          JMS     XC8PNT
 972   1240  1320           EPRMES                  /PRINT THE ERROR MESSAGE
 973   1241  4771'          JMS     XC8PNT
 974   1242  1330           MESPC                   /PRINT THE PC STSTEMENT
 975   1243  1316           TAD     REALPC
 976   1244  4770'          JMS     XC8OCTA         /CONVERT 4 DIGIT PC TO ASCII
 977   1245  4771'          JMS     XC8PNT
 978   1246  1333           MESAC                   /PRINT THE AC MESS
 979   1247  1345           TAD     ACSAVE
 980   1250  4770'          JMS     XC8OCTA
 981   1251  4771'          JMS     XC8PNT
 982   1252  1336           MESMQ                   /PRINT MQ
 983   1253  1346           TAD     MQSAVE
 984   1254  4770'          JMS     XC8OCTA
 985   1255  4771'          JMS     XC8PNT
 986   1256  1341           MESFL                   /PRINT FL
 987   1257  1347           TAD     FLSAVE
 988   1260  4770'          JMS     XC8OCTA
 989   1261  4772'          JMS     XC8CRLF
 990   1262  4775'  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   PC8AVE          /PUT IT IN CALL LOC,
1003   1276  4775'          JMS     C8GET
1004   1277  5744           JMP I   PC8AVE          /EXIT  TO CALL AND HALT
1005   1300  4775'  C8BY2,  JMS     C8GET           /GET THE REGISTERS
1006   1301  5607           JMP I   XC8ERR
1007                        /
1008   1302  7402   ROUIN8, HLT                     /PUT INSTRUCTION TO EXECUTE HEHE!!!!
1009   1303  7000           NOP
1010   1304  3317           DCA     MYAC            /SAVE AC,
1011   1305  6201           CDF     0
1012   1306  1020           TAD     SWR
1013   1307  3765           DCA I   (SWR)           /MOVE SWITCHES DOWN,
1014   1310  1776           TAD I   (CLASIK)
1015   1311  3315           DCA     CLRTRN
1016   1312  1317           TAD     MYAC
1017   1313  6202           CIF     0
1018   1314  5715           JMP I   CLRTRN          /RETURN TO FIELD 0,
1019                        /
1020   1315  0000   CLRTRN, 0
1021   1316  0000   REALPC, 0
1022   1317  0000   MYAC,   0
1023                        /
1024   1320  0410   ERRMES, TEXT    "DHRKAE  FAILED "
       1321  2213
```



```
       1322  0105
       1323  4040
       1324  0601
       1325  1114
       1326  0504
       1327  4000
1025   1330  4040   MESPC,  TEXT    "  PC;"
       1331  2003
       1332  7200
1026   1333  4040   MESAC,  TEXT    "  AC;"
       1334  0103
       1335  7200
1027   1336  4040   MESMQ,  TEXT    "  MQ;"
       1337  1521
       1340  7200
1028   1341  4040   MESFL,  TEXT    "  FL;"
       1342  0614
       1343  7200
1029   1344  7777   PC8AVE, 7777
1030   1345  7777   AC8AVE, 7777
1031   1346  7777   MQ8AVE, 7777
1032   1347  7777   FL8AVE, 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
```

SEQ 0044

```
                        /
                        /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   APT8A=JMS I     XAPT8A
       4404   LAS=JMS I       XLAS
       4406   CLASIC=JMS I    XCLAS
```


SEQ 0045

```
       5426   IOTCHN=JMP I    XCHANG
       5430   MANUAL=JMP I    MANTST
       4444   ENMAN1=JMS I    XMAIN1
       4445   ENMAN2=JMS I    XMAIN2
       4435   NERROR=JMS I    XNERRO
       4436   ERROR=JMS I     XERRO
       4437   IONWAT=JMS I    XIONWT
       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,  CLASIK
 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   XAPT8A, APT8
 0024  7220   XTICK,KTICK
 0025  7241   XAERRO,WAERRO
 0026  7101   XCHANG, CHANG
 0027  7055   XUPPER, UPPER
 0030  5723   MANTST, MANUL
```

```
1130    0031  6011    INTRQ,  INTADD
1131    0032  5670    XEND,   ENDTST
1132    0033  0210    THSFLD, PRSFLD
1133    0034  6463    XPRINT, PRINT
1134    0035  7000    XNERRO, NERRO
1135    0036  6600    XERRO,  ERRO
1136    0037  6900    XIONWT, IONWT
1137    0040  6033    XCOMP1, COMP1
1138    0041  6044    XCOMP2, COMP2
1139    0042  6063    XRDST,  RDST
1140    0043  6240    XRDCM,  RDCM
1141    0044  6256    XMAIN1, MAIN1
1142    0045  6760    XMAIN2, MAIN2
1143    0046  6200    XRDAD,  RDAD
1144    0047  6130    XSDKP,  SDKP
1145    0050  6117    XLDCM,  LDCM
1146    0051  6075    XLDCA,  LDCA
1147    0052  6106    XLDAD,  LDAD
1148    0053  6135    XCLDR,  CLDR
1149    0054  6263    XRDCR,  RDCR
1150    0055  6144    XLDMN,  LDMN
1151    0056  6226    XRDBF,  RDBF
1152    0057  6423    XPRN,   PRN
1153    0060  6400    XFROCT, FROCT
1154    0061  6314    XTOCT,  TOCT
1155    0062  6331    XCRLF,  UPONE
1156    0063  0260    K0260,  0260
1157    0064  0000    K0000,  0000
1158    0065  0001    K0001,  0001
1159    0066  0002    K0002,  0002
1160    0067  0003    K0003,  0003
1161    0070  0004    K0004,  0004
1162    0071  0006    K0006,  0006
1163    0072  0007    K0007,  0007
1164    0073  0010    K0010,  0010
1165    0074  0020    K0020,  0020
1166    0075  0037    K0037,  0037
1167    0076  0040    K0040,  0040
1168    0077  0100    K0100,  0100
1169    0100  0200    K0200,  0200
1170    0101  0207    K0207,  0207
1171    0102  0400    K0400,  0400
1172    0103  1000    K1000,  1000
1173    0104  2000    K2000,  2000
1174    0105  3777    K3777,  3777
1175    0106  4000    K4000,  4000
1176    0107  7000    K7000,  7000
1177    0110  7776    K7776,  7776
1178    0111  7775    K7775,  7775
1179    0112  7700    K7700,  7700
1180    0113  7740    K7740,  7740
1181    0114  0070    K0070,  0070
1182    0115  0077    K0077,  0077
1183    0116  0377    K0377,  0377
1184    0117  0177    K0177,  0177
```



```
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

```
1240                    /
1241            0200    *200
1242                    /
1243                    /SETUP POINTERS FOR AMOUNT OF EXTENDED
1244                    /BANKS OF MEMORY, INTERRUPT SERVICE, CURRENT
1245                    /FIELD , AND TESTS FOR CLASSIC PACKAGE OR APT SYSYTEM.
1246                    /IF CONSOLE IS ACTIVE APT FUNTIONS OR NOP.
1247
1248                    /
1249    0200    5203    BGN,    JMP     .+3             /RUN DISKLESS.
1250    0201    5430            MANUAL                  /TO MANUAL SCOPE TEST
1251    0202    5426            IOTCHN                  /TO IOT CHANGE ROUTINE
1252    0203    6224            RIF
1253    0204    3175            DCA     HOMEMA
1254    0205    1175            TAD     HOMEMA
1255    0206    1150            TAD     KCDF            /MAKE HOMEDF
1256    0207    3210            DCA     PRSFLD
1257    0210    7402    PRSFLD, HLT                     /MAKE DF=IF
1258    0211    4405            SET                     /SETUP FIELD 0
1259    0212    1176            TAD     FLDMAX          /GET FIRST PASS POINTER
1260    0213    7640            SZA CLA                 /IS IT FIRST PASS
1261    0214    5217            JMP     .+3             /NO, MUST BE A RESTART
1262    0215    1532            TAD I   K7777           /GET LAST LOCATION
1263    0216    3007            DCA     SAVEND          /SAVE IT FOR A RESTORE
1264    0217    4423            APT8A                   /NOP CONSOLE IF ON APT8A
1265    0220    4406            CLASIC                  /CHECK FOR CONSOLE CLASSIC
1266    0221    4431            C8SWIT                  /CHECK FOR SWITCH SR=.
1267    0222    7000            NOP
1268    0223    4404            LAS
1269    0224    0072            AND     K0007           /MASK 9-11
1270    0225    7040            CMA
1271    0226    3176            DCA     FLDMAX          /SAVE AMOUNT OF EXTENDED MEMORY
1272    0227    1022            TAD     22
1273    0230    0102            AND     K0400
1274    0231    7640            SZA CLA                 /ON CLASSIC.
1275    0232    6007            6007                    /YES, THEN CLEAR ALL FLAGS.
1276                    /
1277                    /VERIFY THAT THE DISK MOTOR IS OFF, THE
1278                    /STATUS REGISTER SHOULD ONLY CONTAIN NOT READY TO
1279                    /SEEK, READ, OR WRITE AND NOT DISK FILE READY.
1280                    /INITIALIZE SHOULD HAVE CLEARED ALL OTHER BITS
1281                    /
1282
1283    0233    3153            DCA     REG1
1284    0234    1177            TAD     STCON           /GET EXPECTED STATUS
1285    0235    3163            DCA     GDREG2          /SETUP TEST HANDLER
1286                    /
1287    0236    1153    TST0,   TAD     REG1            /GET AC VALUE
1288    0237    4442            RDSTAT                  /READ STATUS REGISTER
1289    0240    4440            ACCMP1                  /CHECK RESULTS
1290    0241    4435            NERROR                  /AC O.K. 4096 LOOPS
1291    0242    4436            ERROR                   /ERROR, "INITIALIZE" CLEAR STATUS
1292                                                    /REGISTER FAILED.
1293    0243    0236            TST0                    /SCOPE LOOP POINTER
1294    0244    5000            5000                    /TEXT POINTER
```


SEQ 0049

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

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

SEQ 0052

```
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
```


SEQ 0053

```
1515  0473  7340          CLA CLL CMA             /3717
1516  0474  4452          LDADD                   /LOAD DISK ADDRESS "DLAG"
1517  0475  1171          TAD     DAREG
1518  0476  0075          AND     K0037           /MASK EXPECTED VALUE
1519  0477  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
1520  0500  4445          ENMAN2                  /ENTER MAINTENANCE
1521  0501  1100          TAD     K0200           /ENABLE SHIFT LOWER BUFFER
1522  0502  4455          LDMAN                   /LOAD MAINTENANCE
1523  0503  2156          ISZ     TCNTR1          /COUNT 12 SHIFTS
1524  0504  5302          JMP     .-2
1525  0505  7300          CLA CLL
1526  0506  1074          TAD     K0020           /ENABLE READ LOWER BUFFER
1527  0507  4455          LDMAN                   /LOAD MAINTENANCE
1528  0510  3171          DCA     DAREG           /SAVE VALUE FOUND
1529  0511  1171          TAD     DAREG
1530  0512  4440          ACCMP1                  /CHECK RESULTS
1531  0513  4435          NERROR                  /O.K. 4096 LOOPS
1532  0514  4436          ERROR                   /ERROR, SURFACE AND SECTOR SHIFT
1533  0515  0464          TST15                   /SCOPE LOOP POINTER
1534  0516  4102          4102                    /TEXT POINTER
1535                /
1536                /VERIFY THAT DLAG LOADS THE SURFACE AND
1537                /SECTOR REGISTER, USE DATA PATTERN ALL
1538                /COMBINATIONS,
1539                /
1540  0517  7301    TST16,  CLA CLL IAC             /ENABLE CLEAR CONTROL
1541  0520  4453          CLRALL                  /CLEAR CONTROL
1542  0521  1136          TAD     M12
1543  0522  3156          DCA     TCNTR1          /SETUP 12 BIT SHIFT COUNTER
1544  0523  1153          TAD     REG1
1545  0524  0075          AND     K0037           /MASK EXPECTED VALUE
1546  0525  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
1547  0526  1153          TAD     REG1
1548  0527  4452          LDADD                   /LOAD DISK ADDRESS "DLAG"
1549  0530  4445          ENMAN2                  /ENTER MAINTENANCE
1550  0531  1100          TAD     K0200           /ENABLE SHIFT LOWER BUFFER
1551  0532  4455          LDMAN                   /LOAD MAINTENANCE
1552  0533  2156          ISZ     TCNTR1          /COUNT 12 SHIFTS
1553  0534  5332          JMP     .-2
1554  0535  7300          CLA CLL
1555  0536  1074          TAD     K0020           /ENABLE READ LOWER BUFFER
1556  0537  4455          LDMAN                   /LOAD MAINTENANCE
1557  0540  3171          DCA     DAREG           /SAVE VALUE FOUND
1558  0541  1171          TAD     DAREG
1559  0542  4440          ACCMP1                  /CHECK RESULTS
1560  0543  4435          NERROR                  /O.K. 4096 LOOPS
1561  0544  4436          ERROR                   /ERROR, SURFACE AND SECTOR SHIFT
1562  0545  0517          TST16                   /SCOPE LOOP POINTER
1563  0546  4102          4102                    /TEXT POINTER
1564                /
1565                /VERIFY THAT THE DISK ADDRESS REGISTER CAN BE LOADED
1566                /AND SHIFTED TO LOWER DATA BUFFER WITH THE MAINTENANCE
1567                /IOT, USE DATA PATTERN 0000 + 7777
1568                /SHIFT THE SURFACE AND SECTOR FROM THE SURFACE AND SECTOR
1569                /REGISTER, SHIFT THE LOWER CYLINDER BITS FROM THE CRC REGISTER,
```

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



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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            LDADD                   /LOAD DISK ADDRESS
1659    0647  7301            CLA CLL IAC             /ENABLE "CLR ALL" BIT
1660    0650  4453            CLRALL                  /DCLR "CLR ALL"
1661    0651  4446            RDADD                   /READ DISK ADDRESS
1662    0652  4440            ACCMP1                  /CHECK RESULTS
1663    0653  4435            NERROR                  /AC O.K, LOOP 4096
1664    0654  4436            ERROR                   /ERROR, LOAD, READ, OR CLEAR
1665                                                    /DISK ADDRESS
1666    0655  0643            TST21                   /SCOPE LOOP POINTER
1667    0656  4102            4102                    /TEXT POINTER
1668                    /
1669                    /VERIFY THAT THE CRC CAN BE LOADED BY "DLAG"
1670                    /AND "DLDC", USE DATA PATTERN 0000 + 7777,
1671                    /THIS WILL VERIFY THAT THE CRC CAN BE LOADED
1672                    /BY THE EXTENDED CYLINDER BIT IN THE COMMAND REGISTER
1673                    /BY THE "DLAG" IOT.
1674                    /
1675    0657  7301    TST22,  CLA CLL IAC
1676    0660  4453            CLRALL                  /DCLR
1677    0661  1153            TAD     REG1
1678    0662  7110            CLL RAR
1679    0663  7630            SZL CLA                 /USE DATA 7777 IF LINK IS SET
```

```
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 "DLCA".
1780                /USE DATA PATTERN 2525 + 5252.
1781                /
1782  0777  7301    TST26,  CLA CLL IAC
1783  1000  4453          CLRALL                  /DCLR
1784  1001  1153          TAD     REG1
1785  1002  7110          CLL RAR
1786  1003  7630          SZL CLA                 /USE DATA 5252 IF LINK IS SET
1787  1004  1120          TAD     K2525
1788  1005  1120          TAD     K2525
1789  1006  0113          AND     K7740
```

```
1790  1007  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
1791  1010  7004          RAL                     /LINK FOR EXTENDED BIT
1792  1011  3162          DCA     GDREG1          /SETUP COMPARE REGISTER
1793  1012  1162          TAD     GDREG1          /GET UPPER DATA
1794  1013  4450          LDCMD                   /LOAD COMMAND
1795  1014  1163          TAD     GDREG2
1796  1015  4452          LDADD                   /LOAD DISK ADDRESS
1797  1016  1154          TAD REG2
1798  1017  4442          RDSTAT                  /READ STATUS
1799  1020  1154          TAD     REG2
1800  1021  4447          DSKSKP                  /"DSKP"
1801  1022  7000          NOP
1802  1023  4456          RDBUF                   /READ BUFFER
1803  1024  1154          TAD REG2
1804  1025  4451          LDCUR                   /LOAD CURRENT ADDRESS
1805  1026  1154          TAD     REG2
1806  1027  4450          LDCMD                   /LOAD COMMAND
1807  1030  1153          TAD     REG1
1808  1031  4427          LDBUF                   /LOAD UPPER BUFFER
1809  1032  4454          RDCRC                   /READ CRC REGISTER
1810  1033  4441          ACCMP2                  /CHECK RESULTS
1811  1034  4435          NERROR                  /O.K. 4096 LOOPS
1812  1035  4436          ERROR                   /ERROR, CRC REGISTER
1813  1036  0777          TST26                   /SCOPE LOOP POINTER
1814  1037  6004          6004                    /TEXT POINTER
1815                /
1816                /VERIFY THAT WRITE LOCK INHIBITS LOAD ADDRESS
1817                /WHEN IT IS SET.
1818                /
1819  1040  7301    TST27,  CLA CLL IAC
1820  1041  4453          CLRALL                  /CLEAR CONTROL
1821  1042  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
1822  1043  1153          TAD     REG1            /GET AC VALUE
1823  1044  4452          LDADD                   /LOAD DISK ADDRESS
1824  1045  1104          TAD     K2000
1825  1046  4450          LDCMD                   /SET WRITE LOCK
1826  1047  1154          TAD     REG2            /GET AC VALUE
1827  1050  4452          LDADD                   /TRY TO LOAD DISK ADDRESS
1828  1051  4446          RDADD                   /READ DISK ADDRESS
1829  1052  4440          ACCMP1                  /CHECK RESULTS
1830  1053  4435          NERROR                  /O.K. 4096 LOOPS
1831  1054  4436          ERROR                   /ERROR LOAD DISK ADDRESS
1832  1055  1040          TST27                   /SCOPE LOOP POINTER
1833  1056  4102          4102                    /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  4102          4102                    /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
```

SEQ 0060

```
1900  1144  4444          ENMAN1                  /ENTER MAINTENANCE
1901  1145  7326          CLA CLL CML RTL         /ENABLE RECALIBRATE
1902  1146  4453          CLRALL                  /RECALIBRATE
1903  1147  7326          CLA CLL CML RTL         /ENABLE RECALIBRATE
1904  1150  4453          CLRALL                  /RECALIBRATE
1905  1151  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
1906  1152  1153          TAD     REG1
1907  1153  4450          LDCMD                   /TRY TO LOAD COMMAND
1908  1154  4443          RDCMD                   /READ COMMAND
1909  1155  4440          ACCMP1                  /CHECK RESULTS
1910  1156  4435          NERROR                  /O.K. 4096 LOOPS
1911  1157  4436          ERROR                   /ERROR, IDLE (1)
1912  1160  1142          TST30                   /SCOPE LOOP POINTER
1913  1161  4201          4201                    /TEXT POINTER
1914                /
1915                /VERIFY THAT RECALIBRATE INHIBITS
1916                /LOAD DISK ADDRESS DLAG
1917                /
1918  1162  7301    TST31,  CLA CLL IAC             /ENABLE CLEAR CONTROL
1919  1163  4453          CLRALL                  /CLEAR CONTROL
1920  1164  4444          ENMAN1                  /ENTER MAINTENANCE
1921  1165  1153          TAD     REG1            /GET AC VALUE
1922  1166  3163          DCA     GDREG2          /SETUP COMPARE
1923  1167  1163          TAD     GDREG2
1924  1170  4452          LDADD                   /LOAD DISK ADDRESS (DLAG)
1925  1171  7326          CLA CLL CML RTL         /ENABLE RECAL,
1926  1172  4453          CLRALL                  /RECALIBRATE
1927  1173  1154          TAD     REG2
1928  1174  4452          LDADD                   /LOAD DISK ADDRESS (DLAG)
1929  1175  4446          RDADD                   /READ DISK ADDRESS
1930  1176  4440          ACCMP1                  /CHECK RESULTS
1931  1177  4435          NERROR                  /O.K. 4096 LOOPS
1932  1200  4436          ERROR                   /ERROR ON INHIBIT
1933  1201  1162          TST31                   /SCOPE POINTER
1934  1202  4102          4102                    /TEXT POINTER
1935                /
1936                /VERIFY THAT "DMAN" (MAINTENANCE) DOES NOT
1937                /AFFECT AC WHEN AC0=0 AND AC7=1 OR 0.
1938                /
1939  1203  7301    TST32,  CLA CLL IAC             /CLEAR ENABLE BIT
1940  1204  4453          CLRALL                  /DCLR "CLR ALL"
1941  1205  1153          TAD     REG1
1942  1206  0122          AND     K3737           /MASK OUT 0
1943  1207  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
1944  1210  1163          TAD     GDREG2
1945  1211  4455          LDMAN                   /LOAD MAINTENANCE "DMAN"
1946  1212  4440          ACCMP1                  /CHECK AC, COMPARE TO GDREG2
1947  1213  4435          NERROR                  /AC O.K. 4096 LOOPS
1948  1214  4436          ERROR                   /ERROR, "DMAN" AFFECTED AC
1949  1215  1203          TST32                   /SCOPE LOOP POINTER
1950  1216  4010          4010                    /TEXT POINTER
1951                /
1952                /VERIFY THAT "DMAN" DOES NOT AFFECT AC WHEN
1953                /AC7=0 AND AC0=1 OR 0.
1954                /
```


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```
1955  1217  7301    TST33,  CLA CLL IAC             /CLEAR ENABLE BIT
1956  1220  4453          CLRALL                  /DCLR "CLR ALL"
1957  1221  1153          TAD     REG1            /GET AC VALUE
1958  1222  0123          AND     K7717           /MASK OUT BIT 7
1959  1223  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
1960  1224  1163          TAD     GDREG2
1961  1225  4455          LDMAN                   /LOAD MAINTENANCE
1962  1226  4440          ACCMP1                  /CHECK AC, COMPARE TO GDREG2
1963  1227  4435          NERROR                  /AC O.K,, 4096 LOOPS
1964  1230  4436          ERROR                   /ERROR, DMAN AFFECT AC
1965  1231  1217          TST33                   /SLOPE LOOP POINTER
1966  1232  4010          4010                    /TEXT POINTER
1967                /
1968                /VERIFY THAT "DMAN" ONLY GETS CLEARED BY
1969                /DCLR NOT BY ANOTHER DMAN.
1970                /
1971  1233  7301    TST34,  CLA CLL IAC             /CLEAR ENABLE BIT
1972  1234  4453          CLRALL                  /DCLR "CLR ALL"
1973  1235  1153          TAD     REG1
1974  1236  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
1975  1237  1153          TAD     REG1
1976  1240  4450          LDCMD                   /LOAD COMMAND REGISTER
1977  1241  1136          TAD     M12             /NO, OF SHIFTS
1978  1242  3156          DCA     TCNTR1          /STORE IN COUNTER
1979  1243  4445          ENMAN2                  /ENTER MAINTENANCE MODE + DB4=1
1980  1244  1102          TAD     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          LDMAN                   /LOAD MAINTENANCE "DMAN"
2011  1276  2156          ISZ     TCNTR1
2012  1277  5275          JMP     .-2             /12 COUNT
2013  1300  7301          CLA CLL IAC
2014  1301  4453          CLRALL                  /CLEAR ALL "DCLR"
2015  1302  1074          TAD     K0020
2016  1303  4455          LDMAN                   /LOAD MAINTENCE
2017  1304  4440          ACCMP1                  /CHECK AC, COMPARE TO GDREG2
2018  1305  4435          NERROR                  /AC O.K. 4096 LOOPS
2019  1306  4436          ERROR                   /ERROR, DMAN AFFECTED AC
2020  1307  1263          TST35                   /SCOPE LOOP POINTER
2021  1310  4010          4010                    /TEXT POINTER
2022                /
2023                /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2024                /CRC REGISTER, THEN READ CRC REGISTER.
2025                /TRY ALL 1'S AND ALL 0'S.
2026                /
2027  1311  7301    TST36,  CLA CLL IAC
2028  1312  4453          CLRALL                  /DCLR "CLR ALL"
2029  1313  1153          TAD     REG1
2030  1314  7110          CLL RAR
2031  1315  7630          SZL CLA                 /SKIP IF ALL 0'S DATA
2032  1316  7340          CLA CLL CMA             /ALL ONE'S DATA
2033  1317  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2034  1320  1163          TAD     GDREG2
2035  1321  0145          AND     K0017
2036  1322  3162          DCA     GDREG1          /SETUP COMPARE REGISTER
2037  1323  1137          TAD     M16
2038  1324  3156          DCA     TCNTR1          /SHIFTER FOR CRC
2039  1325  4444          ENMAN1                  /ENTER MAINTENANCE MODE
2040  1326  1153          TAD     REG1
2041  1327  7104          CLL RAL
2042  1330  0066          AND     K0002
2043  1331  1103          TAD     K1000           /ENABLE BITS
2044  1332  4455          LDMAN                   /LOAD MAINTENANCE
2045  1333  2156          ISZ     TCNTR1
2046  1334  5332          JMP     .-2             /16 COUNT
2047  1335  4454          RDCRC                   /READ CRC REGISTER
2048  1336  4441          ACCMP2                  /COMPARE RESULTS
2049  1337  4435          NERROR                  /AC O.K. 4096 LOOPS
2050  1340  4436          ERROR                   /ERROR, CRC REGISTER
2051  1341  1311          TST36                   /SCOPE LOOP POINTER
2052  1342  6004          6004                    /TEXT POINTER
2053
2054                /
2055                /VERIFY THAT "AC 10 DATA" CAN BE SHIFTED TO
2056                /CRC REGISTER, THEN READ CRC REGISTER.
2057                /TRY PATTERN "125252"
2058
2059
2060
2061
2062
2063
2064
```



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2065
2066
2067
2068                /
2069  1343  7301    TST37,  CLA CLL IAC
2070  1344  4453          CLRALL                  /DCLR "CLR ALL"
2071  1345  1121          TAD     K5252
2072  1346  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2073  1347  1163          TAD     GDREG2
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2074  1350  0145          AND     K0017
2075  1351  3162          DCA     GDREG1          /SETUP COMPARE REGISTER
2076  1352  1137          TAD     M16
2077  1353  3156          DCA     TCNTR1          /SETUP 16 COUNT
2078  1354  4444          ENMAN1                  /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  7044          CMA RAL
2121  1415  0066          AND     K0002           /SETUP "AC 10 DATA"
2122  1416  1103          TAD     K1000           /ENABLE BITS
2123  1417  4455          LDMAN                   /LOAD MAINTENANCE
2124  1420  2156          ISZ     TCNTR1
2125  1421  5212          JMP     T38R            /16 COUNT
2126  1422  4454          RDCRC                   /READ CRC REGISTER
2127  1423  4441          ACCMP2                  /CHECK RESULTS
2128  1424  4435          NERROR                  /O,K, 4096 LOOPS
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2129  1425  4436          ERROR                   /ERROR, CRC REGISTER
2130  1426  1400          TST38                   /SCOPE LOOP POINTER
2131  1427  6004          6004                    /TEXT POINTER
2132                /
2133
2134                /
2135                /
2136                /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO CRC
2137                /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                  /O,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          LDADD                   /LOAD DISK ADDRESS AND CLEAR CRC
2199  1520  4454          RDCRC                   /READ CRC REGISTER
2200  1521  4441          ACCMP2                  /CHECK RESULTS
2201  1522  4435          NERROR                  /O.K. 4096 LOOPS
2202  1523  4436          ERROR                   /ERROR, CRC REGISTER
2203  1524  1470          TST40                   /ERROR, CRC REGISTER
2204  1525  6004          6004                    /TEXT POINTER
2205                /
2206                /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2207                /UPPER DATA BUFFER THEN SINK TO LOWER DATA
2208                /BUFFER, TRY ALL 1'S AND 0'S.
2209                /
2210  1526  7301  TST41,  CLA CLL IAC
2211  1527  4453          CLRALL                  /"DCLR" "CLR ALL"
2212
2213  1530  1153          TAD     REG1
2214  1531  7110          CLL RAR
2215  1532  7630          SZL CLA
2216  1533  7240          CLA CMA
2217  1534  3163          DCA     GDREG2
2218  1535  1163          TAD     GDREG2          /GET VALUE TO LOAD
2219  1536  4427          LDBUF                   /LOAD UPPER BUFFER
2220  1537  4456          RDBUF                   /READ LOWER BUFFER
2221  1540  4440          ACCMP1                  /CHECK AC, COMPARE TO GDREG2
2222  1541  4435          NERROR                  /AC O,K, 4096 LOOPS
2223  1542  4436          ERROR                   /ERROR, DATA REGISTERS
2224  1543  1526          TST41                   /SCOP LOOP POINTER
2225  1544  4405          4405                    /TEXT POINTER
2226                /
2227                /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2228                /UPPER DATA BUFFER THEN SINK TO LOWER DATA
2229                /BUFFER, TRY PATTERN 2525 + 5252
2230                /
2231  1545  7301  TST42,  CLA CLL IAC
2232  1546  4453          CLRALL                  /"DCKR" "CLR ALL"
2233  1547  1153          TAD     REG1
2234  1550  7110          CLL RAR
2235  1551  7630          SZL CLA                 /WHAT DATA????
2236  1552  1120          TAD     K2525           /DATA 5252
2237  1553  1120          TAD     K2525
2238  1554  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
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2239  1555  1163          TAD     GDREG2          /GET VALUE TO LOAD
2240  1556  4427          LDBUF                   /LOAD UPPER BUFFER
2241  1557  4456          RDBUF                   /READ LOWER DATA BUFFER
2242  1560  4440          ACCMP1                  /CHECK AC, COMPARE TO GDREG2
2243  1561  4435          NERROR                  /AC O,K, 4096 LOOPS
2244  1562  4436          ERROR                   /ERROR, DATA BUFFERS
2245  1563  1545          TST42                   /SCOPE LOOP POINTER
2246  1564  4405          4405                    /TEXT POINTER
2247
2248                /
2249                /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     TCNTR4
2297  1630  2160          ISZ     TCNTR3
2298  1631  5223          JMP     T45R1           /4 COUNT, SKIP WHEN BUFFERS FULL
2299  1632  1153          TAD     REG1
2300  1633  3163          DCA     GDREG2          /SETUP FOR FIRST 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", ØR "DRST" IOTS.
2318                      /USE DATA PATTERN ALL COMBINATIONS
2319                      /
2320  1652  7301  TST46,  CLA CLL IAC
2321  1653  4453          CLRALL                  /DCLR
2322  1654  1154          TAD     REG2
2323  1655  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2324  1656  1133          TAD     M4
2325  1657  3156          DCA     TCNTR1          /COUNTER FOR AMOUNT OF BUFFERS
2326  1660  1163  T46A1,  TAD     GDREG2          /GET VALUE TO LOAD
2327  1661  4427          LDBUF                   /LOAD UPPER BUFFER
2328  1662  2156          ISZ     TCNTR1          /COUNT AMOUNT
2329  1663  5260          JMP     T46A1           /MORE TO LOAD
2330  1664  1153          TAD     REG1
2331  1665  4452          LDADD                   /LOAD DISK ADDRESS
2332  1666  1153          TAD     REG1
2333  1667  4451          LDCUR                   /LOAD CURRENT ADDRESS
2334  1670  1153          TAD     REG1
2335  1671  0105          AND     K3777           /MASK OFF WRITE
2336  1672  4450          LDCMD                   /LOAD COMMAND REGISTER
2337  1673  1153          TAD     RFG1
2338  1674  4447          DSKSKP                  /DSKP
2339  1675  7000          NOP
2340  1676  4442          RDSTAT                  /READ STATUS
2341  1677  7300          CLA CLL
2342  1700  4453          CLRALL                  /CLEAR STATUS
2343  1701  1133          TAD     M4
2344  1702  3156          DCA     TCNTR1          /SETUP COUNTER
2345  1703  7300  T46A2,  CLA CLL
2346  1704  1074          TAD     K0020           /ENABLE READ BUFFER
2347  1705  4455          LDMAN                   /DMAN
2348  1706  3167          DCA     DBREG           /SAVE RESULTS
```


SEQ 0069

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2349  1707  1167          TAD     DBREG
2350  1710  4440          ACCMP1                  /CHECK RESULTS
2351  1711  7610          SKP CLA                 /DATA O.K.
2352  1712  5316          JMP     T46E            /ERROR
2353  1713  2156          ISZ     TCNTR1          /READ ALL FOUR
2354  1714  5303          JMP     T46A2           /LOOP
2355  1715  4435          NERROR                  /O.K, 4096 LOOPS
2356  1716  4436  T46E,   ERROR                   /ERROR, BUFFER AFFECTED
2357  1717  1652          TST46                   /SCOPE LOOP POINTER
2358  1720  4405          4405                    /TEXT POINTER
2359                      /
2360                      /VERIFY THAT THE UPPER BUFFER CAN BE LOADED
2361                      /THEN SINK TO LOWER BUFFER. USE A FLOATING
2362                      /1'S PATTERN.
2363                      /
2364  1721  3156          DCA     TCNTR1          /START AT Ø
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                   /FRROR 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                      /Ø'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 Ø'S
2394  1752  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2395  1753  1163          TAD     GDREG2          /GET VALUE TO LOAD
2396  1754  4427          LDBUF                   /LOAD UPPER BUFFER
2397  1755  4456          RDBUF                   /READ LOWER BUFFER
2398  1756  4440          ACCMP1                  /CHECK RESULTS
2399  1757  7610          SKP CLA                 /DATA O.K.
2400  1760  5367          JMP     T48E            /ERROR
2401  1761  1156          TAD     TCNTR1
2402  1762  7104          CLL RAL
2403  1763  7450          SNA
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2404  1764  7001          IAC
2405  1765  3156          DCA     TCNTR1          /SET ONE TO LEFT
2406  1766  4435          NERROR                  /LOOP 4096 TIMES
2407  1767  4436  T48E,   ERROR                  /ERROR SILO BUFFERS
2408  1770  1746          TST48                   /SCOPE LOOP POINTER
2409  1771  4405          4405                    /TEXT POINTER
2410                /
2411  1772  5773          JMP I   .+1             /TO NEXT TEST
2412  1773  2000          TST49
2413                /
2414        2000    PAGE
2415                /
2416                /VERIFY THAT "DRL" OCCURES WHEN BUFFER
2417                /EMPTY.
2418                /
2419  2000  7301    TST49,  CLA CLL IAC
2420  2001  4453          CLRALL                  /"DCLR" CLEAR ALL
2421  2002  1177          TAD     STCON           /GET EXPECTED BITS
2422  2003  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2423  2004  1153          TAD     REG1
2424  2005  4442          RDSTAT                  /READ STATUS REGISTER
2425  2006  4440          ACCMP1                  /CHECK RESULTS
2426  2007  7610          SKP CLA                 /O.K.
2427  2010  5232          JMP     T49E            /ERROR, STATUS REGISTER
2428  2011  1177          TAD     STCON
2429  2012  1070          TAD     K0004           /GET EXPECTED BITS
2430  2013  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2431  2014  4444          ENMAN1                  /ENTER MAINTENANCE MODE
2432  2015  1103          TAD     K1000
2433  2016  4455          LDMAN                   /LOAD MAINTENANCE
2434  2017  7240          CLA CMA
2435  2020  4442          RDSTAT                  /READ STATUS REGISTER
2436  2021  4440          ACCMP1                  /CHECK RESULTS
2437  2022  7610          SKP CLA                 /O.K.
2438  2023  5232          JMP     T49E            /ERROR, STATUS REGISTER
2439  2024  1177          TAD     STCON
2440  2025  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2441  2026  4453          CLRALL                  /DCLR "CLEAR STATUS"
2442  2027  4442          RDSTAT                  /READ STATUS REGISTER
2443  2030  4440          ACCMP1                  /CHECK RESULTS
2444  2031  4435          NERROR                  /STATUS O.K., 4096 LOOPS
2445  2032  4436  T49E,   ERROR                  /ERROR, STATUS REGISTER
2446  2033  2000          TST49                   /SCOPE LOOP POINTER
2447  2034  5000          5000                    /TEXT POINTER
2448                /
2449                /VERIFY THAT BUFFER FULL CAUSES "DRL".
2450                /
2451  2035  7301    TST50,  CLA CLL IAC
2452  2036  4453          CLRALL                  /DCLR "CLR ALL"
2453  2037  1177          TAD     STCON
2454  2040  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2455  2041  1154          TAD     REG2
2456  2042  4442          RDSTAT                  /READ STATUS REGISTER
2457  2043  4440          ACCMP1                  /CHECK RESULTS
2458  2044  7610          SKP CLA                 /O.K.
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2459  2045  5274          JMP     T50E            /ERROR, STATUS REGISTER
2460  2046  1140          TAD     M48
2461  2047  3156          DCA     TCNTR1          /48 COUNTER
2462  2050  4444          ENMAN1                  /ENTER MAINTENANCE MODE
2463  2051  1077          TAD     K0100           /ENABLE BITS
2464  2052  4455          LDMAN                   /LOAD MAINTENANCE
2465  2053  2156          ISZ     TCNTR1
2466  2054  5252          JMP     .-2             /SKIP WHEN BUFFERS ARE FULL
2467  2055  7300          CLA CLL
2468  2056  4442          RDSTAT                  /READ STATUS REGISTER
2469  2057  4440          ACCMP1                  /CHECK RESULTS
2470  2060  7610          SKP CLA
2471  2061  5274          JMP     T50E            /ERROR, STATUS REGISTER
2472  2062  1077          TAD     K0100
2473  2063  4455          LDMAN                   /CAUSE "DRL" DMAN
2474  2064  7300          CLA CLL
2475  2065  1177          TAD     STCON
2476  2066  1070          TAD     K0004           /BIT EXPECTED
2477  2067  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2478
2479  2070  1153          TAD     REG1
2480  2071  4442          RDSTAT                  /READ STATUS REGISTER
2481  2072  4440          ACCMP1                  /CHECK RESULTS
2482  2073  4435          NERROR                  /STATUS O.K., 4096 LOOPS
2483  2074  4436  T50E,   ERROR                  /ERROR, STATUS REGISTER
2484  2075  2035          TST50                   /SCOPE LOOP POINTER
2485  2076  5000          5000                    /TEXT POINTER
2486                /
2487                /VEPIFY THAT "DSKP" SKIPS ON "DRL" ERROR
2488                /
2489  2077  7301    TST51,  CLA CLL IAC
2490  2100  4453          CLRALL                  /DCLR "CLR ALL"
2491  2101  4444          ENMAN1                  /ENTER MAINTENANCE MODE
2492  2102  1103          TAD     K1000
2493  2103  4455          LDMAN                   /SET "DRL" "DMAN"
2494  2104  7300          CLA CLL
2495  2105  4447          DSKSKP                  /"DSKP"
2496  2106  5314          JMP     T51E            /ERROR, "DSKP"
2497  2107  4447          DSKSKP                  /"DSKP"
2498  2110  5314          JMP     T51E            /ERROR, "DSKP"
2499  2111  4453          CLRALL                  /CLEAR STATUS "DCRL"
2500  2112  4447          DSKSKP                  /"DSKP" SKIP
2501  2113  4435          NERROR                  /SKIP O.K, 4096 LOOPS
2502  2114  4436  T51E,   ERROR                  /ERROR, "DSKP" SKIP ON "DRL"
2503  2115  2077          TST51                   /SLOPE LOOP POINTER
2504  2116  0006          0006                    /TEXT POINTER
2505                /
2506                /VERIFTY THAT "DRL" DOES CAUSE DISK "INTERRUPT" IF
2507                /ENABLED BY "ENABLE INTERRUPT" BIT IN COMMAND REGISTER.
2508                /
2509  2117  7301    TST52,  CLA CLL IAC
2510  2120  4453          CLRALL                  /"DCRL" "CLR ALL"
2511  2121  1102          TAD     K0400
2512  2122  4450          LDCMD                   /SET INT. ENABLE "LOAD COMMAND REG."
2513  2123  4444          ENMAN1                  /ENTER MAINTENANCE MODE
```

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2514  2124  1103          TAD     K1000
2515  2125  4455          LDMAN                   /"SET DRL" "DMAN"
2516  2126  4437          IONWAT                  /WAIT FOR INTERRUPT
2517  2127  7610          SKP CLA                 /ERROR, NO INT, RQ.
2518  2130  4435          NERROR                  /O.K. INT, OCCURRED
2519  2131  4436          ERROR                   /ERROR, INT, REQUEST
2520  2132  2117          TST52                   /SCOP LOOP POINTER
2521  2133  0007          0007                    /TEXTPOINTER
2522
2523                /
2524                /VERIFY THAT "DRL" SHOULD CAUSE INT, RQ, ONLY
2525                /WHEN "INT, ENABLE BIT IS SET, DOES LDCMD CLEAR INT,
2526                /
2527
2528  2134  7301    TST53,  CLA CLL IAC
2529  2135  4453          CLRALL                  /DCLR "CLR ALL"
2530  2136  4444          ENMAN1                  /ENTER MAINTENANCE MODE
2531  2137  1103          TAD     K1000
2532  2140  4455          LDMAN                   /SET "DRL" DMAN
2533  2141  4437          IONWAT                  /WAIT FOR INT,
2534  2142  7610          SKP CLA                 /O.K. NO INT,
2535  2143  5356          JMP     T53E            /ERROR, INT, OCCURRED
2536  2144  1102          TAD     K0400
2537  2145  4450          LDCMD                   /SET INT, ENABLE AND CLEAR INT,
2538  2146  4437          IONWAT                  /WAIT FOR INT,
2539  2147  7610          SKP CLA                 /O.K. NO INT, RQ,
2540  2150  5356          JMP     T53E            /ERROR, INT, OCCURED
2541  2151  1103          TAD     K1000
2542  2152  4455          LDMAN                   /SET "DRL" "DMAN"
2543  2153  4437          IONWAT                  /WAIT INT,, SHOULD INT,
2544  2154  7610          SKP CLA                 /ERROR, NO INT,
2545  2155  4435          NERROR                  /O.K. INT, OCCURRED
2546  2156  4436    T53E, ERROR                   /ERROR,, INT, RQ
2547  2157  2134          TST53                   /SCOPE LOOP POINTER
2548  2160  0007          0007                    /TEXT POINTER
2549                /
2550  2161  5762          JMP I   .+1             /TO NEXT TEST
2551  2162  2200          TST54
2552                /
2553        2200    PAGE
2554                /
2555                /VERIFY THAT "LDCMD" CLEARS STATUS REGISTER
2556                /
2557  2200  7301    TST54,  CLA CLL IAC
2558  2201  4453          CLRALL                  /DCLR "CLR ALL"
2559  2202  1177          TAD     STCON
2560  2203  1070          TAD     K0004
2561  2204  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2562  2205  4444          ENMAN1                  /ENTER MAINTENANCE MODE
2563  2206  1103          TAD     K1000           /ENABLE
2564  2207  4455          LDMAN                   /SET "DRL" DMAN
2565  2210  7300          CLA CLL
2566  2211  1154          TAD     REG2
2567  2212  4442          RDSTAT                  /READ STATUS REGISTER
2568  2213  4440          ACCMP1                  /CHECK RESULTS
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2569  2214  7610          SKP CLA                 /O.K, CHECK CLEAR
2570  2215  5225          JMP     T54E            /STATUS REGISTER ERROR
2571  2216  4450          LDCMD                   /CLEAR STATUS, "LOAD COMMAND"
2572  2217  1177          TAD     STCON
2573  2220  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2574  2221  1153          TAD     REG1
2575  2222  4442          RDSTAT                  /READ STATUS REGISTER
2576  2223  4440          ACCMP1                  /CHECK RESULTS
2577  2224  4435          NERROR                  /STATUS O,K, 4096 LOOPS
2578  2225  4436    T54E, ERROR                   /ERROR, STATUS REGISTER
2579  2226  2200          TST54                   /SCOPE LOOP POINTER
2580  2227  5000          5000                    /TEXT POINTER
2581                /
2582                /VERIFY THAT RECALIBRATE DOES SET DRIVE STATUS
2583                /ERROR IN THE STATUS REGISTER,
2584                /
2585  2230  7301    TST55,  CLA CLL IAC             /ENABLE CLEAR CONTROL
2586  2231  4453          CLRALL                  /CLEAR CONTROL
2587  2232  7301          CLA CLL IAC             /ENABLE CLEAR CONTROL
2588  2233  4453          CLRALL                  /ENABLE CLEAR CONTROL
2589  2234  1177          TAD     STCON
2590  2235  3163          DCA     GDREG2          /SETUP EXPECTED COMPARE
2591  2236  4442          RDSTAT                  /READ STATUS REGISTER
2592  2237  4440          ACCMP1                  /CHECK RESULTS
2593  2240  7610          SKP CLA                 /STATUS O,K,
2594  2241  5252          JMP     T55E            /ERROR, STATUS
2595  2242  7326          CLA CLL CML RTL
2596  2243  1177          TAD     STCON
2597  2244  3163          DCA     GDREG2          /SETUP EXPECTED COMPARE
2598  2245  7326          CLA CLL CML RTL         /ENABLE RECALIBRATE
2599  2246  4453          CLRALL                  /RECALIBRATE
2600  2247  4442          RDSTAT                  /READ STATUS
2601  2250  4440          ACCMP1                  /CLECK RESULTS
2602  2251  4435          NERROR                  /O,K, 4096 LOOPS
2603  2252  4436    T55E, ERROR                   /ERROR, STATUS
2604  2253  2230          TST55                   /SCOPE LOOP POINTER
2605  2254  5000          5000                    /TEXT POINTER
2606                /
2607                /VERIFY THAT "LOAD DISK ADDRESS CAUSES" "DRIVE STATUS ERROR"
2608                /
2609  2255  7301    TST56,  CLA CLL IAC             /ENABLE CLEAR CONTROL
2610  2256  4453          CLRALL
2611  2257  4452          LDADD
2612  2260  1177          TAD     STCON
2613  2261  1066          TAD     K0002
2614  2262  3163          DCA     GDREG2
2615  2263  1153          TAD     REG1
2616
2617  2264  4442          RDSTAT                  /READ STATUS REGISTER
2618  2265  4440          ACCMP1                  /CHECK RESULTS
2619  2266  4435          NERROR                  /STATUS O,K, 4096 LOOPS
2620  2267  4436          ERROR                   /ERROR, STATUS REGISTER
2621  2270  2255          TST56                   /SCOPE LOOP POINTER
2622  2271  5000          5000                    /TEXT POINTER
2623                /
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                        /VERIFY THAT "DRIVE STATUS ERROR" CAUSES INT. RQ.
                        / "DOES LDCMD 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 ERPOR
 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  4444              ENMAN1                  /ENTER MAINTENANCE MODE
 2709   2407  1103              TAD     K1000
 2710   2410  4455              LDMAN                   /SET "DRL" DMAN
 2711   2411  4437              IONWAT                  /WAIT FOR INT.
 2712   2412  5220              JMP     T61E            /ERROR, NO INT.
 2713   2413  1071              TAD     K0006
 2714   2414  3222              DCA     T61E+2          /SETUP TEXT POINTER
 2715   2415  4447              DSKSKP                  /"DSKP" SHOULD SKIP
 2716   2416  7610              SKP CLA                 /ERROR, NO SKIP
 2717   2417  4435              NERROR                  /O.K. 4096 LOOPS
 2718   2420  4436      T61E,   ERROR                   /ERROR, SKIP OR INT.
 2719   2421  2400              TST61                   /SCOPE LOOP POINTER
 2720   2422  0007              0007                    /MODIFIED TEXT POINTER
 2721                   /
 2722                   /VERIFY THAT MAINTENANCE DOES INHIBIT
 2723                   /DRIVE STATUS ERROR SKIP
 2724                   /
 2725   2423  7301      TST62,  CLA CLL IAC
 2726   2424  4453              CLRALL                  /CLEAR CONTROL
 2727   2425  4447              DSKSKP                  /DISK SKIP
 2728   2426  7610              SKP CLA                 /O.K. NO SKIP
 2729   2427  5744              JMP     T62E            /ERROR, SKIP
 2730   2430  7326              CLA CLL CML RTL
 2731   2431  4453              CLRALL                  /RECALIBRATE
 2732   2432  4447              DSKSKP                  /DISK SKIP
 2733   2433  5744              JMP     T62E            /ERROR, NO SKIP
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 2734   2434  4444          ENMAN1                  /SET MAIN
 2735   2435  4447          DSKSKP                  /DISK SKIP
 2736   2436  7610          SKP CLA                 /O.K, NO SKIP
 2737   2437  5244          JMP     T62E            /ERROR, SKIP
 2738   2440  7326          CLA CLL CML RTL
 2739   2441  4453          CLRALL                  /RECALIBRATE
 2740   2442  4447          DSKSKP                  /DISK SKIP
 2741   2443  4435          NERROR                  /O.K, 4096 LOOPS
 2742   2444  4436  T62E,   ERROR                  /ERROR, DISK SKIP
 2743   2445  2423          TST62                   /SCOPE LOOP POINTER
 2744   2446  0006          0006                    /TEXT POINTER
 2745                 /
 2746                 /VERIFY THAT "RECALIBRATE" THEN DCLR DOES SET BUSY
 2747                 /AND DRIVE STATUS ERROR
 2748                 /
 2749   2447  7301  TST63,  CLA CLL IAC
 2750   2450  4453          CLRALL                  /CLEAR CONTROL
 2751   2451  1177          TAD     STCON           /EXPECTED STATUS
 2752   2452  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
 2753   2453  4442          RDSTAT                  /READ STATUS
 2754   2454  4440          ACCMP1                  /CHECK RESULTS
 2755   2455  7610          SKP CLA                 /STATUS O.K,
 2756   2456  5304          JMP     T63E            /ERROR, STATUS
 2757   2457  4444          ENMAN1                  /ENTER MAINTENANCE
 2758   2460  7326          CLA CLL CML RTL
 2759   2461  1177          TAD     STCON           /EXPECTED STATUS
 2760   2462  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
 2761   2463  7326          CLA CLL CML RTL
 2762   2464  4453          CLRALL                          /"RECALIBRATE" DCLR
 2763   2465  4442          RDSTAT                  /READ STATUS
 2764   2466  4440          ACCMP1                  /CHECK RESULTS
 2765   2467  7610          SKP CLA                 /STATUS O.K,
 2766   2470  5304          JMP     T63E            /ERROR, STATUS
 2767   2471  1153          TAD     REG1
 2768   2472  0110          AND     K7776           /MASK OUT CLEAR CONTROL
 2769   2473  4453          CLRALL                  /DCLR
 2770   2474  7326          CLA CLL CML RTL
 2771   2475  1177          TAD     STCON
 2772   2476  1077          TAD     K0100           /BUSY BIT
 2773   2477  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
 2774   2500  1154          TAD     REG2
 2775   2501  4442          RDSTAT                          /READ STATUS REGISTER
 2776   2502  4440          ACCMP1                          /CHECK RESULTS
 2777   2503  4435          NERROR                          /STATUS, O.K, 4096 LOOPS
 2778   2504  4436  T63E,   ERROR                          /ERROR, RECALIBRATE
 2779   2505  2447          TST63                           /SCOPE LOOP POINTER
 2780   2506  5000          5000                            /TEXT POINTER
 2781                 /
 2782                 /VERIFY THAT "RECALIBRATE" THEN "DRL" RESULTS IN DRL,
 2783                 /DRIVE STATUS, AND TRANSFER DONE
 2784                 /
 2785   2507  7301  TST64,  CLA CLL IAC
 2786   2510  4453          CLRALL                  /CLEAR CONTROL
 2787   2511  1177          TAD     STCON
 2788   2512  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
```



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 2789   2513  4442          RDSTAT                  /READ STATUS
 2790   2514  4440          ACCMP1                  /CHECK RESULTS
 2791   2515  7610          SKP CLA                 /STATUS O.K.
 2792   2516  5344          JMP     T64E            /ERROR, STATUS
 2793   2517  4444          ENMAN1                  /ENTER MAINTENANCE
 2794   2520  7326          CLA CLL CML RTL
 2795   2521  1177          TAD     STCON           /EXPECTED STATUS
 2796   2522  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
 2797   2523  7326          CLA CLL CML RTL
 2798   2524  4453          CLRALL                  /DCLR
 2799   2525  4442          RDSTAT                  /READ STATUS
 2800   2526  4440          ACCMP1                  /CHECK RESULTS
 2801   2527  7610          SKP CLA                 /STATUS O.K.
 2802   2530  5344          JMP     T64E            /ERROR, STATUS
 2803   2531  7326          CLA CLL CML RTL
 2804   2532  1177          TAD     STCON
 2805   2533  1106          TAD     K4000
 2806   2534  1070          TAD     K0004           /EXPECTED STATUS
 2807   2535  3163          DCA     GDREG2
 2808   2536  1103          TAD     K1000           /ENABLE SHIFT
 2809   2537  4455          LDMAN                   /LOAD MAINTENANCE SET DRL
 2810   2540  1153          TAD     REG1
 2811   2541  4442          RDSTAT                  /READ STATUS REGISTER
 2812   2542  4440          ACCMP1                  /CHECK RESULTS
 2813   2543  4435          NERROR                  /O.K, 4096 LOOPS
 2814   2544  4436  T64E,   ERROR                  /ERROR, STATUS REGISTER
 2815   2545  2507          TST64                   /SCOPE LOOP POINTER
 2816   2546  5000          5000                    /TEXT POINTER
 2817                 /
 2818   2547  5750          JMP I   .+1             /TO NEXT TEST
 2819   2550  2600          TST65
 2820                 /
 2821         2600    PAGE
 2822                 /
 2823                 /VERIFY THAT "RECALIBRATE" THEN "DLCA" SETS
 2824                 /DRIVE STATUS AND BUSY ERROR IN STATUS REGISTER
 2825                 /
 2826   2600  7301  TST65,  CLA CLL IAC
 2827   2601  4453          CLRALL                  /CLEAR CONTROL
 2828   2602  1177          TAD     STCON           /EXPECTED STATUS
 2829   2603  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
 2830   2604  4442          RDSTAT                  /READ STATUS
 2831   2605  4440          ACCMP1                  /CHECK RESULTS
 2832   2606  7610          SKP CLA                 /STATUS O.K.
 2833   2607  5233          JMP     T65E            /ERROR, STATUS
 2834   2610  4444          ENMAN1                  /ENTER MAINTENANCE
 2835   2611  7326          CLA CLL CML RTL
 2836   2612  1177          TAD     STCON           /EXPECTED STATUS
 2837   2613  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
 2838   2614  7326          CLA CLL CML RTL
 2839   2615  4453          CLRALL
 2840   2616  4442          RDSTAT                  /READ STATUS
 2841   2617  4440          ACCMP1                  /CHECK RESULTS
 2842   2620  7610          SKP CLA                 /STATUS O.K.
 2843   2621  5233          JMP     T65E            /ERROR, STATUS
```

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2844  2622  7326          CLA CLL CML RTL
2845  2623  1077          TAD     K0100
2846  2624  1177          TAD     STCON           /EXPECTED STATUS
2847  2625  3163          DCA     GDREG2
2848  2626  4451          LDCUR                   /LOAD CURRENT ADDRESS
2849  2627  1154          TAD     REG2
2850  2630  4442          RDSTAT                  /READ STATUS REGISTER
2851  2631  4440          ACCMP1                  /CHECK RESULTS
2852  2632  4435          NERROR                  /O.K, 4096 LOOPS
2853  2633  4436  T65E,   ERROR                   /ERROR, STATUS REGISTER
2854  2634  2600          TST65                   /SCOPE LOOP POINTER
2855  2635  5000          5000                    /TEXT POINTER
2856                /
2857                /VERIFY THAT "RECALIBRATE" THEN "DLDC"
2858                /DOES SET BUSY ERROR IN STATUS
2859                /
2860  2636  7301  TST66,  CLA CLL IAC
2861  2637  4453          CLRALL                  /CLEAR CONTROL
2862  2640  4444          ENMAN1                  /ENTER MAINTENANCE
2863  2641  7326          CLA CLL CML RTL
2864  2642  4453          CLRALL
2865  2643  7326          CLA CLL CML RTL
2866  2644  1077          TAD     K0100
2867  2645  1177          TAD     STCON           /EXPECTED STATUS
2868  2646  3163          DCA     GDREG2
2869  2647  4450          LDCMD                   /LOAD COMMAND REGISTER
2870  2650  1154          TAD     REG2
2871  2651  4442          RDSTAT                  /READ STATUS REGISTER
2872  2652  4440          ACCMP1                  /CHECK RESULTS
2873  2653  4435          NERROR                  /O.K, 4096 LOOPS
2874  2654  4436          ERROR                   /ERROR, STATUS REGISTER
2875  2655  2636          TST66                   /SCOPE LOOP POINTER
2876  2656  5000          5000                    /TEXT POINTER
2877                /
2878                /VERIFY THAT RECALIBRATE THEN DIAG RESULTS IN
2879                /BUSY AND DRIVE STATUS ERROR.
2880                /
2881  2657  7301  TST67,  CLA CLL IAC
2882  2660  4453          CLRALL                  /CLEAR CONTROL
2883  2661  4444          ENMAN1                  /ENTER MAINTENANCE
2884  2662  7326          CLA CLL CML RTL
2885  2663  1077          TAD     K0100
2886  2664  1177          TAD     STCON           /EXPECTED STATUS
2887  2665  3163          DCA     GDREG2          /SETUP EXPECTED COMPARE
2888  2666  7326          CLA CLL CML RTL         /ENABLE RECALIBRATE
2889  2667  4453          CLRALL
2890  2670  4452          LDADD                   /LOAD DISK ADDRESS
2891  2671  4442          RDSTAT                  /READ STATUS
2892  2672  4440          ACCMP1                  /CKECK RESULTS
2893  2673  4435          NERROR                  /O.K, 4096 LOOPS
2894  2674  4436          ERROR                   /ERROR, BUSY OR DRIVE STATUS
2895  2675  2657          TST67                   /SCOPE LOOP POINTER
2896  2676  5000          5000                    /TEXT POINTER
2897                /
2898                /VERIFY THAT SKIP OCCURRES ON BUSY ERROR
```



```
2899                /
2900  2677  7301  TST68,  CLA CLL IAC
2901  2700  4453          CLRALL                  /CLEAR CONTROL
2902  2701  4447          DSKSKP                  /DSKP
2903  2702  7610          SKP CLA                 /SKIP O.K,
2904  2703  5315          JMP     T68E            /ERROR, DISK SKIP
2905  2704  4444          ENMAN1                  /ENTER MAINTENANCE
2906  2705  7326          CLA CLL CML RTL
2907  2706  4453          CLRALL                  /DCLR
2908  2707  4451          LDCUR                   /LOAD CURRENT ADDRESS
2909  2710  4447          DSKSKP                  /DSKP DISK SKIP
2910  2711  5315          JMP     T68E            /ERROR, NO SKIP
2911  2712  4447          DSKSKP                  /DSKP DISK SKIP
2912  2713  5315          JMP     T68E            /ERROR
2913  2714  4435          NERROR                  /O.K, 4096 LOOPS
2914  2715  4436  T68E,   ERROR                   /ERROR, DSKP
2915  2716  2677          TST68                   /SCOPE LOOP POINTER
2916  2717  0006          0006                    /TEXT POINTER
2917                /
2918                /VERIFY THAT DCLR CLEARS ALL OF STATUS REGISTER
2919                /
2920  2720  7301  TST69,  CLA CLL IAC
2921  2721  4453          CLRALL                  /CLEAR CONTROL
2922  2722  4444          ENMAN1                  /ENTER MAINTENANCE
2923  2723  7326          CLA CLL CML RTL
2924  2724  4453          CLRALL                  /DCLR
2925  2725  7326          CLA CLL CML RTL
2926  2726  1177          TAD     STCON
2927  2727  1106          TAD     K4000
2928  2730  1070          TAD     K0004           /EXPECTED STATUS
2929  2731  3163          DCA GDREG2
2930  2732  1103          TAD     K1000           /ENABLE SHIFT
2931  2733  4455          LDMAN                   /LOAD MAINTENANCE SET DRL
2932  2734  1153          TAD     REG1
2933  2735  4442          RDSTAT                  /READ STATUS REGISTER
2934  2736  4440          ACCMP1                  /CHECK RESULTS
2935  2737  7610          SKP CLA                 /O.K
2936  2740  5350          JMP     T69E            /ERROR
2937  2741  4453          CLRALL                  /DCLR
2938  2742  1177          TAD     STCON
2939  2743  3163          DCA GDREG2              /SETUP COMPARE REGISTER
2940  2744  1154          TAD     REG2
2941  2745  4442          RDSTAT                  /READ STATUS
2942  2746  4440          ACCMP1                  /CHECK RESULTS
2943  2747  4435          NERROR                  /O.K, 4096 LOOPS
2944  2750  4436  T69E,   ERROR                   /ERROR, STATUS REGISTER
2945  2751  2720          TST69                   /SCOPE LOOP POINTER
2946  2752  5000          5000                    /TEXT POINTER
2947                /
2948                /VERIFY THAT INTERRUPT OCCURES ON BUSY ERROR
2949                /
2950  2753  7301  TST70,  CLA CLL IAC
2951  2754  4453          CLRALL                  /CLEAR CONTROL
2952  2755  1102          TAD     K0400           /ENABLE INT. BIT
2953  2756  4450          LDCMD                   /LOAD COMMAND
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2954  2757  4444          ENMAN1                  /ENTER MAINTENANCE
2955  2760  7326          CLA CLL CML RTL
2956  2761  4453          CLRALL                  /DCLR
2957  2762  4437          IONWAT                  /WAIT FOR INT,
2958  2763  7610          SKP CLA                 /INT, O,K,
2959  2764  5374          JMP     T70E            /ERROR, DISK INT,
2960  2765  4453          CLRALL                  /CLEAR STATUS
2961  2766  4437          IONWAT                  /WAIT FOR INTERRUPT
2962  2767  5374          JMP     T70E            /ERROR, NO INT,
2963  2770  4453          CLRALL                  /DCLR
2964  2771  4437          IONWAT                  /WAIT FOR INT,
2965  2772  7610          SKP CLA                 /INT, O,K,
2966  2773  4435          NERROR                  /O,K, 4096 LOOPS
2967  2774  4436  T70E,   ERROR                  /ERROR, INT,
2968  2775  2753          TST70                   /SCOPE LOOP POINTER
2969  2776  0007          0007                    /TEXT POINTER
2970                      /
2971                      /VERIFY THAT "RDBUF", "DLCA", "DRST", "DLAG"
2972                      /OR "DSKP" DOES NOT AFFECT STATUS REGISTER,
2973                      /
2974  2777  7301  TST71,  CLA CLL IAC
2975  3000  4453          CLRALL                  /CLEAR CONTROL
2976  3001  4444          ENMAN1                  /ENTER MAINTENANCE
2977  3002  7326          CLA CLL CML RTL
2978  3003  4453          CLRALL                  /DCLR
2979  3004  1103          TAD     K1000           /ENABLE SHIFT
2980  3005  4455          LDMAN                   /LOAD MAINTENANCE
2981  3006  7326          CLA CLL CML RTL
2982  3007  1177          TAD     STCON
2983  3010  1070          TAD     K0004
2984  3011  1106          TAD     K4000           /EXPECTED STATUS
2985  3012  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
2986  3013  4456          RDBUF                   /READ BUFFER
2987  3014  1153          TAD     REG1
2988  3015  4442          RDSTAT                  /READ STATUS
2989  3016  1154          TAD     REG2
2990  3017  4451          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 WORD1
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
```



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3073    3204    7301    T73R1,  CLA CLL IAC
3074    3205    4453            CLRALL                          /DCLR "CLR ALL"
3075    3206    1161            TAD     TCNTR4
3076    3207    3156            DCA     TCNTR1
3077    3210    1136    T73R2,  TAD     M12
3078    3211    3157            DCA     TCNTR2          /12 BIT WORD COUNTER
3079    3212    4444            ENMAN1                  /ENTER MAINTENANCE MODE
3080    3213    1077            TAD     K0100           /ENABLE SHIFT
3081    3214    4455            LDMAN                   /LOAD MAINTENANCE
3082    3215    2157            ISZ     TCNTR2          /COUNT SHIFTS
3083    3216    5214            JMP     .-2             /MORE TO GO
3084    3217    4456            RDBUF                   /PREVENT DRL
3085    3220    2156            ISZ     TCNTR1          /DO IT 12 TIMES
3086    3221    5210            JMP     T73R2           /MORE 12 BIT COUNTS
3087    3222    7301            CLA CLL IAC             /ENABLE CLEAR CONTROL
3088    3223    4453            CLRALL                  /AND CLEAR THE COUNTER
3089    3224    1177            TAD     STCON
3090    3225    3163            DCA     GDREG2                  /SETUP COMPARE REGISTER
3091    3226    1136            TAD     M12
3092    3227    3156            DCA     TCNTR1                  /FOR FINAL WORD!
3093    3230    1143            TAD     M255
3094    3231    3157            DCA     TCNTR2                  /FOR ONE LESS THAN "LAST WORD"
3095    3232    4444            ENMAN1                  /ENTER MAINTENANCE MODE
3096    3233    1136    T73R3,   TAD     M12
3097    3234    3160            DCA     TCNTR3                  /FOR EACH 12 BIT WORD
3098    3235    1077            TAD     K0100                   /ENABLE BITS TOSHIFT SILO
3099    3236    4455            LDMAN                           /LOAD MAINTENANCE
3100    3237    2160            ISZ     TCNTR3                  /SKIP ON EVERY "12 BIT WORD"
3101    3240    5236            JMP     .-2
3102    3241    4456            RDBUF                           /THIS SHOULD PREVENT A "DRL"
3103    3242    4442            RDSTAT                          /GET STATUS
3104    3243    4440            ACCMP1                  /CHECK RESULTS
3105    3244    7610            SKP CLA
3106    3245    5266            JMP     T73E                    /STATUS ERROR
3107    3246    2157            ISZ     TCNTR2
3108    3247    5233            JMP     T73R3                    /COUNT 255 "12 BIT WORDS"
3109    3250    7330            CLA CLL CML RAR
3110    3251    1177            TAD     STCON
3111    3252    3163            DCA     GDREG2                  /SETUP COMPARE REGISTER
3112    3253    1077            TAD     K0100
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                    /
```

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                        /VERIFY THAT 12TH BIT O.K. H DOES INHTBIT
                        /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
3134    3273  1077              TAD     K0100           /CLEAR CONTROL
3135    3274  4450              LDCMD                   /HALF BLOCK TRANSFERS
3136    3275  7340              CLA CLL CMA             /LOAD COMMAND
3137    3276  3153              DCA     REG1
3138    3277  1141              TAD     M128            /SETUP FOR 1 PASS
3139    3300  3156              DCA     TCNTR1
3140    3301  4444              ENMAN1                  /COUNTER FOR 128 WORDS
3141    3302  3163    T74R1,    DCA     GDREG2          /ENTER MAINTENANCE MODE
3142    3303  1136    T74R1A,   TAD     M12             /SETUP COMPARE REGISTER
3143    3304  3157              DCA     TCNTR2
3144    3305  7300    T74R2,    CLA CLL                 /12 BIT WORD COUNTER
3145    3306  1077              TAD     K0100
3146    3307  4455              LDMAN                   /ENABLE SHIFT
3147    3310  2157              ISZ     TCNTR2          /LOAD MAINTENANCE
3148    3311  5307              JMP     .-2
3149    3312  4456              RDBUF
3150    3313  4440              ACCMP1                  /READ LOWER BUFFER
3151    3314  7610              SKP CLA                 /CHECK RESULTS
3152    3315  5340              JMP     T74E            /DATA O.K.
3153    3316  2156              ISZ     TCNTR1          /ERROR
3154    3317  5302              JMP     T74R1           /COUNT 128 WORDS
3155    3320  1141              TAD     M128            /MORE TO GO
3156    3321  3156              DCA     TCNTR1
3157    3322  1136    T74R3,    TAD     M12             /SETUP COUNTER
3158    3323  3157              DCA     TCNTR2
3159    3324  7326              CLA CLL CML RTL         /SETUP BIT COUNTER
3160    3325  1077              TAD     K0100
3161    3326  4455              LDMAN                   /ENABLE SHIFT
3162    3327  2157              ISZ     TCNTR2          /LOAD MAINTENANCE
3163    3330  5326              JMP     .-2             /COUNT BITS
3164    3331  4456              RDBUF                   /MORE TO GO
3165    3332  4440              ACCMP1                  /READ LOWER BUFFER
3166    3333  7610              SKP CLA                 /CHECK RESULTS
3167    3334  5340              JMP     T74E            /DATA O.K.
3168    3335  2156              ISZ     TCNTR1          /ERROR
3169    3336  5322              JMP     T74R3           /UPDATE COUNTER
3170    3337  4435              NERROR                  /TEST 128 TIMES
3171    3340  4436    T74E,     ERROR                   /TO NEXT TEST
3172    3341  3271              TST74                   /ERROR, 128 WORD
3173    3342  4405              4405                    /SCOPE LOOP POINTER
3174                            /                       /TEXT POINTER
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
```



```
3183    3401  3153              DCA     REG1            /SET FOR 1 PASS PER TEST
3184    3402  7301              CLA CLL IAC
3185    3403  4453              CLRALL                  /DCLR "CLR ALL"
3186    3404  1143              TAD     M255
3187    3405  3156              DCA     TCNTR1          /ONE LESS THAN "LAST WORD"
3188    3406  1136              TAD     M12
3189    3407  3157              DCA     TCNTR2          /FINAL WORD
3190    3410  4444              ENMAN1                  /ENTER MAINTENANCE MODE
3191    3411  1136    T75R,     TAD     M12
3192    3412  3160              DCA     TCNTR3          /"12 BIT" WORD COUNTER
3193    3413  1077              TAD     K0100
3194    3414  4455              LDMAN                   /LOAD MAINTENANCE
3195    3415  2160              ISZ     TCNTR3
3196    3416  5214              JMP     .-2             /COUNT 12 BIT WORDS
3197    3417  4456              RDBUF                   /PREVENT "DRL"
3198    3420  4447              DSKSKP                  /SHOULD NOT SKIP HERE
3199    3421  7610              SKP CLA                 /O.K.
3200    3422  5234              JMP     T75E            /ERROR, DSKP
3201    3423  2156              ISZ     TCNTR1
3202    3424  5211              JMP     T75R            /COUNT 255 WORDS
3203    3425  1077              TAD     K0100
3204    3426  4455              LDMAN                   /LOAD MAINTENANCE
3205    3427  2157              ISZ     TCNTR2
3206    3430  5226              JMP     .-2             /DO ONE MORE WORD
3207    3431  4447              DSKSKP                  /DSKP "SKIP"
3208    3432  7610              SKP CLA                 /ERROR, DSKP DID NOT SKIP
3209    3433  4435              NERROR                  /O.K. 4096 LOOPS
3210    3434  4436    T75E,     ERROR           /ERROR, DSKP
3211    3435  3400              TST75                   /SCOPE LOOP POINTER
3212    3436  0006              0006                    /TEXT POINTER
3213                            /
3214                            /VERFIFY THAT TRANSFER DONE CAUSES "INT. RQ."
3215                            /
3216    3437  7340    TST76,    CLA CLL CMA
3217    3440  3153              DCA     REG1            /SETUP FOR 1 PASS PER TEST
3218    3441  7301              CLA CLL IAC
3219    3442  4453              CLRALL                  /DCLR "CLR ALL"
3220    3443  1143              TAD     M255
3221    3444  3156              DCA     TCNTR1          /ONE LESS THAN "LAST WORD"
3222    3445  1136              TAD     M12
3223    3446  3157              DCA     TCNTR2          /FINAL WORD
3224    3447  1102              TAD     K0400           /ENABLE INT. BIT
3225    3450  4450              LDCMD                   /LOAD COMMAND REGISTER
3226    3451  4444              ENMAN1                  /ENTER MAINTENANCE MODE
3227    3452  1136    T76R,     TAD     M12
3228    3453  3160              DCA     TCNTR3          /"12 BIT" WORD COUNTER
3229    3454  1077              TAD     K0100           /ENABLE SHIFT SILO
3230    3455  4455              LDMAN                   /LOAD MAINTENANCE
3231    3456  2160              ISZ     TCNTR3
3232    3457  5255              JMP     .-2             /COUNT "12 BIT" WORDS
3233    3460  4456              RDBUF                   /PREVENT "DRL"
3234    3461  4437              IONWAT                  /WAIT FOR INT.
3235    3462  7610              SKP CLA                 /O.K. NO INT.
3236    3463  5275              JMP     T76E            /ERROR, INT. OCCURED
3237    3464  2156              ISZ     TCNTR1
```

```
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
```



```
3293  3536  1120          TAD     K2525
3294  3537  1120          TAD     K2525                   /TAKE DATA WORD
3295  3540  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3296  3541  1163          TAD     GDREG2
3297  3542  3000          DCA     0                       /STORE OUTBOUND DATA
3298  3543  1175          TAD     HOMEMA                  /GET CURRENT FIELD BITS
3299  3544  1126          TAD     K5000                    /GET "WRITE ENABLE BIT"
3300  3545  4450          LDCMD                           /LOAD COMMAND REGISTER
3301  3546  1154          TAD     REG2
3302  3547  4451          LDCUR                   /SET CURRENT ADDRESS TO 7777
3303  3550  4451          LDCUR                           /LOAD CURRENT ADDRESS TO 0
3304  3551  1076          TAD     K0040                   /DATA BREAK ENABLE BIT
3305  3552  4455          LDMAN                           /LOAD AND GO
3306  3553  4456          RDBUF                           /READ DATA BUFFER
3307  3554  4440          ACCMP1                  /CHECK RESULTS
3308  3555  4435          NERROR                          /O.K. 4096 LOOPS
3309  3556  4436    T78E, ERROR                           /ERROR, DATA BREAK
3310  3557  3530          TST78                           /SCOPE LOOP POINTER
3311  3560  4263          4263                            /TEXT POINTER
3312                      /
3313                      /VERIFY THAT "DATA BREAK" WORK FROM LOCATION 7777
3314                      /OF CURRENT FIELD, DO A WRITE AND                USE DATA PATTERN
3315                      /0000 AND 7777.
3316                      /
3317  3561  7301    TST79, CLA CLL IAC
3318  3562  4453          CLRALL                          /DCLR "CLR ALL"
3319  3563  4444          ENMAN1                  /ENTER MAINTENANCE MODE
3320  3564  1153          TAD     REG1
3321  3565  7110          CLL RAR
3322  3566  7630          SZL CLA
3323  3567  7340          CLA CLL CMA                     /MAKE DATA WORD
3324  3570  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3325  3571  1163          TAD     GDREG2
3326  3572  3532          DCA I   K7777                   /STORE OUTBOUND DATA
3327  3573  1153          TAD     REG1
3328  3574  4451          LDCUR                   /SET CURRENT ADDRESS
3329  3575  7340          CLA CLL CMA
3330  3576  4451          LDCUR                           /LOAD  CURRENT ADDRESS TO 7777
3331  3577  1175          TAD     HOMEMA                  /CURRENT FIELD BITS
3332  3600  1106          TAD     K4000                   /WRITE ENABLE
3333  3601  4450          LDCMD                           /LOAD COMMAND REGISTER
3334  3602  1076          TAD     K0040                   /BREAK ENABLE BIT
3335  3603  4455          LDMAN                           /LOAD AND GO
3336  3604  4456          RDBUF                           /READ DATA BUFFER
3337  3605  4440          ACCMP1                  /CHECK RESULTS
3338  3606  4435          NERROR                          /O.K. 4096 LOOPS
3339  3607  4436    T79E, ERROR                           /ERROR, DATA BREAK
3340  3610  3561          TST79                           /SCOPE LOOP POINTER
3341  3611  4263          4263                            /TEXT POINTER
3342
3343                      /
3344                      /VERIFY "DATA BREAK" FROM LOCATION 7777 OF
3345                      /CURRENT FIELD, DO A "WRITE" AND USE DATA
3346                      /PATTERN 2525 AND 5252.
3347                      /
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3348  3612  7301  TST80,  CLA CLL IAC
3349  3613  4453          CLRALL                          /DCLR "CLR ALL"
3350  3614  4444          ENMAN1                  /ENTER MAINTENANCE MODE
3351  3615  1153          TAD     REG1
3352  3616  7110          CLL RAR
3353  3617  7630          SZL CLA
3354  3620  1120          TAD     K2525
3355  3621  1120          TAD     K2525                   /MAKE DATA WORD
3356  3622  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3357  3623  1163          TAD     GDREG2
3358  3624  3532          DCA I   K7777            /STORE OUTBOUND DATA
3359  3625  1175          TAD     HOMEMA                  /CURRENT FIELD BITS
3360  3626  1126          TAD     K5000                   /FUNCTION "WRITE"
3361  3627  4450          LDCMD                           /LOAD COMMAND
3362  3630  1154          TAD     REG2
3363  3631  4451          LDCUR                   /SET CURRENT ADDRESS
3364  3632  7340          CLA CLL CMA
3365  3633  4451          LDCUR                           /LOAD CURRENT ADDRESS TO 7777
3366  3634  1076          TAD     K0040                   /BREAK ENABLE BIT
3367  3635  4455          LDMAN                           /LOAD MAINTENANCE AND GO
3368  3636  4456          RDBUF                           /READ BUFFER
3369  3637  4440          ACCMP1                  /CHECK RESULTS
3370  3640  4435          NERROR                          /O.K, 4096 LOOPS
3371  3641  4436  T80E,   ERROR                           /ERROR, DATA BREAK
3372  3642  3612          TST80                           /SCOPE LOOP POINTER
3373  3643  4263          4263                            /TEXT POINTER
3374                /
3375                /VERIFY THAT "DATA BREAK" WORKS FROM CURRENT FIELD
3376                /LOCATION 0, DO A "WRITE" AND USE ALL COMBINATION PATTERN
3377                /ALSO VERIFY THAT DATA IN LOCATION 0 DOESN'T CHANGE
3378                /ON A WRITE BREAK, (NOTE: DATA FROM LOCATION 0 PUT
3379                /IN INDICATOR "DT:")
3380                /
3381  3644  7301  TST81,  CLA CLL IAC
3382  3645  4453          CLRALL                          /DCLR "CLR ALL"
3383  3646  4444          ENMAN1                  /ENTER MAINTENANCE MODE
3384  3647  1154          TAD     REG2
3385  3650  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3386  3651  1163          TAD     GDREG2
3387  3652  3000          DCA     0                       /STORE OUTBOUND DATA
3388  3653  4451          LDCUR                           /SET CURRENT ADDRESS TO 0
3389  3654  1175          TAD     HOMEMA                  /CURRENT FIELD BITS
3390  3655  1106          TAD     K4000                   /WRITE FUNCTION
3391  3656  4450          LDCMD                           /LOAD COMMAND
3392  3657  1076          TAD     K0040                   /DATA BREAK ENABLE BIT
3393  3660  4455          LDMAN                           /LOAD AND GO
3394  3661  4456          RDBUF                           /READ BUFFER
3395  3662  4440          ACCMP1                          /CHECK RESULTS
3396  3663  7610          SKP CLA
3397  3664  5272          JMP     T81E            /ERROR
3398  3665  1000          TAD     0
3399  3666  3173          DCA     DTREG           /SAVE IN CASE OF ERROR
3400  3667  1173          TAD     DTREG
3401  3670  4440          ACCMP1                  /CHECK RESULTS
3402  3671  4435          NERROR                          /O.K, 4096 LOOPS
```



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3403  3672  4436  T81E,   ERROR                           /ERROR, DATA BREAK
3404  3673  3644          TST81                           /SCOPE LOOP POINTER
3405  3674  4263          4263                            /TEXT POINTER
3406
3407                /
3408                /VERIFY "DATA BREAK" FROM LOCATION 7777 OF
3409                /CURRENT FIELD, DO A "WRITE" AND USE ALL COMBINATIONS,
3410                /ALSO VERIFY THAT OUTBOUND DATA IN LOCATION 7777
3411                /DOESN'T CHANGE WHEN DOING A WRITE BREAK, (NOTE: DATA FROM
3412                /LOCATION 7777 PUT IN INDICATOR "DT:")
3413                /
3414  3675  7301  TST82,  CLA CLL IAC
3415  3676  4453          CLRALL                          /DCLR "CLR ALL"
3416  3677  4444          ENMAN1                  /ENTER MAINTENANCE MODE
3417
3418  3700  1153          TAD     REG1
3419  3701  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3420  3702  1163          TAD     GDREG2
3421  3703  3532          DCA I   K7777                   /STORE OUTBOUND DATA
3422  3704  7340          CLA CLL CMA
3423  3705  4451          LDCUR                           /SET CURRENT ADDRESS TO         7777
3424  3706  1175          TAD     HOMEMA                  /CURRENT FIELD BITS
3425  3707  1126          TAD     K5000                   /WRITE FUNCTION
3426  3710  4450          LDCMD                           /LOAD COMMAND
3427  3711  1076          TAD     K0040                   /BREAK ENABLE BIT
3428  3712  4455          LDMAN                           /LOAD AND GO
3429  3713  4456          RDBUF                           /READ BUFFER
3430  3714  4440          ACCMP1                          /CHECK RESULTS
3431  3715  7610          SKP CLA
3432  3716  5324          JMP     T82E            /ERROR
3433  3717  1532          TAD I   K7777
3434  3720  3173          DCA     DTREG           /SAVE INCASE OF ERROR
3435  3721  1173          TAD     DTREG
3436  3722  4440          ACCMP1                  /CHECK RESULTS
3437  3723  4435          NERROR                          /O.K, 4096 LOOPS
3438  3724  4436  T82E,   ERROR                           /ERROR, DATA BREAK
3439  3725  3675          TST82                           /SCOPE LOOP POINTER
3440  3726  4263          4263                            /TEXT POINTER
3441                /
3442                /VERIFY THAT "DCLR" CLEARS CURRENT ADDRESS
3443                /FIRST DO A DATA BREAK FROM LOCATION 7776
3444                /THEN "DCLR" FROM LOCATION 0000, DO     "A WRITE"
3445                /AND USE DATA PATTERN ALL COMBINATIONS,
3446                /
3447  3727  7301  TST83,  CLA CLL IAC
3448  3730  4453          CLRALL                          /DCLR "CLR ALL"
3449  3731  4444          ENMAN1                  /ENTER MAINTENANCE MODE
3450  3732  1153          TAD     REG1
3451  3733  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3452  3734  1163          TAD     GDREG2
3453  3735  3510          DCA I   K7776                   /STORE OUTBOUND DATA BREAK 1
3454  3736  1154          TAD     REG2
3455  3737  3000          DCA     0                       /STORE OUTBOUND DATA BREAK 2
3456  3740  1175          TAD     HOMEMA                  /CURRENT                FIELD BITS
3457  3741  1106          TAD     K4000                   /WRITE FUNCTION
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3458  3742  4450          LDCMD                           /LOAD COMMAND
3459  3743  7344          CLA CLL CMA RAL
3460  3744  4451          LDCUR                           /LOAD CURRENT ADDRESS TO 7776
3461  3745  1076          TAD     K0040                   /BREAK ENABLE BIT
3462  3746  4455          LDMAN                           /LOAD AND GO
3463  3747  4456          RDBUF                           /READ BUFFER
3464  3750  4440          ACCMP1                          /CHECK RESULTS
3465  3751  7610          SKP CLA                         /O.K, TRY LOCATION 0
3466  3752  5371          JMP     T83E                    /ERROR, DATA BREAK
3467  3753  7301          CLA CLL IAC
3468  3754  4453          CLRALL                          /DCLR "CLEAR CURRENT ADDRESS"
3469  3755  4444          ENMAN1                  /ENTER MAINTENANCE MODE
3470  3756  3172          DCA     ADREG                   /SETUP FOR ERROR PRINTER
3471  3757  1175          TAD     HOMEMA                  /CURRENT FIELD BITS
3472  3760  1126          TAD     K5000                   /FUNCTION WRITE
3473  3761  4450          LDCMD                           /LOAD COMMAND
3474  3762  1154          TAD     REG2
3475  3763  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3476  3764  1076          TAD     K0040                   /BREAK ENABLE BIT
3477  3765  4455          LDMAN                           /LOAD AND GO
3478  3766  4456          RDBUF                           /READ BUFFER
3479
3480  3767  4440          ACCMP1                          /CHECK RESULTS
3481  3770  4435          NERROR                          /ALL WORKED 4096 LOOPS
3482  3771  4436  T83E,   ERROR                           /ERROR, DATA BREAK
3483  3772  3727          TST83                           /SCOPE LOOP POINTER
3484  3773  4263          4263                            /TEXT POINTER
3485                /
3486                /VERIFY THAT CURRENT ADDRESS DOES INCREMENT FROM 7777
3487                /TO 0000, DO A WRITE DATA BREAK AND USE DATA PATTERN
3488                /ALL COMBINATION.
3489                /
3490  3774  7301  TST84,  CLA CLL IAC
3491  3775  4453          CLRALL                  /CLEAR CONTROL
3492  3776  1153          TAD     REG1
3493  3777  3000          DCA     0               /STORE OUTBOUND DATA
3494  4000  1154          TAD     REG2
3495  4001  3532          DCA I   K7777           /STORE OUTBOUND DATA
3496  4002  7340          CLA CLL CMA
3497  4003  4451          LDCUR                   /LOAD CURRENT ADDRESS
3498  4004  4444          ENMAN1                  /ENTER MAINTENANCE MODE
3499  4005  1126          TAD     K5000           /WRITE FUNCTION
3500  4006  1175          TAD     HOMEMA          /CURRENT FIELD
3501  4007  4450          LDCMD                   /LOAD COMMAND
3502  4010  7344          CLA CLL CMA RAL
3503  4011  3156          DCA     TCNTR1          /2 BREAK COUNTER
3504  4012  1076          TAD     K0040           /ENABLE BREAK BIT
3505  4013  4455          LDMAN                   /LOAD MAINTENANCE
3506  4014  2156          ISZ     TCNTR1          /COUNT BREAKS
3507  4015  5213          JMP     .-2             /DO 2
3508  4016  7300          CLA CLL
3509  4017  1154          TAD     REG2
3510  4020  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
3511  4021  4456          RDBUF                   /GET FIRST WORD
3512  4022  4440          ACCMP1                  /CHECK IT
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3513  4023  7610          SKP CLA                 /FIRST O.K.
3514  4024  5233          JMP     T84E            /ERROR, FIRST WORD
3515  4025  3172          DCA     ADREG           /SETUP ERROR PRINTER
3516  4026  1153          TAD     REG1
3517  4027  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
3518  4030  4456          RDBUF                   /GET SECOND WORD
3519  4031  4440          ACCMP1                  /CHECK IT
3520  4032  4435          NERROR                  /O.K. 4096 LOOPS
3521  4033  4436  T84E,   ERROR                   /DATA BREAK
3522  4034  3774          TST84                   /SCOPE LOOP POINTER
3523  4035  4263          4263                    /TEXT POINTER
3524                /
3525                /
3526                /VERIFY THAT CURRENT ADDRESS DOES INCREMENT
3527                /ADDRESS TEST FROM 0200 TO TST85 OF CURRENT
3528                /FIELD, DO A WRITE DATA BREAK.
3529                /
3530  4036  7301  TST85,  CLA CLL IAC
3531  4037  4453          CLRALL                          /DCLR "CLR ALL"
3532  4040  7340          CLA CLL CMA
3533  4041  3153          DCA     REG1            /SETUP FOR 1 PASS PER TEST
3534  4042  1100          TAD     K0200
3535  4043  3157          DCA     TCNTR2          /START AT ADDRESS 0200
3536  4044  1100          TAD     K0200
3537  4045  4451          LDCUR                   /LOAD CURRENT ADDRESS
3538  4046  4444  TR5R1,  ENMAN1                  /ENTER MAINTENANCE MODE
3539  4047  4452          LDADD                   /KEEP WRITE INHIBIT CLEAR
3540  4050  1557          TAD I   TCNTR2          /GET INSTRUCTION
3541  4051  3156          DCA     TCNTR1                  /SAVE INSTRUCTION
3542  4052  1157          TAD     TCNTR2
3543  4053  7110          CLL RAR
3544  4054  7630          SZL CLA
3545  4055  7240          CLA CMA                 /USE DATA 7777
3546  4056  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3547  4057  1163          TAD     GDREG2
3548  4060  3557          DCA I   TCNTR2                    /STORE OUTBOUND DATA
3549  4061  1175          TAD     HOMEMA                  /CURRENT FIELD BITS
3550  4062  1106          TAD     K4000                   /WRITE FUNCTION
3551  4063  4450          LDCMD                           /LOAD COMMAND REGISTER
3552  4064  1076          TAD     K0040                   /BREAK ENABLE BIT
3553  4065  4455          LDMAN                           /LOAD AND GO
3554  4066  7300          CLA CLL
3555  4067  1156          TAD     TCNTR1                  /GET INSTRUCTION
3556  4070  3557          DCA I   TCNTR2                    /REPLACE INSTRUCTION
3557  4071  1157          TAD     TCNTR2
3558  4072  3172          DCA     ADREG                   /ADDRESS OF BREAK
3559  4073  4456          RDBUF                           /GET DATA
3560  4074  4440          ACCMP1                          /CHECK RESULTS
3561  4075  7610          SKP CLA
3562  4076  5306          JMP     T85E                    /ERROR, DATA BREAK
3563  4077  1157          TAD     TCNTR2
3564  4100  1152          TAD     MTS85                   /SPECIAL POINTER FOR START OF
3565  4101  7650          SNA CLA                         /THIS TEST.
3566  4102  5305          JMP     T850K           /TEST O.K.
3567  4103  2157          ISZ     TCNTR2
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3568  4104  5246          JMP     T85R1           /LOOP DO 0200 TO TST60
3569  4105  4435  T85OK,  NERROR                  /THIS ADDRESS WORKED TRY NEXT
3570  4106  4436  T85E,   ERROR                   /ERROR, DATA BREAK
3571  4107  4036          TST85                   /SCOPE LOOP POINTER
3572  4110  4263          4263                    /TEXT POINTER
3573                /
3574  4111  5712          JMP I   .+1             /TO NEXT TEST
3575  4112  4200          TST86
3576                /
3577                /VERIFY THAT B LAST BREAK SETS AFTER 256 WRITE DATA BREAKS
3578                /AND VERIFY THAT DCLR CLEARS WRITE INHIBIT COUNTER.
3579                /
3580        4200    PAGE
3581  4200  7340  T86,    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 ERROR
3604  4227  2157          ISZ     TCNTR2
3605  4230  5214          JMP     T86R2           /DO 0-255 BREAKS
3606  4231  7301          CLA CLL IAC
3607  4232  4453          CLRALL                  /CLEAR CONTROL AND COUNTER
3608  4233  7340          CLA CLL CMA
3609  4234  1143          TAD     M255
3610  4235  3157          DCA     TCNTR2          /256 BREAK COUNTER
3611  4236  7300  T86R3,  CLA CLL
3612                                              /MAKE DATA PATTERN
3613  4237  3000          DCA     0               /STORE OUTBOUND DATA
3614  4240  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
3615  4241  4444          ENMAN1                  /ENTER MAINTENANCE MODE
3616  4242  4451          LDCUR                   /LOAD CURRENT ADDRESS
3617  4243  1126          TAD     K5000           /WRITE FUNCTION
3618  4244  1175          TAD     HOMEMA          /CURRENT FIELD
3619  4245  4450          LDCMD                   /LOAD COMMAND
3620  4246  1076          TAD     K0040           /ENABLE BREAK BIT
3621  4247  4455          LDMAN                   /LOAD MAINTENANCE
3622  4250  4456          RDBUF                   /GET WORD
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3623  4251  4440          ACCMP1                  /CHECK RESULTS
3624  4252  7610          SKP CLA                 /WORD O.K.
3625  4253  5276          JMP     T86E            /DATA ERROR
3626  4254  2157          ISZ     TCNTR2
3627  4255  5236          JMP     T86R3           /DO 256 WRITE BREAKS
3628  4256  1107          TAD     K7000
3629  4257  3160          DCA     TCNTR3          /CLEAR COUNTER
3630  4260  7340  T86R4,  CLA CLL CMA
3631  4261  3000          DCA     0               /STORE NOT OUTBOUND DATA
3632  4262  4451          LDCUR                   /LOAD CURRENT ADDRESS
3633  4263  1076          TAD     K0040           /ENABLE BREAK BIT
3634  4264  4455          LDMAN                   /LOAD "SHOULD NOT BREAK"
3635  4265  4456          RDBUF                           /GET DATA
3636  4266  4440          ACCMP1                  /CHECK IT
3637  4267  7610          SKP CLA                 /DATA O.K.
3638  4270  5276          JMP     T86E            /ERROR, DATA BREAK INHIBIT
3639  4271  2160          ISZ     TCNTR3
3640  4272  5260          JMP     T86R4                   /DO "1000 FAKE" BREAKS
3641  4273  2156          ISZ     TCNTR1
3642  4274  5204          JMP     T86R1           /START ALL OVER WITH ONE LESS
3643  4275  4435          NERROR                          /TO NEXT TEST
3644  4276  4436  T86E,   ERROR                           /ERROR, DATA BREAK
3645  4277  4200          TST86                           /SCOPE LOOP POINTER
3646  4300  4263          4263                            /TEXT POINTER
3647                /
3648  4301  5702          JMP I   .+1             /TO NEXT TEST
3649  4302  4303          TST87
3650                /
3651                /
3652                /VERIFY THAT B LAST BREAK SETS AFTER 128 BREAKS IF
3653                /HALF BIT IS SET, ALSO MAKE SURE LOAD DISK ADDRESS LOADS
3654                /THE INHIBIT COUNTER CORRECTLY.
3655                /
3656  4303  7340  TST87,  CLA CLL CMA
3657  4304  3153          DCA     REG1            /SETUP FOR 1 PASS PER TEST
3658  4305  1143          TAD     M255
3659  4306  3156          DCA     TCNTR1          /SPECIAL COUNTER
3660  4307  7301  T87R1,  CLA CLL IAC
3661  4310  4453          CLRALL                  /CLEAR CONTROL
3662  4311  1156          TAD     TCNTR1
3663  4312  3157          DCA     TCNTR2          /AMOUNT OF BREAKS TO DO
3664  4313  4444          ENMAN1                  /ENTER MAINTENANCE MODE
3665  4314  1077          TAD     K0100           /HALF BIT
3666  4315  1175          TAD     HOMEMA                  /CURRENT FIELD BITS
3667  4316  1106          TAD     K4000                   /WRITE FUNCTION
3668  4317  4450          LDCMD                           /LOAD COMMAND
3669  4320  4451  T87R2,  LDCUR                   /LOAD CURRENT ADDRESS
3670  4321  7340          CLA CLL CMA
3671  4322  3000          DCA     0               /STORE OUTBOUND DATA
3672  4323  7340          CLA CLL CMA
3673  4324  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
3674  4325  1076          TAD     K0040                   /BREAK ENABLE BIT
3675  4326  4455          LDMAN                           /LOAD AND GO
3676  4327  4456          RDBUF                   /GET WORD
3677  4330  4440          ACCMP1                  /CHECK RESULTS
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3678  4331  7610          SKP CLA
3679  4332  5374          JMP     T87E                    /DATA ERROR
3680  4333  2157          ISZ     TCNTR2
3681  4334  5320          JMP     T87R2           /DO SO MANY BREAKS
3682  4335  4452          LDADD                   /LOAD ADDRESS AND INHIBIT COUNT
3683  4336  1141          TAD     M128
3684  4337  3157          DCA     TCNTR2          /128 BREAK COUNTER
3685  4340  7300    T87R3, CLA CLL
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, EPROR                           /ERROR, DATA BREAK
3715  4375  4303          TST87                           /SCOPE LOOP POINTER
3716  4376  4263          4263                            /TEXT POINTER
3717                /
3718                /VERIFY THAT "DATA BREAK" WORKS WITH A "READ"
3719                /TO LOCATION 0 OF CURRENT FIELD, USE DATA
3720                /PATTERN 0000 AND 7777.
3721                /
3722  4377  7301    TST88,  CLA CLL IAC
3723  4400  4453          CLRALL                          /DCLR "CLR ALL"
3724  4401  1175          TAD     HOMEMA          /CURRENT FIELD
3725  4402  4450          LDCMD                   /LOAD COMMAND TO 0
3726  4403  1153          TAD     REG1
3727  4404  7110          CLL RAR
3728  4405  7630          SZL CLA
3729  4406  7240          CLA CMA
3730  4407  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3731  4410  1163          TAD     GDREG2          /GET VALUE TO LOAD
3732  4411  4427          LDBUF                   /LOAD UPPER BUFFER
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3733  4412  1076          TAD     K0040
3734  4413  4455          LDMAN                           /LOAD AND GO
3735  4414  7300          CLA CLL
3736  4415  3172          DCA     ADREG                   /ADDRESS FOR PRINTER
3737  4416  1000          TAD     0                       /GET INBOUND WORD
3738  4417  3173          DCA     DTREG                   /SAVE IT
3739  4420  1173          TAD     DTREG
3740  4421  4440          ACCMP1                          /CHECK
3741  4422  4435          NERROR                          /O.K, 4096 LOOPS
3742  4423  4436          ERROR                           /ERROR, DATA BREAK
3743  4424  4377          TST88                           /SCOPE LOOP POINTER
3744  4425  4263          4263                            /TEXT POINTER
3745
3746
3747                /
3748                /VERIFY WITH A "READ" THAT "DATA BREAK" WORKS
3749                /FROM LOCATION "7777" OF CURRENT FIELD USE
3750                /DATA PATTERN 0000 AND 7777.
3751                /
3752  4426  7301    TST89,  CLA CLL IAC
3753  4427  4453          CLRALL
3754  4430  1103          TAD     K1000
3755  4431  1175          TAD     HOMEMA          /CURRENT FIELD
3756  4432  4450          LDCMD                   /LOAD COMMAND FOR READ
3757  4433  1153          TAD     REG1
3758  4434  7110          CLL RAR
3759  4435  7630          SZL CLA
3760  4436  7240          CLA CMA
3761  4437  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3762  4440  7240          CLA CMA
3763  4441  4451          LDCUR                           /LOAD CURRENT ADDRESS
3764  4442  1163          TAD     GDREG2          /GET VALUE TO LOAD
3765  4443  4427          LDBUF                   /LOAD UPPER BUFFER
3766  4444  1076          TAD     K0040                   /ENABLE BREAK BIT
3767  4445  4455          LDMAN                           /LOAD AND GO
3768  4446  7300          CLA CLL
3769  4447  1532          TAD I   K7777                   /GET "WORD"
3770  4450  3173          DCA     DTREG                   /SAVE INBOUND WORD
3771  4451  1173          TAD     DTREG
3772  4452  4440          ACCMP1                          /CHECK IT
3773  4453  4435          NERROR                          /O.K, 4096 LOOPS
3774  4454  4436          EPROR                           /ERROR, DATA BREAK
3775  4455  4426          TST89                           /SCOPE LOOP POINTER
3776  4456  4263          4263                            /TEXT POINTER
3777                /
3778                /VERIFY THAT "DATA BREAK" WITH A "READ" TO
3779                /CURRENT FIELD LOCATION 0 USE DATA PATTERN
3780                /5252 + 2525
3781                /
3782  4457  7301    TST90,  CLA CLL IAC
3783  4460  4453          CLRALL                          /DCLR
3784  4461  1175          TAD     HOMEMA          /CURRENT FIELD
3785  4462  4450          LDCMD                   /LOAD COMMAND TO READ
3786  4463  1153          TAD     REG1
3787  4464  7110          CLL RAR
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3788  4465  7630          SZL CLA                 /WHAT DDATA
3789  4466  1120          TAD     K2525           /DATA 5252
3790  4467  1120          TAD     K2525
3791  4470  3163          DCA     GDREG2                  /SETUP COMPARE REGISTER
3792  4471  1163          TAD     GDREG2          /GET VALUE TO LOAD
3793  4472  4427          LDBUF                   /LOAD UPPER BUFFER
3794  4473  4451          LDCUR                   /LOAD CURRENT ADDRESS TO 0
3795  4474  1076          TAD     K0040                   /ENABLE BREAK
3796  4475  4455          LDMAN                   /LOAD AND GO
3797  4476  7300          CLA CLL
3798  4477  1000          TAD     0
3799  4500  3173          DCA     DTREG                   /SAVE DATA
3800  4501  1000          TAD     0
3801  4502  4440          ACCMP1                  /CHECK
3802  4503  4435          NERROR                  /O.K, 4096 LOOPS
3803  4504  4436          ERROR                   /ERROR, DATA BREAK
3804  4505  4457          TST90                   /SCOPE LOOP POINTER
3805  4506  4263          4263                    /TEXT POINTER
3806                /
3807                /VERIFY THAT "DATA BREAK" WORD WITH      A "READ"
3808                /TO CURRENT FIELD LOCATION LOCATION 7777.
3809                /USE DATA PATTERN 5252 + 2525
3810                /
3811  4507  7301    TST91,  CLA CLL IAC
3812  4510  4453            CLRALL
3813  4511  1175            TAD     HOMEMA          /CURRENT FIELD
3814  4512  4450            LDCMD                   /LOAD COMMAND
3815  4513  7240            CLA CMA
3816  4514  4451            LDCUR                   /LOAD CURRENT ADDRESS
3817  4515  1153            TAD     REG1
3818  4516  7110            CLL RAR
3819  4517  7630            SZL CLA                 /WHAT DATA TO USE
3820  4520  1120            TAD     K2525           /DATA 5252
3821  4521  1120            TAD     K2525
3822  4522  3163            DCA     GDREG2                  /SETUP COMPARE REGISTER
3823  4523  1163            TAD     GDREG2          /GET VALUE TO LOAD
3824  4524  4427            LDBUF                   /LOAD UPPER BUFFER
3825  4525  1076            TAD     K0040           /ENABLE BREAK BIT
3826  4526  4455            LDMAN                   /LOAD MAINTENANCE
3827  4527  7300            CLA CLL
3828  4530  1532            TAD I   K7777                   /GET BREAK WORD
3829  4531  3173            DCA     DTREG           /SAVE FOR ERROR PRINTER
3830  4532  1173            TAD     DTREG
3831  4533  4440            ACCMP1                  /CHECK
3832  4534  4435            NERROR                  /O.K, 4096 LOOPS
3833  4535  4436            ERROR                   /ERROR, DATA BREAK
3834  4536  4507            TST91                   /SCOPE LOOP POINTER
3835  4537  4263            4263                    /TEXT POINTER
3836                /
3837  4540  5741            JMP I   .+1             /TO NEXT TEST
3838  4541  4600            TST92
3839                /
3840                /
3841                /VERIFY THAT "DATA BUFFERS" CAN BE FILLED
3842                /ON A WRITE DATA BREAK FROM LOCATION
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3843                /0 OF CURRENT FIELD, USE ALL COMBINATIONS.
3844                /
3845        4600    PAGE
3846  4600  7301    TST92,  CLA CLL IAC
3847  4601  4453            CLRALL                  /DCLR "CLR ALL"
3848  4602  4444            ENMAN1                  /ENTER MAINTENANCE MODE
3849  4603  1133            TAD     M4
3850  4604  3156            DCA     TCNTR1                  /FOR FOUR WORDS
3851  4605  1153            TAD     REG1
3852  4606  3157            DCA     TCNTR2                  /DATA START
3853  4607  1175            TAD     HOMEMA                  /CURRENT FIELD
3854  4610  1106            TAD     K4000                   /WRITE FUNCTION
3855  4611  4450            LDCMD                   /LOAD COMMAND
3856  4612  4451    T92R1,  LDCUR                   /LOAD CURRENT ADDRESS TO 0
3857  4613  1157            TAD     TCNTR2
3858  4614  3000            DCA     0               /STORE OUT BOUND DATA
3859  4615  1076            TAD     K0040           /ENABLE BREAK BIT
3860  4616  4455            LDMAN                   /LOAD AND GO
3861  4617  7300            CLA CLL
3862  4620  2157            ISZ     TCNTR2          /UPDATE DATA WORD
3863  4621  7000            NOP
3864  4622  2156            ISZ     TCNTR1
3865  4623  5212            JMP     T92R1           /FILL BUFFER
3866  4624  1133            TAD     M4
3867  4625  3156            DCA     TCNTR1
3868  4626  1153            TAD     REG1
3869  4627  3163            DCA     GDREG2
3870  4630  4456    T92R2,  RDBUF
3871  4631  4440            ACCMP1
3872  4632  7610            SKP     CLA
3873  4633  5241            JMP     T92E
3874  4634  2163            ISZ     GDREG2
3875  4635  7000            NOP
3876  4636  2156            ISZ     TCNTR1
3877  4637  5230            JMP     T92R2
3878  4640  4435            NERROR                  /O.K, 4096 LOOPS
3879  4641  4436    T92E,   ERROR                   /ERROR, DATA BREAK
3880  4642  4600            TST92                   /SCOPE LOOP POINTER
3881  4643  4263            4263                    /TEXT POINTER
3882                /
3883  4644  5645            JMP I   .+1             /TO NEXT TEST
3884  4645  4646            TST93
3885                /
3886                /
3887                /VERIFY THAT "DATA BREAK" WORKS WITH
3888                /A "READ" TO CURRENT FIELD LOCATION 0
3889                /TRY ALL COMBINATIONS
3890                /
3891  4646  7301    TST93,  CLA CLL IAC
3892  4647  4453            CLRALL                  /DCLR "CLR ALL"
3893  4650  1175            TAD     HOMEMA          /CURRENT FIELD
3894  4651  4450            LDCMD                   /LOAD COMMAND FOR READ
3895  4652  3172            DCA     ADREG                   /SAVE ADDRESS
3896  4653  1154            TAD     REG2
3897  4654  3163            DCA     GDREG2                  /SETUP COMPARE REGISTER
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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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4008  5033  1154          TAD     REG2
4009  5034  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
4010  5035  1163          TAD     GDREG2
4011  5036  4427          LDBUF                   /LOAD UPPER BUFFER
4012  5037  1163          TAD     GDREG2
4013  5040  7040          CMA
4014  5041  3000          DCA     0
4015  5042  4451          LDCUR                   /SET CURRENT ADDRESS TO 0
4016  5043  1175          TAD     HOMEMA          /CURRENT FIELD
4017  5044  1106          TAD     K4000
4018  5045  1103          TAD     K1000
4019  5046  1104          TAD     K2000
4020  5047  4450          LDCMD                   /LOAD COMMAND REGISTER
4021  5050  1076          TAD     K0040           /ENABLE BREAK
4022  5051  4455          LDMAN                   /GO
4023  5052  7300          CLA CLL
4024  5053  1000          TAD     0
4025  5054  3173          DCA     DTREG           /SAVE FOR ERROR PRINTER
4026  5055  1173          TAD     DTREG
4027  5056  4440          ACCMP1                  /DID 0 CHANGE
4028  5057  4435          NERROR                  /ALL O.K.
4029  5060  4436  T98E,   ERROR                   /ERROR, DATA BREAK
4030  5061  5031          TST98                   /SCOPE LOOP POINTER
4031  5062  4263          4263                    /TEXT POINTER
4032                      /
4033                      /VERIFY THAT ALL DATA BUFFERS CAN BE FULL
4034                      /AT ONCE, USE A READ BREAK AND PATTERN
4035                      /ALL COMBINATIONS.
4036                      /
4037  5063  7301  TST99,  CLA CLL IAC
4038  5064  4453          CLRALL                  /DCLR "CLR ALL"
4039  5065  1154          TAD     REG2
4040  5066  3161          DCA     TCNTR4
4041  5067  1133          TAD     M4
4042  5070  3160          DCA     TCNTR3          /COUNTER FOR # OF BUFFERS
4043  5071  1161  T99R1,  TAD     TCNTR4
4044  5072  4427          LDBUF                   /LOAD UPPER BUFFER
4045  5073  7340          CLA CLL CMA
4046  5074  1161          TAD     TCNTR4
4047  5075  3161          DCA     TCNTR4
4048  5076  2160          ISZ     TCNTR3
4049  5077  5271          JMP     T99R1           /4 COUNT, SKIP WHEN BUFFERS FULL
4050  5100  1154          TAD     REG2
4051  5101  3163          DCA     GDREG2          /SETUP FOR FIRST CNMPARE
4052  5102  1133          TAD     M4
4053  5103  3160          DCA     TCNTR3
4054  5104  1175          TAD     HOMEMA          /CURRENT FIELD
4055  5105  4450          LDCMD                   /LOAD COMMAND
4056  5106  4451  T99R2,  LDCUR                   /LOAD CURRENT ADDRESS
4057  5107  1076          TAD     K0040           /GET ENABLE BREAK
4058  5110  4455          LDMAN                   /LOAD MAINTENANCE
4059  5111  7300          CLA CLL
4060  5112  1000          TAD     0               /GET DATA
4061  5113  3173          DCA     DTREG           /SAVE FOR PRINTER
4062  5114  1173          TAD     DTREG
```



```
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
```

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



```
4127  5201  1022    EXTFLD, TAD     22
4128  5202  0102          AND     K0400           /MASK CLASSIC BIT
4129  5203  7640          SZA CLA                 /ON CLASSIC SYSTEM?
4130  5204  5600          JMP I   TSTLAS          /BY-PASS EXT. TESTS.
4131                /
4132                /VERIFY THAT DATA BREAK WORKS WITH A WRITE FROM
4133                /LOCATION 0000 IN ALL EXISTING EXTENDED FIELDS.
4134                /USE DATA PATTERN 0000 + 7777.
4135                /
4136  5205  7301    TST101, CLA CLL IAC
4137
4138
4139
4140
4141
4142
4143  5206  4453          CLRALL                  /DCLR
4144  5207  4444          ENMAN1                  /ENTER MAINTENANCE MODE
4145  5210  1150          TAD     KCDF
4146  5211  3232          DCA     TOFLD2          /START FIELD 0
4147  5212  1176          TAD     FLDMAX
4148  5213  3156          DCA     TCNTR1          /FIELDS TO TEST -1
4149  5214  1433          TAD I   THSFLD
4150  5215  3234          DCA     RTFLD2          /RETURN FIELD CDF
4151  5216  1153          TAD     REG1
4152  5217  7110          CLL RAR
4153  5220  7630          SZL CLA                 /USE DATA 7777 IF LINK IS SET
4154  5221  7240          CLA CMA
4155  5222  3163          DCA     GDREG2          /SETUP COMPARE REGISTER
4156  5223  4451    T101R,  LDCUR                   /SET CURRENT ADDRESS TO 0000
4157  5224  1232          TAD     TOFLD2
4158  5225  7041          CIA
4159  5226  1234          TAD     RTFLD2
4160  5227  7650          SNA CLA                 /CURRENT FIELD
4161  5230  5247          JMP     NEXFL2          /YES, NOT THIS ONE
4162  5231  1163          TAD     GDREG2          /OUTBOUND DATA
4163  5232  7402    TOFLD2, HLT                   /MODIFIED CDF
4164  5233  3464          DCA I   K0000           /STORE DATA
4165  5234  7402    RTFLD2, HLT                   /HOME CDF
4166  5235  1232          TAD     TOFLD2
4167  5236  0114          AND     K0070
4168  5237  1106          TAD     K4000           /WRITE
4169  5240  4450          LDCMD                   /LOAD COMMAND REGISTER
4170  5241  1076          TAD     K0040           /ENABLE WRITE BREAK
4171  5242  4455          LDMAN                   /GO
4172  5243  4456          RDBUF                   /GET RESULTS
4173  5244  4440          ACCMP1                  /CHECK RESULTS
4174  5245  7610          SKP CLA                 /O.K. TRY NEXT
4175  5246  5257          JMP     T101E           /ERROR
4176  5247  2156    NEXFL2, ISZ     TCNTR1
4177  5250  7610          SKP CLA
4178  5251  5256          JMP     T101D           /DONE WITH ALL
4179  5252  1232          TAD     TOFLD2
4180  5253  1073          TAD     K0010
4181  5254  3232          DCA     TOFLD2          /SET TO NEXT FIELD
```

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4182  5255  5223            JMP     T101R           /TRY IT
4183  5256  4435  T101D,    NERROR                  /O.K 4096 LOOPS
4184  5257  4436  T101E,    ERROR                   /ERROR, DATA BREAK
4185  5260  5205            TST101                  /SCOPE LOOP POINTER
4186  5261  4263            4263                    /TEXT POINTER
4187                /
4188                /
4189                /
4190                /VERIFY THAT DATA BREAK WORKS WITH A WRITE FROM
4191                /LOCATION 0000 IN ALL EXISTING EXTENDED FIELDS,
4192                /USE DATA PATTERN 2525 + 5252.
4193                /
4194  5262  7301    TST102, CLA CLL IAC
4195  5263  4453            CLRALL                  /DCLR
4196  5264  4444            ENMAN1                  /ENTER MAINTENANCE MODE
4197  5265  1150            TAD     KCDF
4198  5266  3310            DCA     TOFLD3          /START FIELD 0
4199  5267  1176            TAD     FLDMAX
4200  5270  3156            DCA     TCNTR1          /FIELDS TO TEST -1
4201  5271  1433            TAD I   THSFLD
4202  5272  3312            DCA     RTFLD3          /RETURN FIELD CDF
4203  5273  1153            TAD     REG1
4204  5274  7110            CLL RAR
4205  5275  7630            SZL CLA                 /USE DATA 5252 IF LINK IS SET
4206  5276  1120            TAD     K2525
4207  5277  1120            TAD     K2525
4208  5300  3163            DCA     GDREG2          /SETUP COMPARE REGISTER
4209  5301  4451  T102R,    LDCUR                   /SET CURRENT ADDRESS TO 0000
4210  5302  1310            TAD     TOFLD3
4211  5303  7041            CIA
4212  5304  1312            TAD     RTFLD3
4213  5305  7650            SNA CLA                 /CURRENT FIELD
4214  5306  5325            JMP     NEXFL3          /YES, NOT THIS ONE
4215  5307  1163            TAD     GDREG2          /OUTBOUND DATA
4216  5310  7402  TOFLD3,   HLT                     /MODIFIED CDF
4217  5311  3464            DCA I   K0000           /STORE DATA
4218  5312  7402  RTFLD3,   HLT                     /HOME CDF
4219  5313  1310            TAD     TOFLD3
4220  5314  0114            AND     K0070
4221  5315  1106            TAD     K4000           /WRITE
4222  5316  4450            LDCMD                   /LOAD COMMAND REGISTER
4223  5317  1076            TAD     K0040           /ENABLE WRITE BREAK
4224  5320  4455            LDMAN                   /GO
4225  5321  4456            RDBUF                   /GET RESULTS
4226  5322  4440            ACCMP1                  /CHECK RESULTS
4227  5323  7610            SKP CLA                 /O.K, TRY NEXT
4228  5324  5335            JMP     T102E           /ERROR
4229  5325  2156  NEXFL3,   ISZ     TCNTR1
4230  5326  7610            SKP CLA
4231  5327  5334            JMP     T102D           /DONE WITH ALL
4232  5330  1310            TAD     TOFLD3
4233  5331  1073            TAD     K0010
4234  5332  3310            DCA     TOFLD3          /SET TO NEXT FIELD
4235  5333  5301            JMP     T102R           /TRY IT
4236  5334  4435  T102D,    NERROR                  /O.K 4096 LOOPS
```


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```
4237  5335  4436  T102E,    ERROR                   /ERROR, DATA BREAK
4238  5336  5262            TST102                  /SCOPE LOOP POINTER
4239  5337  4263            4263                    /TEXT POINTER
4240  5340  5741            JMP I   .+1
4241  5341  5400            TST103
4242        5400  PAGE
4243                /
4244                /VERIFY THAT DATA BREAK WORKS WITH A WRITE FROM
4245                /LOCATION 7777 IN ALL EXISTING EXTENDED FIELDS,
4246                /USE DATA PATTERN 0000 + 7777.
4247                /
4248  5400  7301    TST103, CLA CLL IAC
4249  5401  4453            CLRALL                  /DCLR
4250  5402  4444            ENMAN1                  /ENTER MAINTENANCE MODE
4251  5403  1150            TAD     KCDF
4252  5404  3226            DCA     TOFLD4          /START FIELD 0
4253  5405  1176            TAD     FLDMAX
4254  5406  3156            DCA     TCNTR1          /FIELDS TO TEST -1
4255  5407  1433            TAD I   THSFLD
4256  5410  3230            DCA     RTFLD4          /RETURN FIELD CDF
4257  5411  1153            TAD     REG1
4258  5412  7110            CLL RAR
4259  5413  7630            SZL CLA                 /USE DATA 7777 IF LINK IS SET
4260  5414  7240            CLA CMA
4261  5415  3163            DCA     GDREG2          /SETUP COMPARE REGISTER
4262  5416  7240  T103R,    CLA CMA
4263  5417  4451            LDCUR                   /SET CURRENT ADDRESS TO 7777
4264  5420  1226            TAD     TOFLD4
4265  5421  7041            CIA
4266  5422  1230            TAD     RTFLD4
4267  5423  7650            SNA CLA                 /CURRENT FIELD
4268  5424  5243            JMP     NEXFL4          /YES, NOT THIS ONE
4269  5425  1163            TAD     GDREG2          /OUTBOUND DATA
4270  5426  7402  TOFLD4,   HLT                     /MODIFIED CDF
4271  5427  3532            DCA I   K7777           /STORE DATA
4272  5430  7402  RTFLD4,   HLT                     /HOME CDF
4273  5431  1226            TAD     TOFLD4
4274  5432  0114            AND     K0070
4275  5433  1106            TAD     K4000           /WRITE
4276  5434  4450            LDCMD                   /LOAD COMMAND REGISTER
4277  5435  1076            TAD     K0040           /ENABLE WRITE BREAK
4278  5436  4455            LDMAN                   /GO
4279  5437  4456            RDBUF                   /GET RESULTS
4280  5440  4440            ACCMP1                  /CHECK RESULTS
4281  5441  7610            SKP CLA                 /O.K, TRY NEXT
4282  5442  5253            JMP     T103E           /ERROR
4283  5443  2156  NEXFL4,   ISZ     TCNTR1
4284  5444  7610            SKP CLA
4285  5445  5252            JMP     T103D           /DONE WITH ALL
4286  5446  1226            TAD     TOFLD4
4287  5447  1073            TAD     K0010
4288  5450  3226            DCA     TOFLD4          /SET TO NEXT FIELD
4289  5451  5216            JMP     T103R           /TRY IT
4290  5452  4435  T103D,    NERROR                  /O.K 4096 LOOPS
4291  5453  4436  T103E,    ERROR                   /ERROR, DATA BREAK
```

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4292  5454 5400          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   THSFLD
4309  5466 3307          DCA     RTFLD5          /RETURN FIELD CDF
4310  5467 1153          TAD     REG1
4311  5470 7110          CLL RAR
4312  5471 7630          SZL CLA                 /USE DATA 5252 IF LINK IS SET
4313  5472 1120          TAD     K2525
4314  5473 1120          TAD     K2525
4315  5474 3163          DCA     GDREG2          /SETUP COMPARE REGISTER
4316  5475 7240     T104R, CLA CMA
4317  5476 4451          LDCUR                   /SET CURRENT ADDRESS TO 7777
4318  5477 1305          TAD     TOFLD5
4319  5500 7041          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   THSFLD
4361  5605 3245          DCA     RTFLD1
4362  5606 1153          TAD     REG1
4363  5607 3163          DCA     GDREG2          /SETUP COMPARE REGISTER
4364  5610 7301     T105R, CLA CLL IAC
4365  5611 4453          CLRALL                  /DCLR
4366  5612 4444          ENMAN1                  /ENTER MAINTENANCE MODE
4367  5613 1221          TAD     TOFLD1
4368  5614 7041          CIA
4369  5615 1245          TAD     RTFLD1
4370  5616 7650          SNA CLA                 /IS IT CURRENT FIELD
4371  5617 5255          JMP     NEXFL1          /YES, BYPASS
4372  5620 1163          TAD     GDREG2
4373  5621 0000     TOFLD1, 0                    /MODIFIED CDF
4374  5622 3554          DCA I   REG2            /STORE DATA WORD
4375  5623 1221          TAD     TOFLD1
4376  5624 0114          AND     K0070           /MASK DF BITS
4377  5625 1106          TAD     K4000
4378  5626 4450          LDCMD                   /LOAD COMMAND REGISTER
4379  5627 1154          TAD     REG2
4380  5630 4451          LDCUR                   /LOAD 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  1073          TAD     K0010
4406  5662  3221          DCA     TOFLD1
4407  5663  5210          JMP     T105R           /TRY NEXT FIELD
4408  5664  4435  T105D,  NERROR                  /O.K. NEXT ADDRESS
4409  5665  4436  T105E,  ERROR                   /ERROR, DATA BREAK
4410  5666  5600          TST105                  /SCOPE LOOP POINTER
4411  5667  4263          4263                    /TEXT POINTER
4412                /
4413  5670  4405  ENDTST, SET                     /SETUP FIELD 0
4414  5671  1007          TAD     SAVEND
4415  5672  3532          DCA I   K7777           /REPLACE BINARY
4416  5673  1022          TAD     22
4417  5674  0106          AND     K4000           /TEST FOR APT
4418  5675  7650          SNA CLA                 /APT??
4419  5676  5301          JMP     .+3             /NO, NORMAL RUN
4420  5677  2371          ISZ     PCOUNT
4421  5700  5317          JMP     ENDHLT+1        /LOOP PROGRAM
4422  5701  4406          CLASIC                  /CHECK FOR CONSOLE CLASSIC
4423  5702  4424          CRPASS                  /CHECK FOR PASS COMPLETE TYPEOUT.
4424  5703  7610          SKP CLA
4425  5704  5310          JMP     .+4             /BYPASS NORMAL TYPEOUT.
4426  5705  4462          CRLF
4427  5706  4457          PRNTER                  /PRINT END OF TEST MESSAGE
4428  5707  7562          TEXEND                  /POINTER
4429  5710  4404          LAS
4430  5711  7004          RAL
4431  5712  7710          SPA CLA
4432  5713  5317          JMP     .+4             /NO STOP.
4433  5714  4406          CLASIC                  /CHECK FOR CLASSIC.
4434  5715  4437          CRINQU                  /ROUTINE TO EXECUTE.
4435  5716  7402  ENDHLT, HLT                     /END OF TEST
4436  5717  7301          CLA CLL IAC
4437  5720  4453          CLRALL                  /DCLR
4438  5721  5722          JMP I   .+1             /LOOP ON PROGRAM
4439  5722  0766          TST4
4440                /
4441                /
4442                /MANUAL TEST FOR 16 BIT COUNTER.
4443                /SET SWITCH REGISTER TO 0201 AND PRESS
4444                /LOAD ADDRESS, SET THE SWITCH REGISTER TO 0000.
4445                /THEN PRESS CLEAR AND CONTINUE.
4446                /SCOPE THE 16TH CARRY OUTPUT TEST POINT
4447                /FOR A GROUND TO +3 VOLT SIGNAL.
4448                /
4449  5723  7301  MANUL,  CLA CLL IAC
4450  5724  4453          CLRALL                  /FIRST, CLEAR CONTROL
4451  5725  4444          ENMAN1                  /ENTER MAINTENANCE MODE
4452  5726  1077          TAD     K0100           /ENABLE SHIFT PULSES
4453  5727  4455          LDMAN                   /ISSUE MAINTENANCE IOT AND
4454  5730  5327          JMP     .-1             /CAUSE HI MAIN SHIFTS TO THE
4455  5731  5327          JMP     .-2             /INPUT OF THE 16 BIT COUNTER.
4456                /
```



```
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          CRCKSW                  /GET SWITCHES.
4494  5767  7604          7604                    /NOP IF ON APT
4495  5770  5764          JMP I   MYLAS           /EXIT
4496                /
4497  5771  0000  PCOUNT, 0
4498                /
4499  5773  1302
4500  5774  0022
4501  5775  0021
4502  5776  0020
4503  5777  0400
            6000  PAGE
4504                /
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  LDAD,   0
4596  6107  3171          DCA     DAREG           /SAVE OUTBOUND DATA
4597  6110  1171          TAD     DAREG
4598  6111  6743  IOT3,   DLAG                          /LOAD DISK ADDRESS REGISTER
4599  6112  5706          JMP I   LDAD                    /EXIT
4600  6113  4406          CLASIC                  /CHECK FOR CLASSIC.
4601  6114  4436          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                          /DCLR "CLEAR IOT"
4630  6137  5735          JMP I   CLDR                  /EXIT
4631  6140  4406          CLASIC                  /CHECK FOR CLASSIC.
4632  6141  4436          C8ERR                   /ROUTINE TO EXECUTE.
4633  6142  7402  ERHLT2, HLT                     /SKIP TRAP ERROR
4634  6143  5340          JMP     .-3             /NON-RECOVERABLE ERROR.
4635
4636                /
4637                /SUBROUTINE TO ISSUE "DMAN" MAINTENANCE IOT
4638                /
4639  6144  0000  LDMN,   0
4640  6145  6747  IOT7,  DMAN                          /"DMAN" MAINTENANCE IOT
4641  6146  5744          JMP I   LDMN                  /EXIT
4642  6147  4406          CLASIC                  /CHECK FOR CLASSIC.
4643  6150  4436          C8ERR                   /ROUTINE TO EXECUTE.
4644  6151  7402  ERHLT7, HLT                     /SKIP TRAP ERROR.
4645  6152  5347          JMP     .-3             /NON-RECOVERABLE ERROR.
4646        6200  PAGE
4647                /
4648                /SUBROUTINE TO SHIFT, THEN READ DISK
4649                /ADDRESS INTO DATA BUFFER, 12 SHIFTS
4650                /
4651  6200  0000  RDAD,   0
4652  6201  4445          ENMAN2                  /ENTER MAINTENANCE MODE + DB4=1
4653  6202  1134          TAD     M5
4654  6203  3155          DCA     SBCNT1          /SETUP COUNTER
4655  6204  1103          TAD     K1000           /ENABLE SHIFT CRC
4656  6205  1100          TAD     K0200           /ENABLE SHIFT SURFACE AND SECTOR
4657  6206  4455          LDMAN                   /LOAD MAINTENANCE
4658  6207  2155          ISZ     SBCNT1          /FOUR SHIFTS
4659  6210  5206          JMP     .-2             /MORE TO GO
4660  6211  7300          CLA CLL
4661  6212  1135          TAD     M7
4662  6213  3155          DCA     SBCNT1
4663  6214  1103          TAD     K1000                   /SHIFT CRC
4664  6215  4455          LDMAN                           /LOAD MAINTENANCE IOT
4665  6216  2155          ISZ     SBCNT1
4666  6217  5215          JMP     .-2                     /SHIFT 12 BITS
4667  6220  7300          CLA CLL
4668  6221  1074          TAD     K0020
4669  6222  4455          LDMAN                           /READ DATA BUFFER
4670  6223  3171          DCA     DAREG                   /SAVE RESULTS
4671
4672
4673  6224  1171          TAD     DAREG
4674  6225  5600          JMP I   RDAD                    /EXIT
4675                /
```



```
4676                /SUBROUTINE TO READ DATA BUFFER TO AC
4677                /
4678  6226  0000  RDBF,   0
4679  6227  7330          CLA CLL CML RAR
4680  6230  4455          LDMAN                   /ENTER MAINTENANCE MODE
4681  6231  1074          TAD     K0020
4682  6232  4455          LDMAN                           /LOAD MAINTENANCE
4683  6233  3167          DCA     DBREG
4684  6234  1167          TAD     DBREG
4685  6235  3173          DCA     DTREG
4686  6236  1173          TAD     DTREG
4687  6237  5626          JMP I   RDBF                    /EXIT
4688                /
4689                /SUBROUTINE TO SHIFT COMMAND    REGISTER TO
4690                /DATA BUFFER THEN READ DATA BUFFER
4691                /
4692  6240  0000  RDCM,   0
4693  6241  4445          ENMAN2                  /ENTER MAINTENANCE MODE + DB4=1
4694  6242  1136          TAD     M12
4695  6243  3155          DCA     SBCNT1                  /12 BIT SHIFT
4696  6244  1102          TAD     K0400                   /ENABLE BIT FOR SHIFT COMMAND
4697  6245  4455          LDMAN                           /LOAD AND GO
4698  6246  2155          ISZ     SBCNT1
4699  6247  5245          JMP     .-2                     /SHIFT 12
4700  6250  7300          CLA CLL
4701  6251  1074          TAD     K0020                   /ENABLE READ BUFFER
4702  6252  4455          LDMAN                           /LOAD AND GO
4703  6253  3170          DCA     CMREG                   /SAVE IT
4704  6254  1170          TAD     CMREG
4705  6255  5640          JMP I   RDCM                    /EXIT
4706                /
4707                /ROUTINE TO ENTER MAINTENANCE MODE
4708                /
4709  6256  0000  MAIN1,  0
4710  6257  7330          CLA CLL CML RAR         /ENABLE MAINTENANCE BIT
4711  6260  4455          LDMAN                   /ENTEP 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                  /ENTEP 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
```



```
4786  6405  3776'         DCA     TOCT
4787  6406  1777'         TAD     UPONE
4788  6407  0072          AND     K0007
4789  6410  1063          TAD     K0260
4790  6411  4434          TYPE
4791  6412  1777'         TAD     UPONE
4792  6413  7006          RTL
4793  6414  7004          RAL
4794  6415  3777'         DCA     UPONE
4795  6416  2776'         ISZ     TOCT
4796  6417  5206          JMP     .+11
4797  6420  1261          TAD     K0240
4798  6421  4434          TYPE
4799  6422  5600          JMP I   FROCT
4800                      /
4801                      /SUBROUTINE TO PRINT TEXT
4802                      /
4803  6423  0000          PRN,    0
4804  6424  7300          CLA CLL
4805  6425  1623          TAD I   PRN                     /GET POINTER
4806
4807  6426  2223          ISZ     PRN
4808  6427  3200          DCA     FROCT
4809  6430  1600          TAD I   FROCT
4810  6431  0112          AND     K7700
4811  6432  7450          SNA
4812  6433  5257          JMP     EXIT
4813  6434  7500          SMA
4814  6435  7020          CML
4815  6436  7001          IAC
4816  6437  7012          RTR
4817  6440  7012          RTR
4818  6441  7012          RTR
4819  6442  4434          TYPE
4820  6443  1600          TAD I   FROCT
4821  6444  0115          AND     K0077
4822  6445  7450          SNA
4823  6446  5257          JMP     EXIT
4824  6447  1262          TAD     K3740
4825  6450  7500          SMA
4826  6451  1124          TAD     K4100
4827  6452  1261          TAD     K0240
4828  6453  4434          TYPE
4829  6454  2200          ISZ     FROCT
4830  6455  7300          CLA CLL
4831  6456  5230          JMP     PRN+5
4832  6457  7300  EXIT,   CLA CLL
4833  6460  5623          JMP I   PRN
4834                      /
4835  6461  0240  K0240,  0240
4836  6462  3740  K3740,  3740
4837                      /
4838                      /ROUTINE TO TYPE
4839                      /
4840  6463  0000  PRINT,  0
```

```
4841  6464 4406          CLASIC                  /CHECK FOR CLASSIC,
4842  6465 4435          C8TYPE                  /ROUTINE TO EXECUTE,
4843  6466 7410          SKP
4844  6467 5663          JMP I   PRINT           /INHIBIT TYPE,
4845  6470 6046          TLS
4846  6471 6041          TSF
4847  6472 5271          JMP     .-1
4848  6473 6042          TCF
4849  6474 7200          CLA
4850  6475 5663          JMP I   PRINT
4851                /
4852                /ROUTINE TO GET ALL REGISTERS AFTER "ERHLT9"
4853                /
4854  6476 0000     DUMP, 0
4855  6477 4404          LAS
4856  6500 0102          AND     K0400           /MASK SWITCH 3
4857  6501 7650          SNA CLA                 /WAS IT GET ALL
4858  6502 5676          JMP I   DUMP            /NO
4859  6503 4442          RDSTAT                  /GET STATUS
4860  6504 4456          RDBUF                   /READ BUFFER
4861  6505 7300          CLA CLL
4862  6506 1136          TAD     M12
4863  6507 3263          DCA     PRINT           /12 BIT COUNTER
4864  6510 1100          TAD     K0200           /ENABLE SHIFT SECTOR AND SURFACE
4865  6511 4455          LDMAN                   /LOAD MAINTENANCE
4866  6512 2263          ISZ     PRINT           /12 BIT SHIFT
4867  6513 5311          JMP     .-2
4868  6514 7300          CLA CLL
4869  6515 1074          TAD     K0020           /ENABLE READ BUFFER
4870  6516 4455          LDMAN                   /LOAD MAINTENANCE
4871  6517 3171          DCA     DAREG           /SAVE SURFACE AND SECTOR
4872  6520 4454          RDCRC                   /READ CRC
4873  6521 4443          RDCMD                   /READ COMMAND
4874  6522 4462          CRLF
4875  6523 1125          TAD     K7600
4876  6524 2276          ISZ     DUMP
4877  6525 5676          JMP I   DUMP            /REPORT
4878                /
4879  6576 6314
4880  6577 6331
             6600     PAGE
4881                /
4882                /SUBROUTINE FOR "ERRORS," SCOPE LOOPS, AND
4883                /ERROR TYPEOUTS.
4884                /
4885  6600 0000     ERRO, 0
4886  6601 7300          CLA CLL
4887  6602 4425          AERRO                   /REPORT ERROR TO APT IF NEED BE.
4888  6603 1600          TAD I   ERRO                    /GET SCOPE LOOP POINTER
4889  6604 3340          DCA     SERRO                   /SAVE FOR RETURN
4890  6605 4404          LAS                             /GET SWR0
4891  6606 7700          SMA CLA                         /IS IT SCOPE LOOP
4892  6607 5217          JMP     .+10            /NO SCOPE
4893  6610 4404          LAS                     /GET SWITCH 2
4894  6611 7006          RTL
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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     NTCPC, DCA   ERRO
4948  6675 1342          TAD     XTEXT
4949  6676 3345          DCA     PCNTR2
```

```
4950  6677  1343          TAD     XREG
4951  6700  3010          DCA     AUTO10
4952  6701  1131          TAD     K7771
4953  6702  3344          DCA     PCNTR1                  /COUNTER FOR    # OF HEADS
4954  6703  1200  STRAUT, TAD     ERRO                    /GET TEXT POINTER
4955  6704  7500          SMA
4956  6705  5332          JMP     NOTEX                   /NOT THIS ONE
4957  6706  7104          CLL RAL
4958  6707  3200          DCA     ERRO
4959  6710  1345          TAD     PCNTR2          /GET TEXT MESSAGE POINTER
4960  6711  2345          ISZ     PCNTR2
4961  6712  2345          ISZ     PCNTR2
4962  6713  3315          DCA     .+2                     /STORE FOR PRNTER
4963  6714  4457          PRNTER                          /PRINT XX:
4964  6715  7402          HLT                             /MODIFIED TEXT POINTER
4965  6716  1410          TAD I   AUTO10
4966  6717  4460          OCTEL                           /PRINT FOUR OCTAL
4967  6720  2344  BAKPNT, ISZ     PCNTR1                  /CHECK FOR NEXT XX:
4968  6721  5303          JMP     STRAUT
4969  6722  1007          TAD     SAVEND          /GET CONSTANT SAVED
4970  6723  3532          DCA I   K7777           /REPLACE LAST LOCATION
4971  6724  4406          CLASIC                  /CHECK FOR CLASSIC.
4972  6725  4436          C8ERR                   /ROUTINE TO EXECUTE!!!!
4973  6726  7402  ERHLT9, HLT                     /ALL RECOVERABLE ERROR HALTS
4974  6727  4741          JMS I   XDUMP           /CHECK FOR GET ALL REGISTERS
4975  6730  5740          JMP I   SERRO                   /TRY SAME TEST AGAIN
4976  6731  5257          JMP     NTGD            /GET ALL REGISTERS
4977  6732  7104  NOTEX,  CLL RAL
4978  6733  3200          DCA     ERRO
4979  6734  2345          ISZ     PCNTR2
4980  6735  2345          ISZ     PCNTR2
4981  6736  2010          ISZ     AUTO10
4982  6737  5320          JMP     BAKPNT
4983                      /
4984  6740  0000  SERRO,  0
4985  6741  6476  XDUMP,  DUMP
4986  6742  7406  XTEXT,  TEXST
4987  6743  0165  XREG,   CPREG2
4988  6744  0000  PCNTR1, 0
4989  6745  0000  PCNTR2, 0
4990  6746  1347  HEDTAD, TAD     HEDLST
4991  6747  7424  HEDLST, ERTX1
4992  6750  7437          ERTX2
4993  6751  7453          ERTX3
4994  6752  7471          ERTX4
4995  6753  7502          ERTX5
4996  6754  7514          ERTX6
4997  6755  7526          ERTX7
4998  6756  7536          ERTX8
4999  6757  7551          ERTX9
5000                      /
5001                      /
5002                      /ROUTINE TO ENTER MAINTENANCE MODE AND
5003                      /SET DB4=1 TO ENABLE SHIFT TO LOWER SILO
5004                      /
```



```
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          C8CKPA                  /ROUTINE TO EXECUTE.
5021  7003  7000          NOP
5022  7004  4404          LAS                     /GET SWITCH 4
5023  7005  0100          AND     K0200           /MASK
5024  7006  7650          SNA CLA                 /WAS IT SET
5025  7007  5215          JMP     STPHLT +1       /NO DON'T HALT
5026  7010  1007          TAD     SAVEND          /GET BINARY END
5027  7011  3532          DCA I   K7777           /REPLACE IT
5028  7012  4406          CLASIC                  /CHECK FOR CLASSIC.
5029  7013  4437          CRINQU                  /WAIT FOR OPERATOR.
5030  7014  7402  STPHLT, HLT                     /STOP PROGRAM HALT
5031  7015  2200          ISZ     NERRO                   /UPDATE PC STORE
5032  7016  1600          TAD I   NERRO                   /GET SCOPE LOOP POINTER
5033  7017  3237          DCA     SNERRO                  /STORE FOR RETURN
5034  7020  4404          LAS                             /GET SWITCH 0
5035  7021  7710          SPA CLA                 /ENTER SCOPE LOOP
5036  7022  5637          JMP I   SNERRO          /YES
5037  7023  2153          ISZ     REG1                    /UPDATE UPCOUNTER
5038  7024  7610          SKP CLA
5039  7025  5233          JMP     NEXTST                  /END OF PARTICULAR TEST
5040  7026  1153          TAD     REG1
5041  7027  7140          CLL CMA
5042  7030  3154          DCA     REG2                    /SETUP DOWN COUNTER
5043  7031  4424  NEXT,   TICK                    /REPLACED WITH TIMING IF ON APT
5044  7032  5637          JMP I   SNERRO                  /BACK TO SAME TEST
5045  7033  2200  NEXTST, ISZ     NERRO                   /UPDATE         PC STORE
5046  7034  2200          ISZ     NERRO                   /UPDATE PC STORE
5047  7035  5600          JMP I   NERRO                   /TO NEXT SEQUENTIAL TEST
5048                      /
5049  7036  0000  TOTST,  0
5050  7037  0000  SNERRO, 0
5051                      /
5052                      /SUBROUTINE TO SETUP FIELD 0
5053                      /
5054  7040  0000  SETUP,  0
5055  7041  1433          TAD I   THSFLD          /GET HOME DF
5056  7042  3252          DCA     BAKFLD
5057  7043  1151          TAD     KRMF            /GET RMF FOR INT. RETURN
5058  7044  6201          CDF     0               /SWITCH FIELD 0
5059  7045  3465          DCA I   K0001
```

SEQ 0120

```
 5060   7046  1254          TAD     K5403           /JMP I 3 FOR LOC, 2
 5061   7047  3466          DCA I   K0002
 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

```
 5076   7062  3200          DCA     NERRO           /SETUP COUNTER
 5077   7063  4444          ENMAN1                  /ENTER MAINTENANCE MODE
 5078   7064  1236  UPPR1,  TAD     TOTST           /GET DATA
 5079   7065  0237          AND     SNERRO          /MASK
 5080   7066  7640          SZA CLA                 /A ONE OR ZERO????
 5081   7067  1066          TAD     K0002           /A ONE!!!!
 5082   7070  1077          TAD     K0100           /ENABLE SHIFT
 5083   7071  4455          LDMAN                   /LOAD MAINTENANCE
 5084   7072  7300          CLA CLL
 5085   7073  1237          TAD     SNERRO
 5086   7074  7104          CLL RAL
 5087   7075  3237          DCA     SNERRO
 5088   7076  2200          ISZ     NERRO           /COUNT BITS
 5089   7077  5264          JMP     UPPR1           /MORE TO GO
 5090   7100  5655          JMP I   UPPEP           /UPPER BUFFER LOADED
 5091                       /
 5092                       /ROUTINE TO CHANGE PROGRAM DEVICE CODES
 5093                       /
 5094   7101  4406  CHANG,  CLASIC                  /CHECK FOR CLASSIC,
 5095   7102  4431          CBSWIT                  /ROUTINE TO EXECUTE,
 5096   7103  7000          NOP
 5097   7104  4404          LAS
 5098   7105  0332          AND     A0770
 5099   7106  3236          DCA     TOTST           /SAVE DESIRED
 5100   7107  1334          TAD     CHNPOT
 5101   7110  3255          DCA     UPPER
 5102   7111  1333          TAD     CCNTR1
 5103   7112  3237          DCA     SNERRO          /A FEW POINTERS
 5104   7113  1655  CHANGR, TAD I   UPPER           /GET ADDRESS POINTER
 5105   7114  3240          DCA     SETUP           /SAVE IT
 5106   7115  1640          TAD I   SETUP           /GET OLD IOT CODE
 5107   7116  0331          AND     A7007
 5108   7117  1236          TAD     TOTST           /ADD IN DESIRED
 5109   7120  3640          DCA I   SETUP           /CHANGE CODE
 5110   7121  2255          ISZ     UPPER           /UPDATE POINTER
 5111   7122  2237          ISZ     SNERRO          /UPDATE CHANGE COUNTER
 5112   7123  5313          JMP     CHANGR
 5113   7124  4406          CLASIC                  /CHECK FOR CLASSIC,
 5114   7125  4436          CBEPR                   /ROUTINE TO EXECUTE,
 5115   7126  7402  CHNHLT, HLT                     /DEVICE CODES CHANGED, PRESS
 5116   7127  5730          JMP I   XBGN            /CONTINUE OR IF ON CONSOLE
 5117                                               /PACKAGE HIT CONTROL F.
 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
```

```
 5131   7143  6145            IOT7
 5132                 /
 5133         7200            PAGE
 5134                 /THIS ROUTINE TEST FOR BEING ON THE APT OR ACT SYSTEMS.
 5135                 /IF ON APT CONSOLE PACKAGE AND SWITCH REGISTER FUNCTIONS
 5136                 /ARE NOP'S.
 5137                 /
 5138                 /
 5139   7200  0000    APT8,   0
 5140   7201  1022            TAD 22                  /HARWARE CONFIGURATION
 5141   7202  0106            AND     K4000
 5142   7203  7650            SNA CLA                 /SKIP IF ON ACT OR APT
 5143   7204  5600            JMP I   APT8            /RETURN TO MAIN PROGRAM
 5144   7205  1022            TAD     22
 5145   7206  0264            AND     K7377           /MAKE SURE CONSOLE DISABLED
 5146   7207  3022            DCA 22
 5147   7210  1107            TAD     K7000
 5148   7211  3663            DCA I   XMYLAS          /NOP SWITCH REGISTER FUNCTIONS
 5149   7212  1200            TAD     APT8
 5150   7213  1070            TAD     K0004
 5151   7214  3200            DCA     APT8
 5152   7215  1021            TAD     21              /GET MEMORY SIZE
 5153   7216  7012            RTR                     /SET UP MEMORY SIZE
 5154   7217  5600            JMP I APT8              /NOW ON APT.  RETURN IS PLUS 4.
 5155                 /
 5156                 /THIS ROUTINE WILL GENERATE THE TIMING REQUIRED BY
 5157                 /APT OR ACT.
 5158                 /
 5159   7220  0000    KTICK,  0
 5160   7221  1022            TAD     22
 5161   7222  0106            AND     K4000           /SEE IF ON APT
 5162   7223  7650            SNA CLA
 5163   7224  5620            JMP I   KTICK           /NOT ON APT
 5164   7225  2266            ISZ CLKCNT              /INCREMENT COUNTER
 5165   7226  5620            JMP I KTICK             /NO
 5166   7227  6002            IOF                     /DISABLE INTERUPTS
 5167   7230  6214            RDF                     /GET PRESENT DATA FIELD
 5168   7231  1150            TAD KCDF
 5169   7232  3233            DCA .+1                 /ESTABLISHES CURRENT DATA FIELD
 5170   7233  7402            HLT                     /REPLACED WITH CURRENT DATA FIELD
 5171   7234  6272            CIF 70                  /FIELD 7, LOCATION OF UV PROM
 5172   7235  4777            JMS I (6500
 5173   7236  1376            TAD (-2777              /ABOUT 1.5 SEC ON MOST TESTS
 5174   7237  3266            DCA CLKCNT
 5175   7240  5620            JMP I KTICK
 5176                 /
 5177                 /THIS ROUTINE WILL NOTIFY APT OF AN ERROR AND SEND PC TO
 5178                 /APT SYSTEM
 5179                 /
 5180   7241  0000    WAERRO, 0
 5181   7242  1022            TAD     22
 5182   7243  0106            AND     K4000           /SEE IF ON APT
 5183   7244  7650            SNA CLA
 5184   7245  5641            JMP I   WAERRO          /NO
 5185   7246  6002            IOF                     /DISABLE INTERUPTS
```



```
 5186   7247  7200            CLA
 5187   7250  1775            TAD I (ERRO             /GET PC
 5188   7251  3265            DCA SAVPC
 5189   7252  6214            RDF                     /GET CURRENT DATA FIELD
 5190   7253  1774            TAD I (KCDF
 5191   7254  3256            DCA .+2
 5192   7255  1265            TAD SAVPC
 5193   7256  7402            HLT                     /REPLACED WILL CURRENT DATA FIELD
 5194   7257  6272            CIF     70              /FIELD OF UVPROM
 5195   7260  5773            JMP I (6520             /NOTIFIES APT OF ERROR
 5196   7261  7200            CLA
 5197   7262  5641            JMP I WAERRO
 5198                 /
 5199   7263  5767    XMYLAS, MYLAS+3
 5200   7264  7377    K7377,  7377
 5201   7265  0000    SAVPC,  0
 5202   7266  5001    CLKCNT, -2777
 5203   7373  6520
 5204   7374  0150
 5205   7375  6600
 5206   7376  5001
 5207   7377  6500
               7400            PAGE
 5208   7400  2003    TEXPC,  TEXT    "PC:"
        7401  7200
 5209   7402  0704    TEXGD,  TEXT    "GD:"
        7403  7200
 5210   7404  0322    TEXCR,  TEXT    "CR:"
        7405  7200
 5211   7406  2324    TEXST,  TEXT    "ST:"
        7407  7200
 5212   7410  0402    TEXDB,  TEXT    "DB:"
        7411  7200
 5213   7412  0315    TEXCM,  TEXT    "CM:"
        7413  7200
 5214   7414  0401    TEXDA,  TEXT    "DA:"
        7415  7200
 5215   7416  0104    TEXAD,  TEXT    "AD:"
        7417  7200
 5216   7420  0424    TEXDT,  TEXT    "DT:"
        7421  7200
 5217   7422  0103    TEXAC,  TEXT    "AC:"
        7423  7200
 5218                 /
 5219   7424  2324    ERTX1,  TEXT    "STATUS REGISTER ERROR"
        7425  0124
        7426  2523
        7427  4022
        7430  0507
        7431  1123
        7432  2405
        7433  2240
        7434  0522
        7435  2217
        7436  2200
```

```
5220    7437  0317    ERTX2,  TEXT    "COMMAND REGISTER ERROR"
        7440  1515
        7441  0116
        7442  0440
        7443  2205
        7444  0711
        7445  2324
        7446  0522
        7447  4005
        7450  2222
        7451  1722
        7452  0000
5221    7453  0411    ERTX3,  TEXT    "DISK ADDRESS REGISTER ERROR"
        7454  2313
        7455  4001
        7456  0404
        7457  2205
        7460  2323
        7461  4022
        7462  0507
        7463  1123
        7464  2405
        7465  2240
        7466  0522
        7467  2217
        7470  2200
5222    7471  0401    ERTX4,  TEXT    "DATA BREAK ERROR"
        7472  2401
        7473  4002
        7474  2205
        7475  0113
        7476  4005
        7477  2222
        7500  1722
        7501  0000
5223    7502  0322    ERTX5,  TEXT    "CRC REGISTER ERROR"
        7503  0340
        7504  2205
        7505  0711
        7506  2324
        7507  0522
        7510  4005
        7511  2222
        7512  1722
        7513  0000
5224    7514  0401    ERTX6,  TEXT    "DATA REGISTER ERROR"
        7515  2401
        7516  4022
        7517  0507
        7520  1123
        7521  2405
        7522  2240
        7523  0522
        7524  2217
        7525  2200
```



```
5225    7526  0411    ERTX7,  TEXT    "DISK SKIP ERROR"
        7527  2313
        7530  4023
        7531  1311
        7532  2040
        7533  0522
        7534  2217
        7535  2200
5226    7536  0411    ERTX8,  TEXT    "DISK INTERRUPT ERROR"
        7537  2313
        7540  4011
        7541  1624
        7542  0522
        7543  2225
        7544  2024
        7545  4005
        7546  2222
        7547  1722
        7550  0000
5227    7551  0103    ERTX9,  TEXT    "AC REGISTER ERROR"
        7552  4022
        7553  0507
        7554  1123
        7555  2405
        7556  2240
        7557  0522
        7560  2217
        7561  2200
5228                    /
5229    7562  2213    TEXEND, TEXT    "RK8E DISKLESS PASS COMPLETE"
        7563  7005
        7564  4004
        7565  1123
        7566  1314
        7567  0523
        7570  2340
        7571  2001
        7572  2323
        7573  4003
        7574  1715
        7575  2011
        7576  0524
        7577  0500
5230                    /
5231                            $$$
```

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

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

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

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


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

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

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

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


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

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

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

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


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

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

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

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



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

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

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

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


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

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

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

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


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

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

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

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


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

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

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

7600
7700
```

A0770	7132	CRTTYI	4426	ENMAN2	4445	IOT4	6100
A7007	7131	CRTYPE	4435	ERHLT1	6031	IOT5	6064
ACCMP1	4440	CAF	6007	ERHLT2	6142	IOT6	6122
ACCMP2	4441	CCNTR1	7133	ERHLT3	6115	IOT7	6145
ACL	7701	CHANG	7101	ERHLT4	6104	IOTCHN	5426
ACREG	0174	CHANGR	7113	ERHLT5	6070	K0000	0064
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	7200	CKCOUT	0232	ERR1	0736	K0004	0070
APT8A	4423	CLASIC	4406	ERRMES	1320	K0006	0071
AUTO10	0010	CLASIK	5732	ERRO	6600	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	4427	COMP1	6033	F1OP1	0021	K0240	6461
C8CONT	1145	COMP2	6044	F1OP2	0022	K0260	0063
C8CRLF	4433	CONSOL	0000	F1SWR	0020	K0377	0116
C8DO1	0310	CRERR	6060	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
C8SWIT	4431	ENDIT	0742	IOT1	6131	K7775	0111
C8SWST	0745	ENDTST	5670	IOT2	6136	K7776	0110
C8TMP1	1021	ENMAN1	4444	IOT3	6111	K7777	0132

KCDF	0150	NTCLAS	1270	SETUP2	0225	T71E	3041
KRMF	0151	NTCRC	6674	SNERRO	7037	T72E	3115
KTICK	7220	NTGD	6657	STCON	0177	T72R	3060
LAS	4404	OCTEL	4460	STPHLT	7014	T73E	3266
LDAD	6106	OP1	0021	STRAUT	6703	T73R1	3204
LDADD	4452	OP2	0022	STREG	0166	T73R2	3210
LDBUF	4427	PASCNT	0250	SWR	0020	T73R3	3233
LDCA	6075	PCLF	6662	T101D	5256	T74E	3340
LDCM	6117	PCNTR1	6744	T101E	5257	T74R1	3302
LDCMD	4450	PCNTR2	6745	T101R	5223	T74R1A	3303
LDCUR	4451	PCOUNT	5771	T102D	5334	T74R2	3305
LDMAN	4455	PCSAVE	1344	T102E	5335	T74R3	3322
LDMN	6144	PNTBUF	1120	T102R	5301	T75E	3434
M12	0136	PRINT	6463	T103D	5452	T75R	3411
M128	0141	PRN	6423	T103E	5453	T76E	3475
M16	0137	PRNTER	4457	T103R	5416	T76R	3452
M191	0142	PRSFLD	0210	T104D	5531	T77E	3525
M255	0143	PSIE	6665	T104E	5532	T78E	3556
M300	0144	PSKE	6663	T104R	5475	T79E	3607
M4	0133	PSKF	6661	T105D	5664	T80E	3641
M40	0140	PSTB	6664	T105E	5665	T81E	3672
M5	0134	PTSTOR	0336	T105R	5610	T82E	3724
M7	0135	RDAD	6200	T37R	1355	T83E	3771
MAIN1	6256	RDADD	4446	T38R	1412	T84E	4033
MAIN2	6760	RDBF	6226	T39R	1444	T85E	4106
MANTST	0030	RDBUF	4456	T40R	1501	T85OK	4105
MANUAL	5430	RDCM	6240	T45E	1647	T85R1	4046
MANUL	5723	RDCMD	4443	T45R1	1623	T86E	4276
MESA	0747	RDCR	6263	T45R3	1636	T86R1	4204
MESAC	1333	RDCRC	4454	T46A1	1660	T86R2	4214
MESFL	1341	RDST	6063	T46A2	1703	T86R3	4236
MESHAN	1146	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	4641
MTS85	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	7265	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

TCNTR4	0161	TST30	1142	TST78	3530	XCLAS	0006
TEXAC	7422	TST31	1162	TST79	3561	XCLDR	0053
TEXAD	7416	TST32	1203	TST8	0333	XCOMP1	0040
TEXCM	7412	TST33	1217	TST80	3612	XCOMP2	0041
TEXCR	7404	TST34	1233	TST81	3644	XCRLF	0062
TEXDA	7414	TST35	1263	TST82	3675	XDOLPT	1112
TEXDB	7410	TST36	1311	TST83	3727	XDOSW	0520
TEXDT	7420	TST37	1343	TST84	3774	XDUMP	6741
TEXEND	7562	TST38	1400	TST85	4036	XEND	0032
TEXGD	7402	TST39	1430	TST86	4200	XERRO	0036
TEXPC	7400	TST4	0266	TST87	4303	XFROCT	0060
TEXST	7406	TST40	1470	TST88	4377	XIONWT	0037
THSFLD	0033	TST41	1526	TST89	4426	XLAS	0004
TICK	4424	TST42	1545	TST9	0344	XLDAD	0052
TMPCNT	0746	TST43	1565	TST90	4457	XLDCA	0051
TOCT	6314	TST44	1601	TST91	4507	XLDCM	0050
TOFLD1	5621	TST45	1615	TST92	4600	XLDMN	0055
TOFLD2	5232	TST46	1652	TST93	4646	XMAIN1	0044
TOFLD3	5310	TST47	1722	TST94	4672	XMAIN2	0045
TOFLD4	5426	TST48	1746	TST95	4722	XMYLAS	7263
TOFLD5	5505	TST49	2000	TST97	5000	XNERRO	0035
TOTST	7036	TST5	0302	TST98	5031	XPRINT	0034
TST0	0236	TST50	2035	TST99	5063	XPRN	0057
TST1	0245	TST51	2077	TSTCHA	0715	XRDAD	0046
TST10	0353	TST52	2117	TSTLAS	5200	XRDBF	0056
TST100	5131	TST53	2134	TTYLPT	1121	XRDCM	0043
TST101	5205	TST54	2200	TWOCT	4461	XRDCR	0054
TST102	5262	TST55	2230	TYPE	4434	XRDST	0042
TST103	5400	TST56	2255	UPAROW	0615	XREG	6743
TST104	5456	TST57	2272	UPONE	6331	XSDKP	0047
TST105	5600	TST58	2310	UPPER	7055	XSET	0005
TST11	0375	TST59	2323	UPPR1	7064	XTABLA	0457
TST12	0420	TST6	0315	WAERRO	7241	XTABLB	0460
TST13	0434	TST60	2336	WATMES	0651	XTEXT	6742
TST14	0452	TST61	2400	XAERRO	0025	XTICK	0024
TST15	0464	TST62	2423	XAPT8A	0023	XTOCT	0061
TST16	0517	TST63	2447	XBGN	7130	XUPPER	0027
TST17	0547	TST64	2507	XC8CKP	1041		
TST18	0571	TST65	2600	XC8CNT	0400		
TST19	0614	TST66	2636	XC8CRL	1023		
TST2	0252	TST67	2657	XC8ECH	1063		
TST20	0626	TST68	2677	XC8ERR	1207		
TST21	0643	TST69	2720	XC8INQ	0635		
TST22	0657	TST7	0324	XC8OCT	1000		
TST23	0703	TST70	2753	XC8PAS	0200		
TST24	0730	TST71	2777	XC8PAU	0337		
TST25	0752	TST72	3044	XC8PNT	0303		
TST26	0777	TST73	3200	XC8PSW	0656		
TST27	1040	TST74	3271	XC8SW	0262		
TST28	1057	TST75	3400	XC8TTY	0272		
TST29	1107	TST76	3437	XC8TYP	1077		
TST3	0260	TST77	3500	XCHANG	0026		

ERRORS DETECTED: 0

LINKS GENERATED: 115

RUN-TIME: 11 SECONDS

3K CORE USED

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A0770     5098    5122#
A7007     5107    5121#
ACCMP1    1082#   1289    1339    1353    1365    1376    1389    1400    1423    1447    1464    1482    1530    1559
          1584    1610    1627    1645    1662    1829    1858    1890    1909    1930    1946    1962    1990    2017
          2221    2242    2260    2277    2304    2350    2372    2398    2425    2436    2443    2457    2469    2481
          2568    2576    2592    2601    2618    2754    2764    2776    2790    2800    2812    2831    2841    2851
          2872    2892    2934    2942    2999    3006    3037    3047    3056    3104    3117    3150    3165    3275
          3307    3337    3369    3395    3401    3430    3436    3464    3480    3512    3519    3560    3601    3623
          3636    3677    3693    3706    3740    3772    3801    3831    3871    3906    3934    3963    3997    4027
          4063    4108    4173    4226    4280    4334    4396
ACCMP2    1083#   1690    1718    1743    1770    1810    2048    2088    2127    2166    2200
ACL         55#
ACREG     1236#   4539    4540
ACSAVE     363     366     569     800     946     979    1030#
ADREG     1234#   3470    3515    3558    3736    3895    4101    4385    4392    4583    4584
AERRO     1071#   4887
APT8      1124    5139#   5143    5149    5151    5154
APT8A     1072#   1264
AUTO10    1116#   4951    4965    4981
BAKFLD    5056    5064#
BAKPNT    4967#   4982
BGN        453    1249#   5119
BYRETR     436     439#
C8BY1      146     148     161#    173
C8BY2      993     995    1005#
C8BY3      806     809     815#
C8BY4      450#    631
C8BY5      868     873#    881
C8CHAR     234     235     378     387     395     397     399     553     642     652     662     666     670     672
           839     841#
C8CKP      729     738     742#
C8CKPA      96#   5020
C8CKSW      74#   4493
C8CNTR      78#
C8CONT     886     898#
C8CRLF      86#
C8DO1      266#    287
C8DO10     969     990#
C8DO11     534     538#
C8DO2      765#    767
C8DO3      313     319#
C8DO4      730#    739
C8DO7      462     466#
C8ECHO      88#
C8ERR       92#   4532    4573    4588    4601    4614    4632    4643    4972    5114
C8GET      141     156     437     440     468     483     492     540     562#    570     599     811     815     833
           962     990     996    1003    1005
C8HANG     871     879#    885     891     897
C8INQU      94#   4434    5029
C8OCTA      84#
C8PASS      72#   4423
C8PAUS      98#
C8PRNT      80#
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C8RDPS     633#    678
C8RETD     536     541    544#
C8RETR     441     465    473#
C8SETD     532     537    539    543#
C8SETS     434     439    447    460     466     472#
C8SWIT      82#   1266   5095
C8SWST     450     491    499    629     632     680     682#
C8TMP1     727     730    734    737     741#
C8TTYI      76#
C8TYPE      90#   4842
CAF         56#    502
CCNTR1    5102    5123#
CHANG     1127    5094#
CHANGR    5104#   5112
CHKCLA     139     312    364    593     625     807     924#    929     931     959
CHNHLT    1059    5115#
CHNPOT    5100    5124#   5124
CKCOUT     147     163#    175    176
CLASIC    1074#   1265   4422   4433   4492   4531   4572   4587   4600   4613   4631   4642   4841   4971
          5019    5028   5094   5113
CLASIK     956    1014   1111   4461#  4463   4465   4471   4472
CLDR      1148    4628#  4630
CLKCNT    5164    5174   5202#
CLRALL    1092#   1335   1386   1399   1411   1434   1480   1496   1509   1541   1572   1597   1643   1660
          1676    1703   1768   1783   1820   1856   1869   1886   1888   1899   1902   1904   1919   1926
          1940    1956   1972   2001   2014   2028   2070   2109   2140   2176   2211   2232   2254   2271
          2287    2321   2342   2366   2391   2420   2441   2452   2490   2499   2510   2529   2558   2586
          2588    2599   2610   2628   2646   2661   2665   2679   2703   2726   2731   2739   2750   2762
          2769    2786   2798   2827   2839   2861   2864   2882   2889   2901   2907   2921   2924   2937
          2951    2956   2960   2963   2975   2978   3002   3020   3074   3088   3133   3185   3219   3257
          3288    3318   3349   3382   3415   3448   3468   3491   3531   3586   3607   3661   3723   3753
          3783    3812   3847   3892   3916   3944   3978   4007   4038   4082   4143   4195   4249   4302
          4365    4437   4450
CLRTRN    1015    1018   1020#
CMREG     1232#   4609   4610   4703   4704
CNTRLC     420     498#
CNTRLD     426     531#
CNTRLE     425     490#
CNTRLL     421     479#
CNTRLQ     422     433#
CNTRLR     423     446#
CNTRLS     424     460#   471
CNTVAL     168     180#
COMP1     1137    4511   4513   4538#  4544   4546
COMP2     1138    4551#  4563   4565
CONSOL      48#     67
CRERR     4558    4563#
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
DCLR      1062#   4629
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K0003   1160#  5063
K0004   1161#  2429   2476   2560   2806   2928   2983   5150
K0006   1162#  2680   2713
K0007   1163#  1269   2687   2704   4756   4760   4788
K0010   1164#  4180   4233   4287   4341   4405
K0017   1212#  2035   2074   2113   2144   4554   4744   4904
K0020   1165#  1526   1555   1986   2002   2015   2346   4668   4681   4701   4730   4742   4869
K0037   1166#  1518   1545
K0040   1167#  3272   3304   3334   3366   3392   3427   3461   3476   3504   3552   3598   3620   3633
        3674   3690   3703   3733   3766   3795   3825   3859   3900   3928   3957   3991   4021   4057
        4093   4098   4170   4223   4277   4331   4381   4389
K0070   1181#  4167   4220   4274   4328   4376   4387
K0077   1182#  4821
K0100   1168#  2463   2472   2772   2845   2866   2885   3031   3042   3053   3080   3098   3112   3134
        3145   3160   3193   3203   3229   3239   3665   4452   5082
K0177   1184#
K0200   1169#  1521   1550   3534   3536   4656   4864   5023
K0207   1170#  4897
K0212   1214#  4773
K0215   1213#  4771
K0240   4797   4827   4835#
K0260   1156#  4757   4761   4789
K0377   1183#
K0400   1171#  1273   1980   2009   2511   2536   2629   2634   2682   2706   2952   3224   4128   4525
        4696   4856
K1000   1172#  2043   2083   2122   2155   2188   2432   2492   2514   2531   2541   2563   2709   2808
        2930   2979   3754   3954   4018   4655   4663   4725   4736
K2000   1173#  1824   3926   3955   3989   4019
K2525   1185#  1438   1439   1601   1602   1707   1708   1787   1788   2110   2236   2237   3293   3294
        3354   3355   3789   3790   3820   3821   4206   4207   4313   4314
K3737   1187#  1942
K3740   4824   4836#
K3777   1174#  2335
K4000   1175#  2805   2927   2984   3260   3332   3390   3457   3550   3591   3667   3854   3988   4017
        4091   4168   4221   4275   4329   4377   4417   5141   5161   5182
K4100   1189#  4826
K5000   1191#  3299   3360   3425   3472   3499   3617
K5252   1186#  2071
K5403   5060   5067#
K5777   1192#  1844
K7000   1176#  3628   3698   5147
K7377   5145   5200#
K7600   1190#  4875
K7700   1179#  4510   4810
K7717   1188#  1958
K7740   1180#  1681   1709   1734   1758   1789
K7771   1194#  4952
K7774   1193#  4705
K7775   1178#  1767
K7776   1177#  2768   3453
K7777   1195#  1262   3326   3358   3421   3433   3495   3769   3828   4087   4271   4325   4415   4970
        5027
KCDF    1215#  1255   4145   4197   4251   4304   4356   5168   5190
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KRMF    1216#  5057
KTICK   1125   5159#  5163   5165   5175
LAS     1073#  1268   4429   4855   4890   4893   5022   5034   5097
LDAD    1147   4595#  4599
LDADD   1088#  1388   1516   1548   1580   1582   1606   1608   1625   1640   1642   1658   1688   1716
        1741   1765   1796   1823   1827   1842   1875   1924   1928   2198   2331   2611   2631   2647
        2662   2684   2890   2994   3539   3682
LDBUF   1087#  1808   1853   1883   2219   2240   2258   2275   2293   2327   2370   2396   2996   3732
        3765   3793   3824   3899   3920   3948   3982   4011   4044
LDCA    1146   4582#  4586
LDCM    1145   4608#  4612
LDCMD   1090#  1337   1375   1419   1421   1443   1445   1458   1462   1475   1479   1494   1686   1714
        1739   1763   1794   1806   1825   1845   1873   1907   1976   2005   2336   2512   2537   2571
        2630   2635   2683   2707   2869   2953   3135   3225   3261   3300   3333   3361   3391   3426
        3458   3473   3501   3551   3592   3619   3668   3725   3756   3785   3814   3855   3894   3927
        3956   3990   4020   4055   4092   4097   4169   4222   4276   4330   4378   4388
LDCUR   1091#  1364   1804   1847   1877   2333   2848   2908   2990   3270   3271   3302   3303   3328
        3330   3363   3365   3388   3423   3460   3497   3537   3593   3616   3632   3669   3689   3702
        3763   3794   3816   3856   3924   3952   3986   4015   4056   4085   4156   4209   4263   4317
        4380
LDMAN   1094#  1522   1527   1551   1556   1945   1961   1981   1985   1987   2010   2016   2044   2084
        2123   2156   2189   2347   2433   2464   2473   2493   2515   2532   2542   2564   2710   2809
        2931   2980   3032   3043   3054   3081   3099   3113   3146   3161   3194   3204   3230   3240
        3273   3305   3335   3367   3393   3428   3462   3477   3505   3553   3599   3621   3634   3675
        3691   3704   3734   3767   3796   3826   3860   3901   3929   3958   3992   4022   4058   4094
        4099   4171   4224   4278   4332   4382   4390   4453   4657   4664   4669   4680   4682   4697
        4702   4711   4726   4731   4737   4743   4865   4870   5007   5009   5083
LDMN    1150   4639#  4641
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        3222   3227   4694   4723   M734   4862   5075
M128    1205#  3138   3155   3683
M16     1203#  2037   2076   2115   2148   2181
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M300    1208#
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M48     1204#  2460
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MAIN1   1141   4709#  4713
MAIN2   1142   5005#  5011
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T86R4     3630#   3640
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T87R2     3669#   3681
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T87R4     3700#   3710
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T94E      3936#
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T97E      3999#
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          2353    2364    2367    2369    2375    2379    2389    2392    2401    2405    2461    2465    3025    3044
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TOFLD4    4252    4264    4270#   4273    4286    4288
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TYPE     1099#  4758  4762   4772   4774   4775   4790   4798   4819   4828   4898
UPAROW    449    482   490    500    531    550#   556
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UPPER    1128   5071#  5090   5101   5104   5110
UPPR1    5078#  5089
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WATMES    597    603#
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XC8PAS     73    137#  145    161    162
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XC8PSW     83    538   624#   627    681
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XERRO    1080   1135#
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XMAIN1   1077   1141#
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