IDENTIFICATION

PRODUCT CODE: MAINDEC-08-DHRKB-G-D

PRODUCT NAME: RK8E DRIVE CONTROL TEST

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TABLE OF CONTENTS

1. ABSTRACT
2. REQUIREMENTS
2.1 HARDWARE
2.2 STORAGE
3. PRELIMINARY PROGRAMS
4. SWITCH REGISTER SETTINGS
5. OPERATOR AND/OR PROGRAM ACTION
5.1 STANDARD TEST PROCEDURE
5.2 RK05 DRIVE CARTRIDGE MOUNTING PROCEDURE
5.3 DRIVE CONTROL TEST
5.4 CHECK WRITE PROTECT (MANUAL)
5.5 CHECK WRITE PROTECT (PROGRAM CONTROL)
5.6 MANUAL FUNCTIONS (FOR TROUBLE SHOOTING ONLY)
5.7 CHANGE PROGRAM IOT CODES
5.8 SEEK FROM SWITCHES (FOR RK05 ALIGNMENT)
6. ERRORS
6.1 USEFUL ERROR INFORMATION
6.2 NON-RECOVERABLE ERROR HALTS
6.3 RECOVERABLE ERROR HALT
6.4 ERROR TYPEOUTS
6.5 SCOPE LOOPS
6.6 TYPICAL ERROR TYPEOUTS
7. RESTRICTIONS
8. TROUBLE SHOOTING INFORMATION
9. PROGRAM DESCRIPTION
10. CONSOLE PACKAGE ADDENDUM
11. APT-8 HOOKS
12. PROGRAM LISTING

1. ABSTRACT

THE RK8E DRIVE CONTROL TEST IS DESIGNED FOR THE PURPOSE OF CHECKOUT OF THE RK8E DISK CONTROL LOGIC REQUIRING THE USE OF THE DISK DRIVE(S).

IN GENERAL, THE TEST IS AN INSTRUCTION TEST TO VERIFY BASIC OPERATION OF THE SEEK ONLY, RESTORE, WRITE DATA, READ DATA, WRITE ALL, AND READ ALL FUNCTIONS WITH ALL DRIVES ON THE CONTROL. SIMPLE COMPLEMENT DATA PATTERNS OF 2525 ↔ 5252, 5252 ↔ 2525, AND 0000 ↔ 7777 ARE USED TO VERIFY ADDRESSING AND DATA TRANSFERS TO AND FROM EACH INDIVIDUAL DRIVE.

A MANUAL INTERVENTION TEST IS ALSO INCLUDED (SEE SECTION 5.7), TO ALLOW THE OPERATOR TO SELECT DATA PATTERNS AND COMMAND FUNCTIONS VIA THE SWITCH REGISTER.

CONSIDERING NO ERROR CONDITIONS, THE DRIVES THAT HAVE RUN THIS TEST ARE FORMATTED, IF THE PROGRAM WAS STOPPED AT END OF PROGRAM PASS COMPLETION BY SWR9=1.

2. REQUIREMENTS

2.1 HARDWARE

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

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

C. ASR-33 TELETYPE OR EQUIVALENT

D. RK8E DISK CONTROL

E. RK05J OR RK05F DISK DRIVE(S)

F. UNFORMATTED OR FORMATTED 2200 BPI-1600 SECTOR PACK(S)

2.2 STORAGE

THE PROGRAM OCCUPIES OR UTILIZES LOCATIONS 0000 TO LOCATION 7577 OF FIELD 0 AND LOCATIONS 0 TO 1377 OF FIELD 1.

3. PRELIMINARY PROGRAMS

ALL BASIC AND EXTENDED MEMORY DIAGNOSTICS AND THE RK8E DISKLESS CONTROL TEST SHOULD BE RUN PRIOR TO THIS TEST.

4. SWITCH REGISTER SETTINGS

SWR0=1 SCOPE LOOP ON ERROR, AFTER AN ERROR HALT AT LOCATION "ERHLT9" RAISING THIS SWITCH AND PRESSING KEY CONTINUE WILL RESULT IN A SCOPE LOOP ON THE CURRENT FAILING TEST IF THE TEST CONTINUES TO FAIL. THE ERROR TYPEOUT AND THE ERROR HALT AT LOCATION "ERHLT9" WILL BE INHIBITED. THE TTY BELL WILL RING INDICATING AN ERROR IF SWR2=0.

SWR1=1 SCOPE LOOP ON CURRENT NON-FAILING TEST. RAISING THIS SWITCH CAUSES THE PROGRAM TO LOOP ON THE CURRENT TEST IF THE TEST IS WORKING CORRECTLY. MAY BE USED IN CONJUNCTION WITH SWR0=1 FOR INTERMITTENT PROBLEMS.

SWR2=1 INHIBIT BELL ON SCOPE LOOP. WHEN IN A SCOPE LOOP DUE TO SWR0=1, RAISING THIS SWITCH INHIBITS THE SCOPE LOOP ERROR BELL.

SWR4=1 STOP PROGRAM OR HALT SWITCH. RAISING THIS SWITCH WILL RESULT IN A PROGRAM STOP UPON COMPLETION OF THE NEXT NON-FAILING TEST. IF POSSIBLE, THIS SWITCH SHOULD ALWAYS BE USED TO STOP THE PROGRAM.

SWR5=1 INHIBIT THE RECOVERABLE ERROR HALT AFTER A RECOVERABLE ERROR TYPEOUT. AFTER AN ERROR HALT AT LOCATION "ERHLT9", RAISING THIS SWITCH AND PRESSING KEY CONTINUE WILL INHIBIT ALL FUTURE RECOVERABLE ERROR HALTS. IF SWR1=0 THE PROGRAM WILL PROCEDE TO NEXT TEST AFTER EACH ERROR TYPEOUT. IF SWR1=1 THE PROGRAM WILL PROCEDE BACK TO THE SAME OR CURRENT FAILING TEST.

SWR6=1 RECALIBRATE IN SCOPE LOOPS. RAISING THIS SWITCH WILL RESULT IN A DISK RECALIBRATION WHEN IN A SCOPE LOOP DUE TO SWR0=1, SWR1=1, OR WHEN SWR5=1.

SWR7=1 PROGRAM WAIT LOOP FOR DISK IN SCOPE LOOPS. RAISING THIS SWITCH WILL RESULT IN A PROGRAM WAIT LOOP FOR APROX. 500 MS WHEN IN A SCOPE LOOP DUE TO SWR0=1, SWR1=1, OR WHEN SWR5=1. IN SOME CASES, THIS MAY BE USEFUL FOR WAITING FOR THE DISK MOVEMENT TO COMPLETE IF CONTROL OR DRIVE ERRORS OCCUR, BEFORE REPEATING THE TEST AGAIN. IN SOME CASES, FAILURE TO WAIT, MAY CAUSE ADDITIONAL ERRORS.

SWR8=1 GET ALL REGISTERS AFTER THE RECOVERABLE ERROR HALT "ERHLT9", AFTER AN ERROR HALT AT LOCATION "ERHLT9", RAISING THIS SWITCH AND PRESSING KEY CONTINUE RESULTS IN AN ERROR TYPEOUT OF THE ACTUAL CONTENTS OF

THE CRC, STATUS, COMMAND, LOWER DATA, AND SURFACE AND SECTOR REGISTERS.

SWR9=1 PROGRAM HALT OR STOP AT END OF PROGRAM PASS COMPLETION.

SWR10-11 DISK DRIVE(S) TO TEST. WHEN RUNNING THE CHECK WRITE PROTECT TEST SECTION 5.4, THE CHECK WRITE PROTECT TEST SECTION 5.5, THE MANUAL FUNCTIONS SECTION 5.6, AND THE THE SEEK FROM SWITCHES SECTION 5.8, THESE SWITCHES INDICATE THE DRIVE NUMBER TO SELECT.

5. OPERATOR AND/OR PROGRAM ACTION

5.1 STANDARD TEST PROCEDURE

A. START AS SPECIFIED THROUGH OUT THIS DOCUMENTATION IS KEY CLEAR AND THEN KEY CONTINUE ON PDP8/E, PDP8/M, AND PDP8/F COMPUTERS.

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 5.8.

D. RUN THE DRIVE CONTROL TEST WITH ALL DRIVES ON THE DISK SYSTEM (SEE SECTION 5.3).

E. THE PROGRAM EXECUTION TIME IS APROX. 30 MINUTES PER DISK DRIVE.

F. RUN THE WRITE PROTECT CHECK TESTS ON ALL DRIVES ON THE DISK SYSTEM BY FOLLOWING THE PROCEDURES IN SECTIONS 5.5 AND 5.6.

G. MANUAL FUNCTIONS, SECTION 5.7, MAY BE USED FOR TROUBLE SHOOTING, IF DESIRED.

H. SEEK FROM SWITCHES, SECTION 5.9, MAY BE USED FOR TROUBLE SHOOTING, IF DESIRED.

I. IF THE PROGRAM WAS STOPPED BY SWR4=1 OR BY "ERHLT9", ADDRESS 0210 CAN BE USED TO RESTART THE PROGRAM AT THE LAST SUBTEST EXECUTED. (NOTE: WATCH YOUR SWITCH SETTINGS.)

5.2 RK05 DRIVE CARTRIDGE MOUNTING PROCEDURE

THE FOLLOWING IS THE CORRECT CARTRIDGE MOUNTING PROCEDURE FOR THE RK05 DISK DRIVE. ANY DEVIATION ENCOUNTERED DURING THIS PROCEDURE WILL BE CONSIDERED AS AN ERROR CONDITION.

A. SET SWITCH LABELED "RUN/LOAD" TO THE "LOAD" POSITION.

B. TURN AC POWER TO DISK DRIVE ON.

C. VERIFY THAT LIGHT LABELED "PWR" IS ON.

D. WAIT FOR LIGHT LABELED "LOAD" TO COME ON.

E. VERIFY THAT LIGHTS LABELED "RDY", "ON CYL", "FAULT", "WT", AND "RD" ARE OFF.

F. OPEN ACCESS DOOR.

G. INSERT CARTRIDGE.

H. CLOSE ACCESS DOOR.

I. SET SWITCH LABELED "RUN/LOAD" TO THE "RUN" POSITION.

J. WAIT FOR THE LIGHTS LABELED "RDY" AND "ON CYL" TO COME ON.

K. TOGGLE SWITCH LABELED "WT PROT" AND VERIFY THAT THE LIGHT LABELED "WT PROT" GOES ON AND OFF.

L. TOGGLE SWITCH LABELED "WT PROT" UNTIL THE LIGHT LABELED "WT PROT" GOES OFF.

M. VERIFY THAT LIGHTS LABELED "FAULT", "WT", "RD", AND "LOAD" ARE OFF.

5.3 DRIVE CONTROL TEST

A. MAKE READY THE DISK DRIVE TO BE TESTED USING THE RK05 DRIVE CARTRIDGE MOUNTING PROCEDURE SECTION 5.2.

B. SET SWITCH LABELED "RUN/LOAD" TO THE "LOAD" POSITION ON ALL DRIVES NOT BEING TESTED.

C. VERIFY THAT AC POWER TO ALL DRIVES IS ON.

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

E. SET THE SWITCH REGISTER TO 0000.

F. PRESS CLEAR AND THEN CONTINUE.

G. THE TTY WILL RESPOND WITH THE FOLLOWING MESSAGE QUESTIONING THE OPERATOR ON THE DISK DRIVES TO TEST. THE RESPONSE SHOULD BE Y FOR YES OR N FOR NO:

```
RK8E DRIVE CONTROL TEST
TEST (Y=YES OR N=NO)?
DISK0? DISK1? DISK2? DISK3?
```

AFTER THE QUESTIONS ARE ANSWERED THE PROGRAM WILL BEGIN TESTING THE DRIVES SPECIFIED.

H. THE PROGRAM SHOULD PRINT THE FOLLOWING MESSAGE AT THE COMPLETION OF EACH PASS.

"RK8E DRIVE CONTROL TEST PASS COMPLETE"

I. ALWAYS USE SWR4=1 FOR STOPPING THE TEST.

J. IF IT IS DESIRED TO HAVE THE PROGRAM HALT OR STOP AT END OF PROGRAM PASS COMPLETION SET SWR9=1.

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

L. FOR THE ABSOLUE LOCATIONS OF ALL KNOWN HALTS ACCESS PAGE 1-22 OF THE PROGRAM LISTING.

5.4 CHECK WRITE PROTECT (MANUAL)

A. RUN THE DRIVE CONTROL TEST WITH ALL DRIVES ON THE CONTROL BEFORE RUNNING THIS "WRITE PROTECT" PORTION.

B. MAKE READY A DRIVE TO TEST USING THE RK05 DRIVE CARTRIDGE MOUNTING PROCEDURE SECTION 5.2.

C. SET SWITCH LABELED "RUN/LOAD" TO THE "LOAD" POSITION ON ALL OTHER DRIVES.

D. VERIFY THAT AC POWER TO ALL DRIVES IS ON.

E. VERIFY THAT THE LIGHT LABELED "WT PROT" IS "OFF" ON THE CURRENT DRIVE UNDER TEST.

F. SET THE SWITCH REGISTER TO 0206 AND PRESS LOAD ADDRESS.

G. SET THE SWITCH REGISTER TO 0000.

H. SET SWR10-11 TO THE CURRENT DRIVE NUMBER UNDER TEST.

I. PRESS START AND THE COMPUTER SHOULD HALT AT LOCATION "MPHLT1".

J. PRESS SWITCH LABELED "WT PROT" TO TURN "WRITE PROTECT" AND THE LIGHT LABELED "WT PROT" ON.

K. PRESS KEY CONTINUE AND THE COMPUTER SHOULD HALT AT LOCATION "MPHLT2" INDICATING A SUCCESSFUL TEST.

M. IF ANY ERRORS ARE ENCOUNTERED OR IF IT IS DESIRED TO TRY THE TEST AGAIN, REPEAT STEPS A-K.

N. FOR POSSIBLE ERROR TYPEOUTS ACCESS SECTION 6 IN THIS DOCUMENTATION. (NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS TEST.)

O. THE "CHECK WRITE PROTECT PROCEDURE" AS DESCRIBED ABOVE SHOULD BE RUN TWICE WITH ALL DRIVES ON THE CONTROL.

5.5 CHECK WRITE PROTECT (PROGRAM CONTROL)

A. RUN THE DRIVE CONTROL TEST WITH ALL DRIVES ON THE CONTROL BEFORE RUNNING THIS "WRITE PROTECT" PORTION.

B. MAKE READY A DRIVE TO TEST USING THE RK05 DRIVE CARTRIDGE MOUNTING PROCEDURE SECTION 5.2.

C. SET SWITCH LABELED "RUN/LOAD" TO THE "LOAD" POSITION ON ALL OTHER DRIVES.

D. VERIFY THAT AC POWER TO ALL DRIVES IS ON.

E. VERIFY THAT THE LIGHT LABELED "WT PROT" IS "OFF" ON THE CURRENT DRIVE UNDER TEST.

F. SET THE SWITCH REGISTER TO 0207 AND PRESS LOAD ADDRESS.

G. SET THE SWITCH REGISTER TO 0000.

H. SET SWR10-11 TO THE CURRENT DRIVE NUMBER UNDER TEST.

I. PRESS START AND THE COMPUTER SHOULD HALT AT LOCATION "APHLT1" INDICATING A SUCCESSFUL TEST.

J. VERIFY THAT THE WRITE PROTECT LIGHT LABELED "WT PROT" IS ON, ON THE CURRENT DRIVE.

L. IF ANY ERRORS ARE ENCOUNTERED OR IF IT IS DESIRED TO TRY THE TEST AGAIN, REPEAT STEPS A-J.

M. FOR POSSIBLE ERROR TYPEOUTS ACCESS SECTION 6 IN THIS DOCUMENTATION. (NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS TEST.)

N. THE "CHECK WRITE PROTECT PROCEDURE" AS DESCRIBED ABOVE SHOULD BE RUN TWICE WITH ALL DRIVES ON THE CONTROL.

5.6 MANUAL FUNCTIONS (FOR TROUBLE SHOOTING ONLY)

THE MANUAL FUNCTIONS ENABLES THE OPERATOR TO SELECT FUNCTIONS, DISK ADDRESS, AND DATA PATTERNS VIA THE SWITCH REGISTER. THIS IS NOT PART OF THE STANDARD TEST PROCEDURE AND SHOULD ONLY BE USED FOR TROUBLE SHOOTING IF DESIRED.

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

B. SET THE SWITCH REGISTER TO THE DESIRED FUNCTION TO BE LOADED INTO THE COMMAND REGISTER. (SEE SECTION 8.) (NOTE: THE EXTENDED MEMORY BITS 6-8, THE ENABLE INTERRUPT BIT 3, AND THE ENABLE SET DONE BIT ON SEEK COMPLETE BIT 4, ARE NOT RECOGNIZED. THIS MANUAL PORTION IS ONLY FLAG DRIVEN AND ALL DATA TRANSFERS ARE TO THE CURRENT FIELD.)

C. PRESS START AND THE COMPUTER SHOULD HALT.

D. SET THE SWITCH REGISTER TO THE DESIRED DISK ADDRESS TO BE LOADED INTO THE CYLINDER, SURFACE, AND SECTOR REGISTER. (SEE SECTION 8.)

E. PRESS START AND THE COMPUTER SHOULD HALT.

F. SET THE SWITCH REGISTER TO THE COMPLEMENT TYPE DATA PATTERN TO BE WRITTEN ON OR READ FROM THE DISK DEPENDING ON THE FUNCTION PREVIOUSLY LOADED INTO THE COMMAND REGISTER. (NOTE: A SETTING OF 0000 WILL RESULTS IN A COMPLEMENT DATA PATTERN OF 0000 + 7777, A SETTING OF 2525 WILL RESULT IN A COMPLEMENT DATA PATTERN OF 2525 + 5252.)

G. PRESS START AND THE COMPUTER SHOULD HALT.

H. SET THE SWITCH REGISTER TO 0000, PRESS START, AND THE FUNCTION SELECTED WILL BE EXECUTED.

I. IF POSSIBLE, ALWAYS USE SWR4=1 FOR STOPPING PROGRAM.

J. IN CASE OF ERRORS OR DESIRED LOOPS, USE THE REGULAR SWITCH REGISTER SETTINGS (SECTION 4.)

K. IF A WRITE ALL OR THE WRITE DATA FUNCTION WAS SELECTED, THE DATA PATTERN SELECTED WILL BE WRITTEN ON THE DISK ADDRESS SELECTED.

L. IF A READ ALL OR READ DATA FUNCTION WAS SELECTED, THE DATA WILL BE READ OFF THE DISK ADDRESS SELECTED AND COMPARED AGAINST THE DATA PATTERN SELECTED.

M. IF A SEEK ONLY FUNCTION WAS SELECTED, A SEEK ONLY WILL BE EXECUTED TO THE DISK ADDRESS SELECTED.

N. IF A WRITE LOCK FUNCTION WAS THE SELECTED THE DISK DRIVE SELECTED WILL BE WRITE LOCKED.

5.7 CHANGE PROGRAM DEVICE IOT CODES

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

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 AT THIS TIME WILL RESULT IN A START OF THE PROGRAM AT LOCATION 0200 (SEE SECTIONS 5.3 OR 5.4 FOR OPERATION INSTRUCTIONS).

5.8 SEEK FROM SWITCHES (FOR RK05 ALIGNMENT)

THE FOLLOWING SUBTEST WAS REQUESTED BY FIELD SERVICE TO AID IN RK05 ALIGNMENT. THE PROGRAM WILL SEEK ONLY BETWEEN ADDRESSES FROM SWITCH REGISTER.

A. SET THE SWITCH REGISTER TO 4000 AND PRESS LOAD ADDRESS.

B. SET THE SWITCH REGISTER TO 0000.

C. SET SWR9-11 TO THE DRIVE NUMBER AND EXTENDED CYLINDER BIT OF THE FIRST SEEK ADDRESS (BITS 9-10 TO DRIVE NUMBER AND BIT 11 TO EXTENDED CYLINDER).

D. SET SWR0-7 TO THE REMAINDER OF THE CYLINDER BITS AND THE SURFACE OF THE FIRST SEEK ADDRESS.

E. PRESS START AND THE COMPUTER SHOULD HALT.

F. SET THE SWITCH REGISTER TO 0000.

G. SET SWR9-11 TO THE DRIVE NUMBER AND EXTENDED CYLINDER BIT OF THE SECOND SEEK ADDRESS (BITS 9-10 TO THE DRIVE NUMBER AND BIT 11 TO THE EXTENDED CYLINDER).

H. SET SWR0-7 TO THE CYLINDER BITS AND SURFACE OF THE SECOND SEEK ADDRESS.

I. PRESS START AND THE DRIVE SHOULD SEEK BETWEEN THE ADDRESSES SPECIFIED BY THE SWITCH REGISTER.

J. THE SECOND SEEK ADDRESS CAN BE CHANGED AT ANY TIME BY SIMPLY CHANGING THE SWITCH REGISTER TO SELECT A NEW ADDRESS.

K. CARE SHOULD BE TAKEN TO NOT SELECT A NON-EXISTENT DISK DRIVE OR NON-EXISTENT CYLINDER.

L. NO ERROR CHECKING IS DONE DURING THIS SUBTEST.

M. IT IS POSSIBLE TO SEEK TO A CONSTANT ADDRESS BY MAKING THE FIRST AND SECOND ADDRESS EQUAL.

6. ERRORS

6.1 USEFUL ERROR INFORMATION

IN THE DRIVE CONTROL TEST, THE DISK SKIP IOT IS FIRST CHECKED AND TIMED-OUT USING AN "ISZ" TIME LOOP. IF THE SKIP IOT FAILS, AN ERROR TYPEOUT AND ERROR HALT SHOULD OCCUR. ONCE PROVEN TO WORK, THE IOT IS NOT TIMED-OUT. THE PROGRAM MAY HANG-UP IF THE SKIP IOT FAILS INTERMITTENTLY. (NOTE: THE MANUAL FUNCTIONS, SECTION 5.7, ALWAYS TIMES OUT THE SKIP IOT TO PREVENT HANGING UP.

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.

THE ABSOLUTE LOCATION OF ALL KNOWN HALTS CAN BE FOUND
A COMPLEMENT TYPE DATA PATTERN (I.E. 2525 + 5252,
5252 + 2525, OR 0000 + 7777) IS ALWAYS USED IN THIS
TEST WHEN DATA IS WRITTEN AND THEN CHECKED. IN SOME
CASES, ALL 0'S IS USED IN CHECKING CRC AND STATUS
REGISTERS, HOWEVER, THE DATA IS NOT CHECKED.

THE PROGRAM USES THE SAME PROGRAM BUFFER FOR WRITING
AND READING DATA. THE BUFFER IS SETUP BEFORE A WRITE
FUNCTION AND CLEARED BEFORE THE DATA IS READ AND
CHECKED. THE BUFFER OCCUPIES THE CURRENT FIELD FROM
THE END OF THE PROGRAM +400 LOCATIONS.

BEFORE DATA IS WRITTEN ON THE DISK, THE FIRST TWO WORDS
OF THE BUFFER ARE SET TO THE ABSOLUTE DISK ADDRESS. THE
FIRST WORD OF THE BUFFER (BITS 9-11) IS SET TO THE DRIVE
NUMBER AND THE EXTENDED CYLINDER BIT, THE SECOND WORD TO
THE 12 REMAINDER CYLINDER, SURFACE, AND SECTOR BITS. ALSO
THE BUFFER +1 IS SET TO THE DATA WORD OF "1234". AFTER
THE WRITE THEN READ, THE WORDS ARE CHECKED FOR CORRECT
VALUES, INDICATING THAT THE INFORMATION WAS WRITTEN ON
AND READ FROM THE SAME PLACE ON THE DISK AND THAT THE DATA
BREAK STOPPED CORRECTLY. WHEN AN ERROR EXISTS WITH THE
WORDS AS STATED PREVIOUS, THE OPERATOR SHOULD REALIZE
THAT THE PROBLEM IS MOST LIKELY ADDRESSING AND SOMETIMES
DATA ERRORS.

WHEN DATA IS BEING READ OFF THE DISK AND A CRC ERROR
OCCURES THE PROGRAM WILL THEN CHECK THE DATA READ FOR DATA
ERRORS. IF NO DATA ERRORS EXIST THE CRC ERROR FOUND WILL BE
REPORTED AS A STATUS REGISTER ERROR. IF DATA ERRORS ARE
FOUND THE DATA ERRORS WILL BE REPORTED AS DISK DATA
ERRORS AND THE CRC STATUS ERROR INDICATED IN THE "ST:".
(SEE SECTION 6.4 FOR ERROR HEADERS AND TYPEOUTS).

THE ABSOLUTE ADDRESS LOCATIONS OF THE DATA BUFFER

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
LOCATION "ERHLT9".

ERHLT9 RECOVERABLE ERROR HALT. READ INFORMATION
TYPEOUT ON TTY AND ACCESS PROGRAM
LISTING AND DOCUMENTATION.

6.4 ERROR TYPEOUTS

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

POSSIBLE "ERROR HEADERS" ARE AS FOLLOWS.

STATUS REGISTER ERROR
COMMAND REGISTER ERROR
DISK ADDRESS REGISTER ERROR
DISK DATA 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 OR
THE CYLINDER, SURFACE, AND SECTOR BITS.

CA: CONTENTS OF THE INITIAL CURRENT ADDRESS

AD: BREAK ADDRESS OF DATA BREAK IN COMPUTER.

DT: DATA FOUND DURING DATA BREAK.

THE "GD:" INFORMATION TYPED OUT POINTS TO THE DATA
EXPECTED IN THE REGISTER 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 VALUE LOADED INTO THAT REGISTER PRIOR TO THE FAILURE.

TO TYPE THE ACTUAL CONTENTS OF THE REGISTERS, SET SWR8=1 AFTER AN ERROR HALT AT LOCATION "ERHLT9", AND PRESS KEY CONTINUE. THE CONTENTS OF THE CRC, STATUS, LOWER DATA, COMMAND, AND SURFACE AND SECTOR REGISTERS WILL THEN BE TYPED.

6.5 SCOPE LOOPS

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

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

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

SWR1=1 MAY HAVE TO BE USED IN SCOPE LOOPS IN CONJUNCTION WITH SWR0=1, IF THE CURRENT TEST IS WORKING INTERMITTENTLY.

6.6 TYPICAL ERROR TYPEOUTS

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:0267
```

THE FOLLOWING IS AN EXAMPLE OF AN "ERROR HEADER" AND ERROR TYPEOUT THAT COULD HAVE OCCURRED ON A DATA BREAK ERROR. (NOTE CRC IN THE STATUS INDICATOR "ST:")

```
DISK DATA ERROR
PC:1161 GD:5252 ST:4010 CM:1000 DA:0001 CA:7000 AD:7010 DT:5250
```

THE FOLLOWING IS A TYPICAL ERROR THAT COULD HAVE OCCURED WHILE READING THE CRC REGISTER.

```
CRC REGISTER ERROR
PC:2246 GD:116047 CR:116046 CM:1000 DA:7777
```

THE FOLLOWING IS AM EXAMPLE OF AN ERROR TYPEOUT THAT COULD HAVE OCCURRED IF THE STATUS REGISTER FAILED. (NOTE: IN THIS CASE THE OPERATOR INDICATED TO THE PROGRAM TO TYPE THE ACTUAL CONTENTS OF THE REGISTERS BY SETTING SWR8=1

AFTER THE ERROR HALT AT LOCATION "ERHLT9" AND PRESSING
KEY CONTINUE).

STATUS REGISTER ERROR
PC:1100 GD:4000 ST:2000 CM:5002 DA:0000
CR:000000 ST:2000 DB:0000 CM:5002 DA:0000

7. RESTRICTIONS

ALL DISK DRIVES SHOULD BE SET TO THE LOAD POSITION
THAT ARE NOT BEING TESTED.

ALL ERRORS SHOULD BE CORRECTED BEFORE PROCEDING ON IN
THE PROGRAM.

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 CLEARS 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 DRIVE CONTROL TEST VERIFIES BASIC FUNCTIONAL OPERATION OF THE RK8E CONTROL LOGIC WITH THE RK05 DISK DRIVE(S). THE PROGRAM IS COMPRISED OF MANY INDIVIDUAL SUBTESTS WHICH ARE AUTOMATICALLY RUN IN A SEQUENCIAL FLOW. ABOVE EACH SUBTEST, IN THE LISTING, IS A BRIEF DESCRIPTION OF EACH SUBTEST.

WHEN SINGLE DRIVE TESTING, ONE PASS THROUGH ALL SUBTESTS (TST0-TST45) RESULTS IN A PASS COMPLETION. WHEN MULTI-DRIVE TESTING, ONE PASS THROUGH ALL SUBTESTS(TST0-TST45) ON ALL DRIVES AND THE RUNNING OF THE OVERLAP SEEK TESTS(OVRLAP, GRONK, AND OVRRED) RESULTS IN A PASS COMPLETION.

CONSIDERING NO ERROR CONDITIONS, THE DRIVES THAT HAVE RUN THIS TEST ARE FORMATTED, IF THE PROGRAM WAS STOPPED AT END OF PROGRAM PASS COMPLETION BY SWR9=1.

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 10.6.

CONTROL E

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

CONTROL L

THIS WILL SWITCH THE TERMINAL MESSAGES
FROM THE DISPLAY TO A LINE PRINTER.
TO RESTORE THE MESSAGES ON THE TERMINAL
CONTROL L MUST BE TYPED AGAIN.IF
NO PRINTER IS 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 O

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

```
**************************************************************
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 FIELD 1 LOCATION 0246.

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

```
**************************************************************

NAME PASS 0001

**************************************************************
```

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

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 INTERFACES ARE:

1. TIMING INTERFACE

2. ERROR INTERFACE

EACH WILL BE EXLPAINED IN DETAIL.

11.2 SETUP

ONLY HARDWARE CONFIGURATION WORD 2, ADDRESS 22, NEED BE ESTABLISHED. THE FOLLOWING INFORMATION MUST BE INDICATED:
1. SINGLE OR MULTIPLE DRIVE TESTING.
2. DRIVE OR DRIVES TO BE TESTED.
3. DIAGNOSTIC RUNNING UNDER APT-8.

IF SINGLE DRIVE TESTING BIT 5 OF ADDRESS 22 MUST BE SET TO A ONE (1) WITH BITS 6-11 CONTAINING THE DRIVE TO BE TESTED. IF MULTIPLE DRIVES ARE TO BE DONE BIT MUST MUST BE SET TO A ZERO (0) AND BIT 6-11 CONTAINING THE HIGHEST NUMBER DRIVE TO BE TESTED. WHEN MULTIPLE DRIVE TESTING ONLY A SPECIFIC NUMBER OF DRIVES CAN BE INDICATED. THE PROGRAM ASSUMES THE DRIVES ARE TO BE DONE BEGINNING WITH DRIVE ZERO (0) AND FINISHING WITH THE HIGHEST DRIVE INDICATED. IF MULTIPLE DRIVES OTHER THAN CONSECUTIVELY NUMBERED DRIVES BEGINNING WITH DRIVE ZERO (0) ARE TO BE DONE, THEY MUST BE DONE AS SINGLE DRIVES AND TESTED INDEPENDANTLY.

THE PROGRAM ALLOWS ONLY DRIVES ZERO (0) THROUGH THREE (3) TO BE TESTED AT THIS TIME.

BIT ZERO OF ADDRESS 22 MUST BE SET TO A ONE TO INDICATE THAT THE PROGRAM WILL RUN UNDER APT-8.

NOTE: IT SHOULD BE NOTED AT THIS TIME THAT WHILE RUNNING UNDER APT-8 THE HARDWARE SWITCH REGISTER IS INOPERATIVE. ONLY THE HALT AND SINGLE STEP SWITCH WILL EFFECT THE PROGRAM RUN.

11.3 APT-8 INTERFACES

11.3.1. TIMING

APT-8 IS NOTIFIED OF PROGRAM RUN BETWEEN .2 SEC
AND 2.0 SEC ON A 1.2 MICROSECOND MEMORY CYCLE. THIS WILL ALLOW
THE DIAGNOSTIC TO RUN WITHOUT CAUSING AN APT-8 TIMEOUT ERROR
IF THE DIAGNOSTIC IS TO BE RUN ON ON THE SLOWER MOS MEMORY.

11.3.2. ERRORS

ONLY THE ERROR PC IS REPORTED TO APT-8
SYSTEM. ERRORS WHICH CAUSE A PROGRAMMED HALT CAUSE A TIMEOUT
ERROR. IF A PROGRAMMED HALT SHOULD OCCUR, THE ERROR PC WILL
APPEAR IN THE AC ON THE DEVICE UNDER TEST. PROGRAMMED HALTS
ARE EXPLAINED EARLIER IN THIS DOCUMENT.

11.4. LOADING PRECAUTIONS

THIS PROGRAM SHOULD BE LOADED IN SCRIPT MODE INDICATING
TO APT THAT CROR CHECK SUMS ARE TO BE IGNORED.

```
                        /
                        /RKAE DRIVE CONTROL TEST
                        /
                        /MAINDEC-08-DHRKB-G-L
                        /
                        /COPYRIGHT (C) 1972, 1976 DIGITAL EQUIP. CORP.
                        /
                        /MAYNARD, MASS. 01754
                        /
                0001            FIELD   1
                        /
                        /CONSOL SRC =V2-R0-CONSOLE PACKAGE
                        /
                        /THE PROGRAM SHOULD CHECK FOR A CONTROL CHARACTER FROM THE TERMINAL
                        /EVERY FIVE(5) SECONDS OR SOONER.

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

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

                        /CASTRT   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 CASTRT SO PUT THE LABEL C8STRT
                        /WHERE YOU WANT TO RESTART THE PROGRAM.


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

                        /SETUP2 IN XCAPASS   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            PST8=   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
```



```
        0021    4000    F1OP1,  4000
        0022    0000    F1OP2,  0
                        /
                        IFDEF CONSOL <


                0024    *24

                4424            C8PASS= JMS I   .
        0024    0200                    XCAPAS          /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          /CA PRINT A BUFFER
                4431            C8SWIT= JMS I   .
        0031    0656                    XCAPSW          /SET UP PSEUDO SW. REG
                4432            C8OCTA= JMS I   .
        0032    1000                    XC8OCT          /CONVERT TO ASCII AND PRINT
                4433            CACRLF= JMS I   .
        0033    1023                    XCACRL          /DO A CARRIGE RETUR+LINE FEED
                4434            C8ECHO= JMS I   .
        0034    1063                    XC8ECH          /CHECK INPUT CHAR
                4435            CATYPE= JMS I   .
        0035    1077                    XC8TYP          /C8 PRINT ONE CHAR
                4436            C8ERR=  JMS I   .
        0036    1237                    XC8ERR          /C8 ERROR  HANDLER
                4437            C8INQU= JMS I   .
        0037    0635                    XC8INQ          /LOOK FOR OPERATOR INTERVENTION
                4440            C8CKPA= JMS I   .
        0040    1041                    XC8CKP          /CHECK IF CONTROL CHAR
                4441            C8PAUS= JMS I   .
        0041    0337                    XCAPAU          /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 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     XCAPNT          /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 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     XCAPAS          /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 CAPASS 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    "DHRKRF  PASS "
0254  2213
0255  0206
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.

                                /C8CKSW=        JMS XC8SW
                                /EX.    JMS     XCASW           /READ THE C8SWIT REGISTER
                                                                /RETURN WITH THE CONTENTS OF SWITCH REGISTER

                        /RETURN TO NEXT LOCATION 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 A 8 BIT ASCI.
                        /       C8TTYI= JMS XCATTY
```

```
                        /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            /AND 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     C8001,  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     C8001           /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     C8003           /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     C8003,  JMP I   XC8PAU          /GO TO HALT OR RETURN TO NEXT LOCATION


0357  7402
0360  0240
0361  0100
0362  3740
0363  0077
0364  1077
0365  7700
0366  1075
```

```
                0400    PAGE
                        /**********************************************************************

                        /C8CNTR
                        /THIS ROUTINE WILL CHECK FOR THE PRESENCE OF CONTROL CHARACTERS
                        /IT WILL CHECK FOR THE FOLLOWING CHAR C=R=Q=L=S
                        /       C8CNTR= JMS XC8CNT

                        /EX.    JMS     XC8CNTR                 /CHECK FOR CONTROL CHARACTER
                        /       JMP     ANYTHING                /LOC FOLLOWING CALL IS FOR CONTINUING THE PROGRAM
                        /       JMP     ANYTHING                /LOC. IS FOR RETURN IF INMODE SET AND NOT CNTRL CHAR
                        /

                        /RETURN IS TO CALL PLUS ONE IF CONTINUE
                        /RETURN IS TO CALL PLUS TWO IF INMODE SET AND NOT CONTROL CHAR
                        /RETURN IS TO CALL PLUS TWO IF INMODE IS NOT SET AND NO
                        /CONTROL CHAR ..THIS WILL PRINT THE CHARACTER AND A ?
                        /CLEAR THE AC AND RETURN CALL+2.

                        /CALLS USED ARE-CHKCLA-XC8TYPE-XC8CRLF-C8GET-UPAROW-XC8TYI-XC8PSW-
                        /
                        /
                        /
0400    0200    XC8CNT, 0
0401    3777*           DCA     AC8AVE          /SAVE THE AC
0402    4776*           JMS     CHKCLA          /CHECK LOC.22 BIT3 FOR CONSOLE BIT
0403    5206            JMP     .+3             /ON ACTIVE CONSOLE
0404    1777*           TAD     AC8AVE          /DEACTIVE CONSOLEGET AC FOR RETURN
0405    5600            JMP I   XC8CNT          /EXIT NOT ON ACTIVE CONSOLE
0406    6004            GTF
0407    3775*           DCA     FL8AVE
0410    7501            MQA
0411    3774*           DCA     MQ8AVE          /SAVE THE MQ
0412    3255            DCA     INDEXA          /SET DISPLACEMENT INTO TABLE B
0413    1257            TAD     XTABLA          /GET ADDRS OF TABLE A
0414    3256            DCA     GETDAT          /CONTAINS POINTER TO CONTROL CHAR
0415    1656    REDOA,  TAD I   GETDAT          /GET CONTROL CHAR FROM TABLE
0416    7450            SNA                     /CHECK FOR A 0 END OF TABLE
0417    5226            JMP     DONEA           /END OF TABLE NO CONTROL CHAR
0420    1773*           TAD     C8CHAR          /COMPARE CHAR TO CONTROL CHAR
0421    7650            SNA CLA                 /0 IF MATCH
0422    5243            JMP     GOITA           /MATCH
0423    2255            ISZ     INDEXA          /NO MATCH NOT END OF TABLE REDO
0424    2256            ISZ     GETDAT          /BUMP INDEX FOR EXIT WHEN CONTROL FOUND
0425    5215            JMP     REDOA           /BUMP GETDAT FOR COMPARE OF NEXT CNTRL CHAR.
```



```
0426    1772*   DONEA,  TAD     INMODE          /CHECK IF PROGRAM EXPECTS CHAR
0427    7640            SZA CLA                 /1=CHAR EXPECTED  0= NO CHAR EXPECTED
0430    5240            JMP     EXITA           /CHAR EXPECTED
0431    1773*           TAD     C8CHAR          /GET CHAR =NOT CONTROL+NOT EXPECTED
0432    4771*           JMS     XC8TYPE         /CAPRNT CHAR
0433    1370            TAD     (277            /GET CODE FOR "?"
0434    4771*           JMS     XC8TYPE
0435    4767*           JMS     XC8CRLF
0436    2200            ISZ     XC8CNT          /BUMP RETURN
0437    5600            JMP I   XC8CNT          /EXIT CALL+2
0440    2200    EXITA,  ISZ     XC8CNT          /BUMP RETURN FOR MAIN PROGRAM CHECK OF CHAR
0441    1773*           TAD     C8CHAR          /PUT CHAR IN AC.
0442    5600            JMP I   XC8CNT          /EXIT
0443    1773*   GOITA,  TAD     C8CHAR          /GET THE CONTENTS OF CHAR
0444    1366            TAD     (100            /ADD 100 TO FORM A GOOD ASCII CHARACTER
0445    3773*           DCA     C8CHAR          /RESTORE COFFECT CHAR
0446    1260            TAD     XTABLB          /GET START OF TABLE B
0447    1255            TAD     INDEXA          /GET NOW FAR INTO TABLE
0450    3254            DCA     GOTOA           /STORE IT
0451    1654            TAD I   GOTOA           /GET THE ROUTINE STARTTING ADDRESS
0452    3254            DCA     GOTOA           /STORE IT IN HERE
0453    5654            JMP I   GOTOA           /GOTO CONTROL CHAR ROUTINE
0454    0000    GOTOA,  0000                    /ADD OF CNTRL ROUTINE TO EXECUTE
0455    0000    INDEXA, 0000                    /DISPLACEMENT INTO CNTRL TABLE
0456    0000    GETDAT, 0000                    /LOCATION OF ADDRS OF CONTROL CHAR.
0457    0461    XTABLA, TABLA                   /ADDRS OF TABLEA
0460    0471    XTABLB, TABLB                   /ADDRS OF TABLEB
0461    7575    TABLA,  7575                    /CNTRL C BACK TO MONITOR 203
0462    7564            7564                    /CNTRL L SWITCH ERROR PRINTTING DEVICE 214
0463    7557            7557                    /CNTRL Q START DISPLAYING CHAR, AGAIN 221
0464    7556            7556                    /CNTRL R BACK TO BEGINNING OF PROGRAM 222
0465    7555            7555                    /CNTRL S STOP SENDING CHAR TO DISPLAY WAIT FOR CNTRL Q 223
0466    7573            7573                    /CNTRL E CONTINUE WITH PROGRAM 205
0467    7574            7574                    /CONTROL O CHANGE SWITCH REGISTER ON FLY
0470    0000            0000

0471    0551    TABLB,  CNTRLC
0472    0537            CNTRLL
0473    0500            CNTRLQ
0474    0511            CNTRLR
0475    0521            CNTRLS
0476    0545            CNTRLE
0477    0600            CNTRLO
                        /
                        /CONTROL Q
                        /START SENDING CHAR. TO THE DISPLAY
                        /THIS WILL RETURN CONTROL TO CALL THAT WAS SET BY
                        /THE CALL FOR CONTROL S.
                        /
0500    3772*   CNTRLQ, DCA     INMODE          /SET SOFT FLAG FOR UNEXPECTED CHAR
0501    1335            TAD     CASETS          /CHECK IF CONTROL S TYPED IN
0502    7640            SZA CLA
0503    5306            JMP     BYRETR          /CONTROL S TYPED IN
0504    4765*           JMS     C8GET           /NO CONTROL S TYPED PREVIOUSLY
0505    5600            JMP I   XC8CNTR         /LEAVE VIA CNTR ENTRY ADDRESS
```

```
0506  3335  RYRETR, DCA   C8SETS          /CLEAR THE SOFT FLAG
0507  4765' JMS   C8GET                   /RESTORE REGISTERS
0510  5736  JMP I C8RETR                  /EXIT TO ADDRESS SET BY CONTROL S
                /
                /
                /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   INMODE
0514  4763' JMS   UPAROW                  /PRINT THE ^ AND C8CHAR
0515  3762' C8BY4, DCA   C8SWST           /CLEAR FLAG FOR CNTRL D OR R
0516  6203  CIF CDF 0
0517  5720  JMP I XDOSW                   /GO TO ADDRS OF C8SWIT
0520  0200  XDOSW, RGN                    /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   C8DO7                   /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  C8DO7, 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 CODE 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 ENTRY 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 ENTRY 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  1343
      0600    PAGE
                /
                        /CONTROL D
                        /CHANGE THE SWITCH REGISTER ANYTIME CNTRL D AND RETURN TO
                        /THE PROGRAM RUNNING.
0600  4215  CNTRLD, JMS   UPAROW
0601  1213  TAD   C8SETD                  /CHECK IF THE RETURN ADDRS IS SAFE
0602  7640  SZA CLA
0603  5207  JMP   C8DO11                  /DO NOT CHANGE THE RETURN ADDRS
0604  1777' TAD   XC8CNT                  /GET THE RETURN ADDRS AND SAVE IT
0605  3214  DCA   C8RETD                  /SAVE THE RETURN HERE
0606  2213  ISZ   C8SETD                  /INDICATE RETURN SAVED DONT DISTROY
0607  4256  C8DO11, JMS   XC8PSW          /GO CHANGE THE SWITCH REGISTER
0610  3213  DCA   C8SETD                  /CLEAR THE FLAG
0611  4224  JMS   C8GET                   /RESTORE THE AC MQ LINK ETC
0612  5614  JMP I C8RETD                  /RETURN TO THE PROGRAM
                /
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    "WAITING "
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=XC8OCTA=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 SR=
0667  0747          MESA
0670  1020          TAD     20              /GET CONTENTS OF SW
0671  4763'         JMS     XC8OCTA         /CONVERT IT TO ASCII
0672  1362          TAD     (40             /GET SPACE
0673  4775'         JMS     XC8TYPE
0674  2761'         ISZ     INMODE          /SET FLAG FOR CHAR EXECTED
0675  4760'         JMS     XC8ECHO         /LOOK FOR INPUT
0676  4315          JMS     TSTCHA          /NOT CONTROL TEST IT IS LEGAL
0677  1774'         TAD     C8CHAR          /STORE NEW CHAR IN SW REG
0700  3020          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 CR+GOOD CHAR
0705  1020          TAD     20              /GET C8SWIT REGISTER
0706  7106          RTL CLL                 /ROTATE IT LEFT 3 PLACES
0707  7004          RAL
0710  1774'         TAD     C8CHAR          /GET CHAR+ADD IT TO PREVIOUS CONTENTS
0711  3020          DCA     20              /SAVE NEW CONTENTS
```

```
                                                
```

```
0756  1227  1237            TAD     FILLER
0757  1230  7040            CMA
0758  1231  3240            DCA     FILCNT          /STORE FILLER IN HERE
0759  1232  1373            TAD     (212            /GET CODE FOR LF
0760  1233  4277  CRDO2,    JMS     XC8TYPE
0761  1234  2240            ISZ     FILCNT          /CHECK ON FILLER CHAR
0762  1235  5233            JMP     CRDO2           /TYPE A NON PRINTING CHAR
0763  1236  5623            JMP I   XCRCRL          /EXIT
0764  1237  0004  FILLER, 0004                     /FILLER SET FOR 4 CHAR
0765  1240  0000  FILCNT, 0                        /COUNTER FOR FILL
0766
0767
0768
0769                  //*************************************************************
0770                  /CRCKPA
0771                  /THIS ROUTINE WILL CHECK IF A CHARACTER WAS ENTERED FROM THE
0772                  /TERMINAL. IFTHE FLAG IS SET AND THE CONSOLE PACKAGE IS
0773                  /ACTIVE A CHECK IS MADE TO DETERMIND IF IT IS A CONTROL CHAR.
0774                  /IF IT WAS A CONTROL CHAR THEN ITS CONTROL FUNCTION IS PERFORMED.
0775                  /IF NOT A CONTROL CHARACTER OR A CONTROL E=0=L=0=IT WILL DO
0776                  /THE CONTROL FUNCTION AND RETURN TO CALL PLUS 2.
0777                  /A NON CONTROL CHARACTER WILL BE PRINTEDAND A "2" IT WILL RETURN TO
0778                  /CALL PLUS 2.
0779                  /IF NO FLAG IS SET OR THE CONSOL IS NOT ACTIVE THE RETURN IS TO
0780                  /CALL PLUS 1.
0781
0782
0783                  /       CRCKPA= JMS     XCRCKP
0784
0785
0786                  /EX.    JMS     XCRCKPA                 /CALL TO CHECK IF CONTROL CHAR SET
0787                  /       ANYTHING(SKIP)          /RETURN IF NOT FLAG OR NOT CONSOLE ACTIVE
0788                  /       ANYTHING(JMP EXIT SKIP CHAIN)   /RETURN IF NOT CONTROL OR CONTINUE CONTROL
0789
0790
0791                  /CALLS USED ARE -XC8TTYI-XCRCNTR-CRGET-
0792
0793
0794  1241  0000  XC8CKP, 0
0795  1242  3772'           DCA     ACSAVE          /SAVE THE AC
0796  1243  6704            GTF                     /SAVE THE FLAGS
0797  1244  3771'           DCA     FLSAVE          /SAVE THE FLAGS
0798  1245  7501            MQA                     /PUT MQ IN AC
0799  1246  3770'           DCA     MQSAVE          /SACE THE MQ
0800  1247  6231            KSF                     /CHECK THE KEYBOARD FLAG
0801  1250  5261            JMP     C8RY3           /EXIT TO CALL PLUS 1
0802  1251  4767'           JMS     CHKCLA          /CHECK LOC 22 BIT 3 CONSOLE BIT
0803  1252  7410            SKP                     /ACTIVE CONSOLE PACKAGE
0804  1253  5261            JMP     C8RY3           /EXIT TO CALL PLUS 1
0805  1254  4766'           JMS     XC8TTYI         /GET THE CHAR
0806  1255  4765'           JMS     C8GET           /GET THE FLAGS
0807  1256  4764'           JMS     XC8CNTR         /CHECK IF CONTROL  CHAR.
0808  1257  7000            NOP                     /RETURN IF A CONTINUE CHAR.
0809  1260  2241            ISZ     XC8CKP          /BUMP RETURN FOR CALL PLUS 2
0810  1261  4765'  C8RY3,   JMS     C8GET           /GET REGISTERS
```



```
0811  1262  5641            JMP I   XCRCKP          /SAY GOOD BY
0812
0813                  //*************************************************************
0814
0815                  /CRECHO
0816                  /THIS ROUTINE WILL LOOK FOR A CHAR FROM THE KEYBOARD.  STORE IT IN LOCATION CHAR
0817                  /CHECK IF IT WAS A CONTROL CHARACTER -SET INMODE -PRINT CHARACTER
0818
0819                  /       C8ECHO =        JMS XC8ECH
0820                  /EX.    JMS     XC8ECHO         /LOOK FOR CONSOL CHAR C8PRNT IT
0821                                                  /RETURN CALL PLUS ONE AC = CHAR CRTYPED IN
0822
0823                  /CALLS USED ARE -XC8TTYI-XCRCNTR-CRGET-XC8ECH-XCRTTYPE
0824
0825                  /
0826  1263  0000  XC8ECH, 0
0827  1264  4766'           JMS     XC8TTYI         /WAIT FOR CHAR FROM KEYBOARD
0828  1265  4765'           JMS     C8GET           /RESTORE THE REGISTERS
0829  1266  2276            ISZ     INMODE          /SET INMODE IDENTIFING THIS AS A EXPECTED CHAR
0830  1267  4764'           JMS     XCRCNTR         /GO CHECK IF IT IS A CONTROL CHAR
0831  1270  5663            JMP I   XCRECH          /WAS A CONTROL CHAR -CONTINUE RUNNING
0832  1271  4277            JMS     XC8TYPE         /NOT A CONTROL CHAR C8PRNT IT
0833  1272  3276            DCA     INMODE          /CLEAR FLAG THAT CHAR EXPECTED
0834  1273  1275            TAD     C8CHAR          /GET CHAR IN AC
0835  1274  5663            JMP I   XCRECH          /EXIT
0836  1275  0000  CRCHAR, 0
0837  1276  0000  INMODE, 0
0838
0839                  /*************************************************************
0840
0841                  /C8TYPE
0842                  /THIS ROUTINE WILL CRPRNT ON THE CONSOLE OR THE LPT WITH DEVICE CODE 6A.
0843                  /
0844                  /       CRTYPE= JMS XCRTYP
0845
0846                  /EX.    JMS     XC8TYPE         /CRPRNT THE CHAR IN THE AC.
0847                          /                       /RETURN CALL PLUS ONE AC =0000
0848                                                  /DO NOT CLEAR THE LINK IN THIS ROUTINE NEEDED RYC8OCT
0849
0850                  /CALLS USED ARE -C8HANG-XCRCNTR-XCRPNT-XC8CRLF-XCRINQU-
0851
0852
0853  1277  0000  XC8TYP, 0
0854  1100  3320            DCA     PNTRUE          /STORE CHAR
0855  1101  1321            TAD     TTYLPT          /CHECK 0=TTY 7777=LPT
0856  1102  7640            SZA CLA
0857  1103  5312            JMP     XDOLPT          /DO OUT PUT ON LPT
0858  1104  1320            TAD     PNTRUE
0859  1105  6046            TLS
0860  1106  6241            TSF
0861  1107  5306            JMP     .-1
0862  1110  6042            TCF
0863  1111  5316            JMP     CRRY5
0864  1112  1320  XDOLPT, TAD     PNTRUE          /GET CHAR
0865  1113  6666            PSTB    PCLF            /CRPRNT IT
```

```
 866  1114  4322          JMS     C8HANG          /CHECK KEYBOARD IF HUNG
 867  1115  6662          PCLF                    /CLEAR THE FLAG
 868  1116  7600  C8RY5,  7600                    /CLEAR THE AC
 869  1117  5677          JMP I   XCATYP          /EXIT
 870  1120  0000  PNTRUF, 0
 871  1121  0000  TTYLPT, 0
 872
 873
 874  1122  0000  C8HANG, 0
 875  1123  7200          CLA             /
 876  1124  1316          TAD     C8RY5           /GET CONSTANT 7600
 877  1125  3320          DCA     PNTRUF          /PNTRUF IS NOW A COUNTER
 878  1126  6661          PSKF                    /SKIP ON PRINTER DONE
 879  1127  7410          SKP                     /NOT DONE YET
 880  1130  5722          JMP .   C8HANG          /SAW FLAG DONE
 881  1131  2345          ISZ     C8CONT          /FIRST COUNTER FAST ONE
 882  1132  5326          JMP     .-4             /CHECK IF FLAG SET YET
 883  1133  2320          ISZ     PNTRUF          /MADE 4096 COUNTS ON FAST COUNTER
 884  1134  5341          JMP     .+3             /KEEP IT UP FOR 5 SEC
 885  1135  1760'         TAD     XC8CNTR         /GET THE RETURN ADDRESS IN CONTROL
 886  1136  3322          DCA     C8HANG          /SAVE IT IN HANG
 887  1137  3321          DCA     TTYLPT          /ALLOW PRINTING ON TTY
 888  1140  4763'         JMS     XC8PNT
 889  1141  1146          MESHANG                 /LPT ERROR
 890  1142  4223          JMS     XC8CRLF
 891  1143  4762'         JMS     XC8INQU         /PRINT WAITING
 892  1144  5722          JMP .   C8HANG          /CONTINUE TO SAVE ADDRESS
 893  1145  0000  C8CONT, 0                       /COUNTER FOR TIMER
 894  1146  1420  MESHANG,TEXT   "LPT ERROR"
       1147  2040
       1150  0522
       1151  2217
       1152  2240
 895
 896  1162  0635
 897  1163  0323
 898  1164  0020
 899  1165  0624
 900  1166  0272
 901  1167  1200
 902  1170  1346
 903  1171  1347
 904  1172  1345
 905  1173  0212
 906  1174  0215
 907  1175  0260
 908  1176  0207
 909  1177  7774
       1200          PAGE
 910                 /*********************************************************************
 911                 /*********************************************************************
 912
 913                 /THIS ROUTINE WILL CHECK LOCATION 22 THE HARD WARE CONFIG WORD.
 914                 /TO SEE IF THE CONSOLE BIT 3 (400) IS SET IF SET THEN RETURN
 915                 /TO CALL PLUS TWO FO A ACTIVE CONSOLE PACKAGE AC=0
```



```
 916                 /IF NOT SET THEN TO CALL PLUS ONE FOR A DEACTIVE CONSOLE PACKAGE.
 917
 918
 919  1200  0000  CHKCLA, 0
 920  1201  7200          CLA
 921  1202  1022          TAD     22              /GET THE CONTENTS OF LOCATION 22
 922  1203  0377          AND     (400            /MASK FOR BIT 3 (400
 923  1204  7650          SNA CLA                 /
 924  1205  2200          ISZ     CHKCLA          /ACTIVE CONSOLE PACKAGE RETURN
 925                                              /CALL PLUS ONE (1) FOR ACTIVE
 926  1206  5600          JMP I   CHKCLA          /DEACTIVE CONSOLE PACKAGE RETURN
 927                                              /CALL PLUS TWO (2)
 928
 929                 /C8ERR
 930                 /THIS ROUTINE WILL DETERMINE WHAT TO DO WHEN A CAERR IS ENCOUNTERED
 931                 /WILL CHECK IF CLASSIC SYSTEM, WILL CHECK CASWIT REGISTERS.
 932                 /       CAERR=  JMS XCAERR
 933                 /EX.    JMS     XC8ERR          /GO TO CAERR CALL IF NOT CONSOL
 934                 /                               /RETURN IS CALL PLUS ONE AC =0000
 935
 936                 /CALLS USED ARE -CHKCLA-XCACRLF-XCASW-XCRINQU-XCAPNT-XC80CTA-
 937
 938
 939  1207  0000  XCAERR, 0
 940  1210  6032          IOF
 941  1211  3345          DCA     ACSAVE          /SAVE AC
 942  1212  6004          GTF
 943  1213  3347          DCA     FLSAVE          /SAVE THE FLAGS
 944  1214  7521          MQA
 945  1215  3346          DCA     MQSAVE          /SAVE THE MQ
 946  1216  7340          CLA CLL CMA             /SUBTRACT A 1 FOR TRUE LOCATION
 947  1217  1207          TAD     XCAERR          /GET RETTURN LOCATION
 948  1220  3344          DCA     PCSAVE          /SAVE ADD OF CAERR CALL
 949  1221  6201          CDF
 950  1222  7340          CLA CLL CMA
 951  1223  1776          TAD I   (CLASIK)        /GET REAL PC.
 952  1224  3316          DCA     REALPC          /SAVE IT.
 953  1225  6211          CDF     10
 954  1226  4240          JMS     CHKCLA          /CHECK LOC.22 BIT 3 CONSOL BIT
 955  1227  7410          SKP                     /ACTIVE CONSOLE PACKAGE
 956  1230  5270          JMP     NTCLAS          /NOT CLASSIC SYSTEM
 957  1231  4775'         JMS     C8GET           /GET REGISTERS.
 958  1232  4774'         JMS     XCASW           /CHECK SWITCH REG FOR BIT THAT INDICATES
 959                                              /NO ERROR MESSAGE
 960  1233  0373  SETUP1, AND     (0000           /MASK FOR BIT FOR NO ERROR PRINTING
 961                                              /IF THIS ERROR MESSAGE IS TO ALWAYS
 962                                              /BE PRINTED LEAVE AND VALUE AT 0000
 963  1234  7440          SZA CLA                 /SKIP IF BIT IS 0 PRINT ERROR MESSAGE
 964  1235  5262          JMP     CADD10          /DO NOT PRINT
 965  1236  4773'         JMS     XCACRLF
 966  1237  4771'         JMS     XCAPNT
 967  1240  1322          ERRMES                  /PRINT THE ERROR MESSAGE
 968  1241  4771'         JMS     XCAPNT
 969  1242  1332          MESPC                   /PRINT THE PC STSTEMENT
 970  1243  1516          TAD     REALPC          /GET PC
```

```
                                JMS     XC80CTA         /CONVERT 4 DIGIT PC TO ASCII
                                JMS     XC4PNT
                                MESAC                   /PRINT THE AC MESS
                                TAD     ACSAVE
                                JMS     XC80CTA
                                JMS     XC8PNT
                                MESMQ                   /PRINT MQ
                                TAD     MQSAVE
                                JMS     XC80CTA
                                JMS     XC4PNT
                                MESFL                   /PRINT FL
                                TAD     FLSAVE
                                JMS     XC80CTA
                                JMS     XC4CRLF
C8DD10, JMS     C8GET           /GET REGISTERS,
                JMS     XC8SW   /CHECK SWITCH REGISTER
                SKP CLA         /SKIP IF BIT 0 SET
                JMP     C8RY2   /LEAVE
                JMS     XC8INQ  /GO TO THE INQUIRE ROUTINE
                JMP     C8RY2   /LEAVE
NTCLAS, JMS     C4GET           /GET REGISTERS,
                JMS     XC8SW   /CHECK PSFUNC SWITCH REGISTER
                                /CHECK THE C8SWIT REGISTER
                SKP CLA         /SKIP IF HALT
                JMP I   XC8ERR  /NO HALT CONTINUE
                TAD     (7402   /CODE FOR HLT
                DCA I   PCSAVE  /PUT IT IN CALL LOC.
                JMP I   PCSAVE  /EXIT  TO CALL AND HALT
C8HY2,  JMS     C4GET           /GET THE REGISTERS
                JMP I   XC4ERR
                /
                /
ROUTNS, HLT                     /PUT INSTRUCTION TO EXECUTE HERE.
                NOP
                DCA     MYAC    /SAVE AC
                CDF     0
                TAD     SWR
                DCA I   (SWR)
                TAD I   (CLASIK)
                DCA     CLRTRN
                TAD     MYAC
                CIF     0
                JMP I   CLRTRN          /RETURN TO FIELD 0.
                /
CLRTRN, 0
REALPC, 0
MYAC,   0
                /
ERRMES, TEXT    "DMPKAF  FAILED "
```

```
0410
2213
0206
4040
0601
1114
```



```
0504
4000
4040    MESPC,  TEXT    "  PC:"
2203
7200
4040    MESAC,  TEXT    "  AC:"
2103
7200
4040    MESMQ,  TEXT    "  MQ:"
1521
7200
4040    MESFL,  TEXT    "  FL:"
0614
7200
7777    PCSAVE, 7777
7777    ACSAVE, 7777
7777    MQSAVE, 7777
7777    FLSAVE, 7777
                /
                /
0320
7402
4635
1200
0303
1223
0200
0262
2624
5132
2400
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  11000000  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
```

```
1042                    /
1043                    /NOTE: LOCATION 0 WILL CONTAIN THE REVISION
1044                    /LEVEL(IN ASCII) ON PROGRAM LOAD.
1045                    /
1046                    /
1047                    /ALL KNOWN HALTS
1048                    /
1049    1400  4761      ERHLT1                          /UNDEFINED INTERRUPT
1050    1401  5576      ERHLT2                          /SKIP TRAP FOR DCLR
1051    1402  6173      ERHLT3                          /SKIP TRAP FOR DLAG
1052    1403  4776      ERHLT4                          /SKIP TRAP FOR DLCA
1053    1404  5161      ERHLT5                          /SKIP TRAP FOR DRST
1054    1405  6556      ERHLT6                          /SKIP TRAP FOR DLDC
1055    1406  4136      ERHLT7                          /SKIP TRAP FOR DMAN
1056    1407  5304      ERHLT9                          /THE RECOVERABLE ERROR HALT
1057    1410  6417      STPHLT                          /PROGRAM STOP OR HALT FROM SWR4=1
1058    1411  6625      CHNHLT                          /IOT CHANGE HALT
1059    1412  2734      MPHLT1                          /HALT FOR "CHECK WRITE PROTECT"
1060    1413  2776      MPHLT2                          /HALT FOR "CHECK WRITE PROTECT"
1061    1414  5273      APHLT1                          /HALT FOR "CHECK WRITE PROTECT"
1062    1415  4122      ENDHLT                          /END OF TEST HALT FROM SWR9=1
1063    1416  4021      MEMHLT                          /FROM ALIGNMENT SUBTEST
1064                    /
1065                    /BUFFER LOCATION INFORMATION
1066                    /
1067    1417  7177      WRKBUF                          /START OF PROGRAM DATA BUFFER
1068    1420  7576      ENDBUF                          /END OF PROGRAM DATA BUFFER
1069    1421  7177      HITPK                           /DISK ADDRESS WORD IF BUFFER
1070    1422  7200      LOTPK                           /DISK ADDRESS WORD IN BUFFER
1071    1423  7577      STPCHK                          /BUFFER+1 "BREAK STOP CHECK" "1234"
1072                    /
1073          6741      DSKP=6741                       /SKIP ON TRANSFER DONE OR ERROR
1074          6742      DCLR=6742                       /CLEAR DISK CONTROL LOGIC
1075          6743      DLAG=6743                       /LOAD ADDRESS AND GO
1076          6744      DLCA=6744                       /LOAD CURRENT ADDRESS
1077          6745      DRST=6745                       /READ STATUS REGISTER
1078          6746      DLDC=6746                       /LOAD COMMAND REGISTER
1079          6747      DMAN=6747                       /LOAD MAINTENANCE
1080          7346      NL7775=7346                     /-3 CONSTANT
1081                    /
1082          4406      DSKOUT=JMS I    XDOUT
1083          4407      DSKIN=JMS I     XDIN
1084          4423      RANADD=JMS I    XRNAD
1085          4425      RECAL=JMS I     XRESTR
1086          4424      SEEK=JMS I      XONLY
1087          4426      DISKGO=JMS I    XDISKG
1088          4427      MAPCHK=JMS I    XMPCHK
1089          4432      KILBUF=JMS I    XKLBUF
1090          4431      FILBUF=JMS I    XFLBUF
1091          4434      WATISZ=JMS I    XWTISZ
1092          4433      SKPWAT=JMS I    XSKWAT
1093          4430      FIGURE=JMS I    XFGURE
1094          4437      MERROR=JMS I    XMERRO
1095          4440      ERROR=JMS I     XERRO
1096          4441      IONWAT=JMS I    XIONWT
```



```
1097          4442      ACCMP1=JMS I    XCOMP1
1098          4443      ACCMP2=JMS I    XCOMP2
1099          4444      RDSTAT=JMS I    XRDST
1100          4445      RDCMD=JMS I     XRDCM
1101          4446      RDADD=JMS I     XRDAD
1102          4452      LDADD=JMS I     XLDAD
1103          4447      DSKSKP=JMS I    XSDKP
1104          4450      LDCMD=JMS I     XLDCM
1105          4451      LDCUR=JMS I     XLDCA
1106          4453      CLRALL=JMS I    XCLDR
1107          4454      RDCRC=JMS I     XRDCR
1108          4455      LDMAN=JMS I     XLDMN
1109          4456      RDBUF=JMS I     XRDBF
1110          4457      PRNTER=JMS I    XPRN
1111          4460      OCTEL=JMS I     XFROCT
1112          4461      TWOCT=JMS I     XTOCT
1113          4436      TYPE=JMS I      XPRINT
1114          4462      CRLF=JMS I      XCRLF
1115          4405      CLASIC=JMS I    XCLAS
1116          4404      LAS=JMS I       XLAS
1117          4530      TICK=JMS I      XTICK
1118                    /
1119          0000      *0
1120                    /
1121    0000  0307              0307                    /REVISION "G"
1122    0001  5001              5001
1123    0002  0002              0002
1124    0003  0003              0003
1125                    /
1126    0004  5075      XLAS,   MYLAS
1127    0005  5172      XCLAS,  CLASIK
1128    0006  5553      XDOUT,  DOUT
1129    0007  4530      XDIN,   DIN
1130                    /
1131          0010      *10
1132                    /
1133    0010  0000      AUTO1P, 0
1134                    /
1135    0011  0010      K0010,  0010
1136    0012  0020      K0020,  0020
1137    0013  0040      K0040,  0040
1138    0014  0100      K0100,  0100
1139    0015  0200      K0200,  0200
1140    0016  0400      K0400,  0400
1141    0017  1000      K1000,  1000
1142                    /
1143          0020      *20
1144                    /
1145    0020  0000      SWR,    0                       /SWITCH REGISTER.
1146    0021  4000      CP1,    4000                    /CONTROL WORD 1
1147    0022  0000      CP2,    0                       /CONTROL WORD 2
1148                    /
1149    0023  6321      XRNAD,  RNAD
1150    0024  6215      XONLY,  ONLY
1151    0025  6200      XRESTR, RESTOR
```

```
1152   0026  5600    XDISKG, DISKG
1153   0027  6441    XHFCHK, HFCHK
1154   0030  5656    XFGURE, FGURE
1155   0031  5447    XFLBUF, FLBUF
1156   0032  5435    XKLBUF, KLBUF
1157   0033  5134    XSKWAT, SKWAT
1158   0034  4000    XWTISZ, WTISZ
1159   0035  0222    THSFLD, PRSFLD
1160   0036  6151    XPRINT, PRINT
1161   0037  6400    XNERRO, NERRO
1162   0040  5200    XERRO,  ERRO
1163   0041  4727    XIONWT, IONWT
1164   0042  4557    XCOMP1, COMP1
1165   0043  3623    XCOMP2, COMP2
1166   0044  5154    XPOST,  POST
1167   0045  5412    XPOCM,  POCM
1168   0046  4143    XPOAD,  POAD
1169   0047  1120    XSOKP,  SOKP
1170   0050  6545    XLOCM,  LOCM
1171   0051  4765    XLOCA,  LOCA
1172   0052  6164    XLOAD,  LOAD
1173   0053  5571    XCLOR,  CLOR
1174   0054  6200    XROCR,  ROCR
1175   0055  4131    XLOMN,  LOMN
1176   0056  5400    XROBF,  ROBF
1177   0057  6111    XPRN,   PRN
1178   0060  6065    XFROCT, FROCT
1179   0061  6236    XTOCT,  TOCT
1180   0062  6253    XCRLF,  UPONE
1181   0063  7230    XLOTRK, LOTRK
1182   0064  7177    XHITRK, HITRK
1183   0065  4530    CYL450, 4500
1184   0066  4520    TRK210, 4520
1185   0067  7177    RGNBUF, WRKBUF
1186   0070  0000    DRVHAV, 0
1187   0071  0000    DRVCNT, 0
1188   0072  0000    DRIVNO, 0
1189   0073  0001    K0001,  0001
1190   0074  0002    K0002,  0002
1191   0075  0003    K0003,  0003
1192   0076  0004    K0004,  0004
1193   0077  0005    K0005,  0005
1194   0100  0006    K0006,  0006
1195   0101  0007    K0007,  0007
1196   0102  1234    K1234,  1234
1197   0103  2000    K2000,  2000
1198   0104  3000    K3000,  3000
1199   0105  4000    K4000,  4000
1200   0106  6000    K6000,  6000
1201   0107  7000    K7000,  7000
1202   0110  7760    K7760,  7760
1203   0111  7700    K7700,  7700
1204   0112  0077    K0077,  0077
1205   0113  2525    K2525,  2525
1206   0114  5252    K5252,  5252
```



```
1207   0115  5000    K5000,  5000
1208   0116  7771    K7771,  7771
1209   0117  0017    K0017,  0017
1210   0120  0037    K0037,  0037
1211   0121  6201    KCDF,   CDF
1212   0122  7740    K7740,  7740
1213   0123  7400    K7400,  7400
1214   0124  7600    K7600,  7600
1215   0125  1355    XLOAD,  LOADCT
1216                 /
1217                 DECIMAL
1218                 /
1219   0126  7764    M12,    -12
1220                 /
1221                 OCTAL
1222                 /
1223   0127  7103    KAERRO, AERRO
1224   0130  7130    XTICK,  KTICK
1225   0131  0000    REG0,   0
1226   0132  0000    REG1,   0
1227   0133  0000    SRCNT1, 0
1228   0134  0000    TCNTR1, 0
1229   0135  0000    TCNTR2, 0
1230   0136  0000    TCNTR3, 0
1231   0137  0000    TCNTR4, 0
1232   0140  0000    TCNTR5, 0
1233   0141  0000    TCNTR6, 0
1234                 /
1235   0142  0000    GDREG1, 0
1236   0143  0000    GDREG2, 0
1237   0144  0000    CRREG1, 0
1238   0145  0000    CRREG2, 0
1239   0146  0000    STREG,  0
1240   0147  0000    DBREG,  0
1241   0150  0000    CMREG,  0
1242   0151  0000    DAREG,  0
1243   0152  0000    CAREG,  0
1244   0153  0000    ADREG,  0
1245   0154  0000    DTREG,  0
1246   0155  0000    ACREG,  0
1247   0156  0000    HOMEMA, 0
1248   0157  2200    STCON,  2200
1249   0160  0011    CRWRD1, 0011
1250   0161  6047    CRWRD2, 6047
1251   0162  0000    DATCNT, 0
1252   0163  0000    SAVDAT, 0
1253   0164  0306    K0306,  0306
1254   0165  5373    K5373,  5373
1255   0166  5300    K5300,  5300
1256   0167  6324    K6324,  6324
1257   0170  3240    ENDTRK, 3240
1258   0171  7777    SOFERR, 7777
1259   0172  0000    SAVPCT, 0
1260   0173  0200    RESTRT, 0200
1261   0174  5617    KTIME,  5617
```

```
1262  0175  7777    KCNT,   -1
1263                /
1264        0200    *200
1265                /
1266  0200  5206    RGN,    JMP     .+6                     /TO NORMAL TEST
1267  0201  5777'           JMP     MANUAL                  /TO MANUAL TEST
1268  0202  5776'           JMP     CHANG                   /TO CHANGE IOT DEVICE CODES
1269  0203  5775'           JMP     MANPRO                  /CHECK MANUAL WRITE PROTECT
1270  0204  5774'           JMP     AUTPRO                  /CHECK PROGRAM WRITE PROTECT
1271  0205  5573            JMP I   RESTRT                  /RESTART AFTER PROGRAM STOP!
1272  0206  6224            RIF
1273  0207  3156            DCA     HOMEMA
1274  0210  1156            TAD     HOMEMA
1275  0211  1121            TAD     KCDF                    /MAKE HOMEDF
1276  0212  3222            DCA     PRSFLD
1277  0213  1362            TAD     KRMF                    /GET RMF FOR INT. RETURN
1278  0214  6201            CDF     0                       /SWITCH FIELD 0
1279  0215  3473            DCA I   K0001
1280  0216  1364            TAD     K5403                   /JMP I 3 FOR LOC. 2
1281  0217  3474            DCA I   K0002
1282  0220  1363            TAD     INTRQ                   /GET ADDRESS RETURN
1283  0221  3475            DCA I   K0003
1284  0222  7402    PRSFLD, HLT                             /MAKE DF=IF
1285  0223  4773            JMS I   (APTS                   /TEST FOR APT SYSTEM
1286  0224  4462            CRLF
1287  0225  4772            JMS I   (SELDSK                 /SETUP DRIVES ON SYSTEM.
1288  0226  1070            TAD     DRVMAV
1289  0227  3071            DCA     DRVCNT                  /COUNTER TO AMOUNT OF DRIVES.
1290  0230  4405            CLASIC                          /CHECK FOR CONSOLE PKG
1291  0231  4431            CRSWIT                          /GET SWITCH REGISTER
1292  0232  7200            NOP
1293  0233  1022            TAD     22
1294  0234  0216            AND     K0400
1295  0235  7640            SZA CLA
1296  0236  6007            6007                            /CLEAR FLAGS
1297                /
1298  0237  3131            DCA     REG0
1299                /
1300                /STATUS AND SELECT TEST
1301                /
1302                /VERIFY THAT THE DISK DRIVE IN "DRIVNO" IS
1303                /READY TO SEEK, READ, OR WRITE. STATUS REGISTER
1304                /SHOULD GO TO 4000.
1305                /
1306  0240  7330    TST0,   CLA CLL CML RAR                 /EXPECTED STATUS
1307  0241  3143            DCA     GDREG2                  /SETUP COMPARE REGISTER
1308  0242  1015            TAD     K0200                   /ENABLE SET DONE BIT
1309  0243  1072            TAD     DRIVNO                  /GET CURRENT DRIVE NUMBER
1310  0244  4450            LDCMD                           /LOAD COMMAND REGISTER
1311  0245  4444            RDSTAT                          /READ STATUS
1312  0246  4442            ACCMPI                          /CHECK RESULTS
1313  0247  7610            SKP CLA                         /O.K. SO FAR
1314  0250  5256            JMP     T0E                     /ERROR STATUS
1315  0251  3143            DCA     GDREG2                  /SETUP COMPARE REGISTER
1316  0252  4453            CLRALL                          /CLEAR STATUS
```



```
1317  0253  4444            RDSTAT                          /READ STATUS
1318  0254  7650            SNA CLA                         /SHOULD BE 0000
1319  0255  4437            NERROR                          /O.K. 4096 LOOPS
1320  0256  4440    T0E,    ERROR                           /ERROR, STATUS
1321  0257  0240            TST0                            /SCOPE LOOP POINTER
1322  0260  5200            5200                            /TEXT POINTER
1323                /
1324                /SKIP (DSKP) TEST
1325                /
1326                /VERIFY THAT "DSKP" SKIPS ON TRANSFER DONE FLAG
1327                /WHEN THE DISK DRIVE IS READY.
1328                /
1329  0261  3771            DCA I   (COUNT
1330  0262  1075            TAD     K0003                   /SET UP APT TIMING
1331  0263  7041            CIA                             /GETS -4
1332  0264  3770            DCA I   (CNT                    /STORE IN APT SECTION
1333  0265  1015    TST1,   TAD     K0200                   /ENABLE SET DONE BIT
1334  0266  1072            TAD     DRIVNO                  /CURRENT DRIVE
1335  0267  4450            LDCMD                           /LOAD COMMAND
1336  0270  4447            DSKSKP                          /DSKP "DISK SKIP IOT"
1337  0271  5275            JMP     T1E                     /ERROR, NO SKIP
1338  0272  4453            CLRALL                          /CLEAR SKIP FLAG OUT
1339  0273  4447            DSKSKP                          /DSKP "DISK SKIP IOT"
1340  0274  4437            NERROR                          /O.K. 4096 LOOPS
1341  0275  4440    T1E,    ERROR                           /ERROR, DSKP FAILED
1342  0276  0265            TST1                            /SCOPE LOOP POINTER
1343  0277  0006            0006                            /TEXT POINTER
1344                /
1345                /INTERRUPT TEST
1346                /
1347                /VERIFY THAT INT. OCCURES FROM
1348                /THE TRANSFER DONE FLAG WHEN DISK
1349                /DRIVE UNDER TEST IS READY TO SEEK,
1350                /READ, OR WRITE.
1351                /
1352  0300  2131            ISZ     REG0                    /SET ONE TIME TEST FLAG.
1353  0301  1015    TST2,   TAD     K0200                   /ENABLE SET DONE BIT
1354  0302  1016            TAD     K0400                   /ENABLE DISK INT.
1355  0303  1372            TAD     DRIVNO                  /GET CURRENT DRIVE
1356  0304  4450            LDCMD                           /LOAD COMMAND REGISTER
1357  0305  7240            CLA CMA                         /SOFTWARE FLAG
1358  0306  4441            IONWAT                          /WAIT FOR DISK INTERRUPT
1359  0307  5323            JMP     T2E                     /ERROR, NO INT.
1360  0310  4453            CLRALL                          /CLEAR THE INT. OUT
1361  0311  7240            CLA CMA                         /SOFTWARE FLAG
1362  0312  4441            IONWAT                          /WAIT FOR DISK INTERRUPT
1363  0313  7610            SKP CLA                         /O.K. NO INT.
1364  0314  5323            JMP     T2E                     /ERROR, INT.
1365  0315  1015            TAD     K0200                   /ENABLE SET DONE BIT
1366  0316  1072            TAD     DRIVNO                  /CURRENT DRIVE
1367  0317  4450            LDCMD                           /LOAD COMMAND
1368  0320  7340            CLA CLL CMA                     /SOFTWARE FLAG
1369  0321  4441            IONWAT                          /WAIT FOR DISK INTERRUPT
1370  0322  4437            NERROR                          /O.K. 4096 LOOPS
1371  0323  4440    T2E,    ERROR                           /ERROR, DISK INT.
```

```
1372  0324  0301          TST2                            /SCOPE LOOP POINTER
1373  0325  0007          0007                            /TEXT POINTER
1374                      /
1375                      /FORCE TIMING ERROR
1376                      /
1377                      /VERIFY A "TIMING ERROR" DOES OCCUR IN STATUS REGISTER
1378                      /IF A DLAG IS ISSUED WITH THE COMMAND REGISTER IS SET TO
1379                      /A FUNCTION OF "7".
1380                      /
1381  0326  1107   TST3,  TAD     K7000
1382  0327  1156          TAD     HOMEMA
1383  0330  1072          TAD     DRIVNO                  /GET CURRENT DRIVE
1384  0331  4452          LDCMD                           /LOAD COMMAND REGISTER
1385  0332  1120          TAD     K0006
1386  0333  3357          DCA     T3T                     /SETUP TEXT POINTER
1387  0334  4452          LDADD                           /DLAG, LOAD DISK ADDRESS
1388  0335  4433          SKPWAT                          /WAIT FOR ERROR SKIP
1389  0336  5355          JMP     T3E                     /ERROR, NO SKIP OCCURRED
1390  0337  1166          TAD     K5300
1391  0340  3357          DCA     T3T                     /SETUP TEXT POINTER
1392  0341  7330          CLA CLL CML RAR
1393  0342  1013          TAD     K0040
1394  0343  3143          DCA     GDREG2                  /SETUP EXPECTED STATUS
1395  0344  4444          RDSTAT                          /READ STATUS REGISTER
1396  0345  4442          ACCMP1                          /CHECK RESULTS
1397  0346  7617          SKP CLA                         /STATUS IS O.K.
1398  0347  5355          JMP     T3E                     /ERROR STATUS INCORRECT
1399  0350  4453          CLRALL                          /CLEAR STATUS
1400  0351  3143          DCA     GDREG2                  /SETUP EXPECTED STATUS
1401  0352  4444          RDSTAT                          /READ STATUS
1402  0353  4442          ACCMP1                          /CHECK RESULTS
1403  0354  4437          NERRMP                          /ALL IS O.K.
1404  0355  4440   T3E,   ERROR                           /ERROR, TIMING SKIP OR STATUS
1405  0356  0326          TST3                            /SCOPE LOOP POINTER
1406  0357  0006   T3T,   0006                                    /TEXT POINTER
1407  0360  5761          JMP I .+1
1408  0361  0400          TST4
1409                      /
1410  0362  6244   KRMF,  RMF
1411  0363  4743   INTRQ, INTAND
1412  0364  5403   K5403, 5403
1413                      /
1414  0365  7160
1415  0366  7161
1416  0367  4260
1417  0370  7225
1418  0371  5000
1419  0372  2706
1420  0373  6600
1421  0374  4600
            0400    PAGE
1422                      /
1423                      /
1424                      /RESTORE TEST
1425                      /
```



```
1426                      /VERIFY THAT "RECALIBRATE" SETS TRANSFER
1427                      /DONE THEN DRIVE READY ON SELECTED DRIVE.
1428                      /
1429  0400  4425   TST4,  RECAL                           /"RECALIBRATE"
1430  0401  0406          T4T                             /TEXT POINTER
1431  0402  5204          JMP     T4E                     /ERROR, SKIP OR STATUS
1432  0403  4437          NERROR                          /O.K. TO NEXT TEST
1433  0404  4440   T4E,   ERROR                           /ERROR, DISK SKIP OR STATUS
1434  0405  0400          TST4                            /SCOPE LOOP POINTER
1435  0406  0006   T4T,   0006                            /TEXT POINTER
1436  0407  5610          JMP I .+1
1437  0410  0411          TST5
1438                      /
1439                      /
1440                      /HEAD MOTION AND STATUS TEST
1441                      /
1442                      /VERIFY THAT "SEEK ONLY" TRACK 312 SETS
1443                      /TRANSFER DONE THEN DRIVE IS READY.
1444                      /
1445  0411  7301   TST5,  CLA CLL IAC                     /EXTENDED
1446  0412  3152          DCA     CMREG                   /SETUP EXTENDED BIT
1447  0413  1266          TAD     TRK212                  /GET LOWER DISK ADDRESS
1448  0414  4424          SEEK                            /SEEK ONLY 312
1449  0415  0422          T5T                             /TEXT POINTER
1450  0416  5220          JMP     T5E                     /ERROR, SKIP OR STATUS
1451  0417  4437          NERROR                          /O.K. TO NEXT TEST
1452  0420  4440   T5E,   ERROR                           /ERROR, DISK SKIP OR STATUS
1453  0421  0411          TST5                            /SCOPE LOOP POINTER
1454  0422  0006   T5T,   0006                            /TEXT POINTER
1455                      /
1456                      /
1457                      /VERIFY RESTORE CLEARS ADDRESS BITS
1458                      /
1459                      /SOMETHING IS WORKING, NOW SEEK ONLY TRACK 312
1460                      /THEN RECALIBRATE AND CHECK FOR NO ERRORS IN STATUS.
1461                      /
1462  0423  7301   TST6,  CLA CLL IAC
1463  0424  3152          DCA     CMREG                   /SETUP EXTENDED BIT
1464  0425  1266          TAD     TRK212
1465  0426  4424          SEEK
1466  0427  0437          T6T                             /SEEK ONLY 312
1467  0430  5235          JMP     T6E                     /TEXT POINTER
1468  0431  4425          RECAL                           /ERROR, SKIP OR STATUS
1469  0432  0437          T6T                             /"RECALIBRATE"
1470  0433  5235          JMP     T6E                     /TEXT POINTER
1471  0434  4437          NERROR                          /ERROR, SKIP OR STATUS
1472  0435  4440   T6E,   ERROR                           /O.K. TO NEXT TEST
1473  0436  0423          TST6                            /ERROR, STATUS
1474  0437  5300   T6T,   5300                            /SCOPE LOOP POINTER
1475                      /                               /TEXT POINTER
1476                      /
1477                      /VERIFY RESTORE CLEARS ADDRESS BITS.
1478                      /
1479                      /VERIFY A "RECALIBRATE" FROM CYLINDER,
1480                      /SURFACE, AND SECTOR 07777.
```

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1481                    /
1482    0440  3150  TST7,  DCA     CMREG                   /CLEAR EXTENDED BIT
1483    0441  7340        CLA CLL CMA
1484    0442  4424        SEEK                            /SEEK ONLY
1485    0443  0453        T7T                             /TEXT POINTER
1486    0444  5251        JMP     T7E                     /ERROR, SEEK ONLY
1487    0445  4425        RECAL                           /"RECALIBRATE"
1488    0446  0453        T7T                             /TEXT POINTER
1489    0447  5251        JMP     T7E                     /ERROR, SKIP OR STATUS
1490    0450  4437        NERROR                          /O.K. TO NEXT TEST
1491    0451  4440  T7E,  ERROR                           /ERROR, STATUS
1492    0452  0440        TST7                            /SCOPE LOOP POINTER
1493    0453  5300  T7T,  5300                            /TEXT POINTER
1494                    /
1495                    /FIND AND SELECT ALL ADDRESSES
1496                    /
1497                    /VERIFY A SEEK ONLY AND FIND ALL ADDRESSES
1498                    /INCREMENTAL SEEK TEST. SEEK 0, 1, 2, 3, ETC.
1499                    /CHECK TIMING AND NO ERRORS IN STATUS.
1500                    /
1501    0454  3134  TST8,  DCA     TCNTR1
1502    0455  3135        DCA     TCNTR2
1503    0456  1134  T8R,   TAD     TCNTR1
1504    0457  3150        DCA     CMREG                   /SETUP EXTENDED BIT
1505    0460  1135        TAD     TCNTR2                  /LOWER DISK ADDRESS BITS
1506    0461  4424        SEEK                            /SEQUENCIAL SEEK ONLY
1507    0462  0501        T8T                             /TEXT POINTER
1508    0463  5277        JMP     T8E                     /ERROR, SKIP OR STATUS
1509    0464  2135        ISZ     TCNTR2                  /UPDATE POINTER
1510    0465  7610        SKP CLA
1511    0466  2134        ISZ     TCNTR1                  /SET EXTENDED BIT
1512    0467  1134        TAD     TCNTR1
1513    0470  7650        SNA CLA                         /IS EXTENDED BIT SET YET
1514    0471  5256        JMP     T8R                     /NO, CONTINUE
1515    0472  1135        TAD     TCNTR2                  /YES
1516    0473  1170        TAD     ENDTRK
1517    0474  7640        SZA CLA                         /WAS IT LAST TRACK
1518    0475  5256        JMP     T8R                     /NO, CONTINUE
1519    0476  4437        NERROR                          /O.K. TO NEXT TEST
1520    0477  4440  T8E,  ERROR                           /ERROR, STATUS
1521    0500  0454        TST8                            /SCOPE LOOP POINTER
1522    0501  5300  T8T,  5300                            /TEXT POINTER
1523                    /
1524                    /FIND AND SELECT ALL ADDRESSES
1525                    /
1526                    /VERIFY A SEEK ONLY AND FIND ALL ADDRESSES
1527                    /312, 311, 310, 307, ETC. CHECK FOR
1528                    /NO ERRORS IN STATUS REGISTER.
1529                    /
1530    0502  1066  TST9,  TAD     TRK212
1531    0503  1117        TAD     K0017
1532    0504  3134        DCA     TCNTR1                  /SETUP LOWER DISK ADDRESS POINT
1533    0505  7301        CLA CLL IAC
1534    0506  3135        DCA     TCNTR2                  /SETUP EXTENDED POINTER
1535    0507  1135  T9R,   TAD     TCNTR2
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1536    0510  3150        DCA     CMREG                   /SETUP EXTENDED BIT
1537    0511  1134        TAD     TCNTR1
1538    0512  4424        SEEK                            /DECREMENTAL SEEK ONLY
1539    0513  0534        T9T                             /TEXT POINTER
1540    0514  5332        JMP     T9E                     /ERROR, SKIP OR STATUS
1541    0515  7340        CLA CLL CMA
1542    0516  1134        TAD     TCNTR1
1543    0517  3134        DCA     TCNTR1                  /DECREMENT
1544    0520  7301        CLA CLL IAC
1545    0521  1134        TAD     TCNTR1
1546    0522  7640        SZA CLA                         /FIRST TIME 0 YET
1547    0523  5307        JMP     T9R                     /NO, CONTINUE
1548    0524  1135        TAD     TCNTR2
1549    0525  7650        SNA CLA                         /PAST EXTENDED BIT
1550    0526  5331        JMP     T9OK                    /YES, TEST O.K.
1551    0527  3135        DCA     TCNTR2                  /CLEAR EXTENDED BIT
1552    0530  5307        JMP     T9R                     /CONTINUE
1553    0531  4437  T9OK,  NERROR                         /O.K. TO NEXT TEST
1554    0532  4440  T9E,   ERROR                          /ERROR, SEEK ONLY
1555    0533  0502        TST9                            /SCOPE LOOP POINTER
1556    0534  5300  T9T,   5300                           /TEXT POINTER
1557                    /
1558                    /VERIFY RESTORE CLEARS ADDRESS BITS.
1559                    /
1560                    /VERIFY RECALIBRATE FROM ALL
1561                    /CYLINDERS. CHECK ALL CYLINDERS
1562                    /BETWEEN 00000-14500.
1563                    /
1564    0535  1077        TAD     K0005
1565    0536  7041        CIA
1566    0537  3777*       DCA     CNT
1567    0540  3134  TST10,  DCA     TCNTR1                  /INITIALIZES APT TIMING FOR A LONGER VALUE
1568    0541  3135        DCA     TCNTR2
1569    0542  1134  T10R,  TAD     TCNTR1                  /GET EXTENDED BIT
1570    0543  3150        DCA     CMREG                   /SETUP EXTENDED BIT
1571    0544  1135        TAD     TCNTR2                  /GET CYLINDER
1572    0545  4424        SEEK                            /SEEK ONLY
1573    0546  0573        T10T                            /TEXT POINTER
1574    0547  5371        JMP     T10E                    /ERROR IN SEEK ONLY
1575    0550  4425        RECAL                           /"RECALIBRATE"
1576    0551  0573        T10T                            /TEXT POINTER
1577    0552  5371        JMP     T10E                    /ERROR, SKIP OR STATUS
1578    0553  7300        CLA CLL
1579    0554  1135        TAD     TCNTR2                  /GET LAST CYLINDER
1580    0555  1313        TAD     K0040                   /UPDATE
1581    0556  3135        DCA     TCNTR2
1582    0557  7430        SZL                             /TIME TO SET EXTENDED?
1583    0560  2134        ISZ     TCNTR1                  /YES
1584    0561  1134        TAD     TCNTR1                  /GET EXTENDED POINTER
1585    0562  7650        SNA CLA                         /SET?
1586    0563  5342        JMP     T10R                    /NO DO THIS CYLINDER
1587    0564  1135        TAD     TCNTR2                  /GET LAST CYLINDER
1588    0565  1170        TAD     ENDTRK                  /GET LAST POINTER!
1589    0566  7640        SZA CLA                         /NON-EXISTENT CYLINDER?
1590    0567  5342        JMP     T10R                    /NO, DO IT
```

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1591  0570  4437          NERROR                          /O.K. TO NEXT TEST
1592  0571  4440  T10E,   ERROR                          /STATUS ERROR
1593  0572  0540          TST10                           /SCOPE LOOP POINTER
1594  0573  5300  T10T,   5300                           /TEXT POINTER
1595                      /
1596  0574  5775          JMP I   .+1                     /TO NEXT TEST
1597  0575  0600          TST11
1598                      /
1599  0577  7160
            0600          PAGE
1600                      /
1601                      /SINGLE DRIVE VIBRATION TEST11
1602                      /
1603                      /SEEK ONLY SEEMS TO BE WORKING. NOW DO
1604                      /A FEW RANDOM SEEKS TO REALLY SHAKE THE
1605                      /DISK DRIVE UNDER TEST.
1606                      /
1607  0600  1122  TST11,  TAD     K7740                   /AMOUNT OF PASSES
1608  0601  3134          DCA     TCNTR1                  /SETUP COUNTER
1609  0602  4423  T11R1,  RANADD                          /GENERATE A RANDOM ADDRESS
1610  0603  3135          DCA     TCNTR2                  /SAVE IT
1611  0604  7204          RAL                             /LINK IS EXTENDED BIT
1612  0605  3136          DCA     TCNTR3                  /SAVE IT
1613  0606  4423          RANADD                          /GENERATE A RANDOM ADDRESS
1614  0607  3137          DCA     TCNTR4                  /SAVE IT
1615  0610  7004          RAL                             /LINK IS EXTENDED BIT
1616  0611  3140          DCA     TCNTR5                  /SAVE IT
1617  0612  4423  T11R2,  RANADD                          /GET A RANDOM NUMBER
1618  0613  0112          AND     K0077                   /MASK OUT
1619  0614  1111          TAD     K7700                   /MAKE COUNT VALUE
1620  0615  3141          DCA     TCNTR6                  /SETUP COUNTER
1621  0616  1136  T11R3,  TAD     TCNTR3                  /GET EXTENDED BIT
1622  0617  3150          DCA     CMREG                   /SETUP COMMAND REGISTER
1623  0620  1135          TAD     TCNTR2
1624  0621  4424          SEEK                            /SEEK ONLY
1625  0622  0641          T11T                            /TEXT POINTER
1626  0623  5237          JMP     T11E                    /ERROR, SKIP OR STATUS
1627  0624  1140          TAD     TCNTR5                  /GET EXTENDED BIT
1628  0625  3150          DCA     CMREG                   /SETUP COMMAND
1629  0626  1137          TAD     TCNTR4
1630  0627  4424          SEEK                            /SEEK ONLY
1631  0630  0641          T11T                            /TEXT POINTER
1632  0631  5237          JMP     T11E                    /ERROR, SKIP OR STATUS
1633  0632  2141          ISZ     TCNTR6                  /UPDATE COUNTER
1634  0633  5216          JMP     T11R3                   /SAME LOOP
1635  0634  2134          ISZ     TCNTR1                  /UPDATE PASS COUNTER
1636  0635  5202          JMP     T11R1                   /MAKE NEW ADDRESS
1637  0636  4437          NERROR                          /O.K. TO NEXT
1638  0637  4440  T11E,   ERROR                          /ERROR, SKIP OR STATUS
1639  0640  0600          TST11                           /SCOPE LOOP POINTER
1640  0641  0000  T11T,   0000                           /MODIFIED TEXT POINTER
1641                      /
1642                      /SELECT ERROR TEST
1643                      /
1644                      /VERIFY A "NOT READY" ON ALL
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1645                      /DRIVES NOT ON THE CONTROL.
1646                      /
1647  0642  4525          JMS I   XLOAD
1648  0643  7000          7000
1649  0644  3131          DCA     REG0                    /SETUP FOR 4096 PASSES
1650  0645  7301  TST12,  CLA CLL IAC
1651  0646  4453          CLRALL                          /CLEAR CONTROL
1652  0647  1157          TAD     STCON                   /EXPECTED STATUS
1653  0650  3143          DCA     GDREG2                  /SETUP COMPARE
1654  0651  3135          DCA     TCNTR2                  /TO START WITH DRIVE 0.
1655  0652  1777'         TAD     M4
1656  0653  3134          DCA     TCNTR1                  /COUNTER FOR NO. OF DRIVES.
1657  0654  1135  T12R,   TAD     TCNTR2                  /GET DRIVE POINTER
1658  0655  1776'         TAD     DSKON                   /POINTER TO DISK BUFFER.
1659  0656  3136          DCA     TCNTR3                  /SAVE POINTER TO DISK BUFFER.
1660  0657  1536          TAD I   TCNTR3
1661  0660  7640          SZA CLA                         /DISK ON THE SYSTEM
1662  0661  5273          JMP     T12A                    /NO UPDATE AND TRY NEXT DRIVE.
1663  0662  1135          TAD     TCNTR2
1664  0663  7104          CLL RAL                         /SHIFT TO UNIT BITS
1665  0664  1015          TAD     K0200                   /ENABLE SET DONE
1666  0665  4450          LDCMD                           /LOAD COMMAND
1667  0666  4444          RDSTAT                          /READ STATUS
1668  0667  4442          ACCMP1                          /CHECK RESULTS
1669  0670  7610          SKP CLA                         /O.K.
1670  0671  5277          JMP     T12E                    /ERROR, STATUS
1671  0672  4453          CLRALL                          /CLEAR STATUS
1672  0673  2135  T12A,   ISZ     TCNTR2                  /UPDATE DRIVE NO.
1673  0674  2134          ISZ     TCNTR1                  /WAS IT LAST DRIVE
1674  0675  5254          JMP     T12R                    /NO, MORE TO TEST
1675  0676  4437          NERROR                          /O.K. 4096 LOOPS
1676  0677  4440  T12E,   ERROR                          /ERROR, STATUS
1677  0700  0645          TST12                           /SCOPE LOOP POINTER
1678  0721  5200          5200                            /TEXT POINTER
1679                      /SELECT ERROR TEST
1680                      /
1681                      /VERIFY A DRIVE STATUS ERROR ON ALL DRIVES
1682                      /NOT ON THE CONTROL. ACTUALLY A SELECT ERROR.
1683                      /
1684  0702  7301  TST13,  CLA CLL IAC
1685  0703  4453          CLRALL                          /CLEAR CONTROL
1686  0704  3135          DCA     TCNTR2                  /TO START WITH DRIVE 0.
1687  0705  1777'         TAD     M4
1688  0706  3134          DCA     TCNTR1                  /COUNTER FOR NO. OF DRIVES.
1689  0707  1135  T13R,   TAD     TCNTR2                  /GET DRIVE POINTER
1690  0710  1776'         TAD     DSKON                   /POINTER TO DISK BUFFER.
1691  0711  3136          DCA     TCNTR3                  /SAVE POINTER TO DISK BUFFER.
1692  0712  1536          TAD I   TCNTR3
1693  0713  7640          SZA CLA                         /DISK ON THE SYSTEM
1694  0714  5347          JMP     T13A                    /NO UPDATE AND TRY NEXT DRIVE.
1695  0715  1074          TAD     K0002
1696  0716  1157          TAD     STCON                   /EXPECTED STATUS
1697  0717  3143          DCA     GDREG2                  /SETUP COMPARE REGISTER
1698  0720  1135          TAD     TCNTR2                  /GET DRIVE NO.
1699  0721  7104          CLL RAL                         /PUT IN UNIT BITS
```

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1700  0722  1015          TAD     K0200                   /ENABLE SET DONE
1701  0723  1104          TAD     K3000                   /FUNCTION SEEK ONLY
1702  0724  4450          LDCMD                           /LOAD COMMAND
1703  0725  4452          LDADD                           /LOAD AND GO
1704  0726  4444          RDSTAT                          /READ STATUS
1705  0727  4442          ACCMP1                          /CHECK RESULTS
1706  0730  7610          SKP CLA                         /O.K.
1707  0731  5353          JMP     T13E                    /ERROR, STATUS
1708  0732  4453          CLRALL                          /CLEAR STATUS
1709  0733  1157          TAD     STCON                   /EXPECTED STATUS
1710  0734  3143          DCA     GDREG2                  /SETUP COMPARE
1711  0735  4444          RDSTAT                          /READ STATUS
1712  0736  4442          ACCMP1                          /CHEAK RESULTS
1713  0737  7610          SKP CLA                         /O.K.
1714  0740  5353          JMP     T13E                    /ERROR, STATUS
1715  0741  7301          CLA CLL IAC
1716  0742  4453          CLRALL                          /CLEAR CONTROL
1717  0743  3143          DCA     GDREG2                  /SETUP COMPARE
1718  0744  4444          RDSTAT                          /READ STATUS
1719  0745  7640          SZA CLA                         /STATUS SHOULD BE 0000
1720  0746  5353          JMP     T13E                    /ERROR, STATUS
1721  0747  2135  T13A,   ISZ     TCNTR2
1722  0750  2134          ISZ     TCNTR1
1723  0751  5307          JMP     T13R                    /TRY NEXT DRIVE
1724  0752  4437          NERROR                          /O.K. 4096 LOOPS
1725  0753  4440  T13E,   ERROR                           /ERROR, STATUS
1726  0754  0702          TST13                           /SCOPE LOOP POINTER
1727  0755  5300          5300                            /TEXT POINTER
1728                      /
1729  0756  5757          JMP I   .+1                     /TO NEXT TEST
1730  0757  1005  TST14P, TST14-3
1731                      /
1732  0760  2213  NMES1,   TEXT "RK8E DRIVE CONTROL TEST"
      0761  7005
      0762  4004
      0763  2211
      0764  2605
      0765  4003
      0766  1716
      0767  2422
      0770  1714
      0771  4024
      0772  0523
      0773  2400
1733                      /
1734  0776  4374
1735  0777  6110
            1000  PAGE
1736                      /
1737                      /SUBROUTINE TO ISSUE DSKP DISK SKIP IOT
1738                      /
1739  1000  0000  SDKP,    0
1740  1001  6741  IOT1,    DSKP                            /DISK SKIP IOT
1741  1002  7410          SKP                             /NO FLAG!
1742  1003  2200          ISZ     SDKP                    /UPDATE NO FLAG POINTER.
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1743  1004  5600          JMP I   SDKP                    /RETURN.
1744                      /
1745                      /
1746                      /SELECT ERROR TEST
1747                      /
1748                      /VERIFY THAT DISK CAPACITY EXCEEDED DOES OCCURR
1749                      /
1750  1005  2131          ISZ     REG0                    /SETUP FOR ONE PAS
1751  1006  7346          NL7775                          /-3 CONSTANT
1752  1007  3777'         DCA     CNT
1753  1010  1066  TST14,  TAD     TRK212
1754  1011  1012          TAD     K0020
1755  1012  3134          DCA     TCNTR1                  /ADDRESS POINTER
1756  1013  7301  T14R,   CLA CLL IAC                     /ENABLE CLEAR CONTROL BIT
1757  1014  4453          CLRALL                          /CLEAR CONTROL
1758  1015  7330          CLA CLL CML RAR
1759  1016  1074          TAD     K0002                   /EXPECTED STATUS
1760  1017  3143          DCA     GDREG2                  /SETUP COMPARE REGISTER
1761  1020  7301          CLA CLL IAC                     /EXTENDED TRACK BIT
1762  1021  1104          TAD     K3000                   /FUNCTION SEEK ONLY
1763  1022  1072          TAD     DRIVNO                  /CURRENT DRIVE
1764  1023  4450          LDCMD                           /LOAD COMMAND
1765  1024  1134          TAD     TCNTR1
1766  1025  4452          LDADD                           /LOAD AND GO
1767  1026  4433          SKPWAT                          /WAIT FOR SKIP
1768  1027  5267          JMP     T14KE                   /ERROR, NO SKIP
1769  1030  4444          RDSTAT                          /READ STATUS
1770  1031  4442          ACCMP1                          /CHECK RESULTS
1771  1032  7610          SKP CLA                         /STATUS O.K.
1772  1033  5263          JMP     T14SE                   /ERROR, STATUS
1773  1034  7301          CLA CLL IAC                     /ENABLE CLEAR CONTROL BIT
1774  1035  4453          CLRALL                          /CLEAR CONTROL
1775  1036  1150          TAD     CMREG                   /GET LAST COMMAND
1776  1037  1015          TAD     K0200                   /GET ENABLE SEEK DONE BIT
1777  1040  4450          LDCMD                           /LOAD COMMAND
1778  1041  4433          SKPWAT                          /WAIT FOR DISK SKIP
1779  1042  5267          JMP     T14KE                   /ERROR, SKIP
1780  1043  7330          CLA CLL CML RAR                 /EXPECTED STATUS
1781  1044  3143          DCA     GDREG2
1782  1045  4444          RDSTAT                          /READ STATUS
1783  1046  4442          ACCMP1                          /CHECK RESULTS
1784  1047  7610          SKP CLA                         /STATUS O.K.
1785  1050  5263          JMP     T14SE                   /ERROR, STATUS
1786  1051  1072          TAD     DRIVNO                  /CURRENT DRIVE
1787  1052  4450          LDCMD                           /LOAD COMMAND
1788  1053  3143          DCA     GDREG2                  /SETUP COMPARE REGISTER
1789  1054  4444          RDSTAT                          /READ STATUS
1790  1055  4442          ACCMP1                          /CHECK RESULTS
1791  1056  7610          SKP CLA                         /STATUS O.K.
1792  1057  5263          JMP     T14SE                   /ERROR
1793  1060  2134          ISZ     TCNTR1
1794  1061  5213          JMP     T14R                    /LOOP
1795  1062  4437          NERROR                          /O.K. TO NEXT TEST
1796  1063  4440  T14SE,  ERROR                           /ERROR, DISK CAPACITY EXCEEDED
1797  1064  1010          TST14                           /SCOPE LOOP POINTER
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1798    1065  5300            5300                            /MODIFIED TEXT POINTER
1799    1066  5272            JMP     .+4                     /TO NEXT TEST
1800    1067  4440    T14KE,  ERROR                           /ERROR, DISK SKIP
1801    1070  1010            TST14                           /SCOPE LOOP POINTER
1802    1071  0006            0006                            /TEXT POINTER
1803                  /
1804                  /STATUS TEST
1805                  /
1806                  /VERIFY THAT SKIP AND STATUS DOES OCCUR
1807                  /AFTER 256 WRITE ALL AND READ ALL BREAKS.
1808                  /THIS SHOULD WRITE ALL ZEROS ON AND
1809                  /READ ALL ZEROS OFF THE DISK SECTOR 00000.
1810                  /
1811    1072  4432            KILBUF                          /ZERO WRITE BUFFER
1812    1073  1115    TST15,  TAD     K5000                   /WRITE ALL FUNCTION
1813    1074  3150            DCA     CMREG                   /SETUP COMMAND
1814    1075  4426            DISKGO                          /DISK WRITE ALL
1815    1076  1110            T15T                            /TEXT POINTER
1816    1077  5306            JMP     T15E                    /ERROR, SKIP OR STATUS
1817    1100  1017            TAD     K1000                   /FUNCTION READ ALL
1818    1101  3150            DCA     CMREG                   /SETUP COMMAND REGISTER
1819    1102  4426            DISKGO                          /DISK READ ALL
1820    1103  1110            T15T                            /TEXT POINTER
1821    1104  5306            JMP     T15E                    /ERROR, SKIP OR STATUS
1822    1105  4437            NERROR                          /O.K. TO NEXT TEST
1823    1106  4440    T15E,   ERROR                           /ERROR, WRITE ALL
1824    1107  1073            TST15                           /SCOPE LOOP POINTER
1825    1110  5300    T15T,   5300                            /MODIFIED TEXT POINTER
1826                  /
1827                  /STATUS TEST
1828                  /
1829                  /VERIFY THAT SKIP AND STATUS DOES OCCUR AFTER
1830                  /128 WRITE ALL AND READ ALL BREAKS.
1831                  /THIS SHOULD WRITE ALL ZEROS ON AND READ ALL
1832                  /ALL ZEROS OFF THE DISK SECTOR 00000.
1833                  /
1834    1111  1115    TST16,  TAD     K5000                   /FUNCTION WRITE ALL
1835    1112  1014            TAD     K0100                   /HALF BIT
1836    1113  3150            DCA     CMREG                   /SETUP COMMAND
1837    1114  4426            DISKGO                          /DISK WRITE ALL
1838    1115  1130            T16T                            /TEXT POINTER
1839    1116  5326            JMP     T16E                    /ERROR, DISK SKIP OR STATUS
1840    1117  1017            TAD     K1000                   /FUNCTION READ ALL
1841    1120  1014            TAD     K0100                   /HALF BIT
1842    1121  3150            DCA     CMREG                   /SETUP COMMAND
1843    1122  4426            DISKGO                          /DISK READ ALL
1844    1123  1130            T16T                            /TEXT POINTER
1845    1124  5326            JMP     T16E                    /ERROR, SKIP OR STATUS
1846    1125  4437            NERROR                          /O.K. TO NEXT TEST
1847    1126  4440    T16E,   ERROR                           /ERROR, WRITE ALL
1848    1127  1111            TST16                           /SCOPE LOOP POINTER
1849    1130  5300    T16T,   5300                            /MODIFIED TEXT POINTER
1850                  /
1851                  /VERIFY ALL SECTORS CAN BE ACCESSED.
1852                  /
```



```
1853                  /VERIFY A WRITE ALL TO ALL OF CYLINDER 0
1854                  /AND USE DATA PATTERN 2525+5252.
1855                  /MAKE THE FIRST TWO WORDS IN THE BUFFER
1856                  /EQUAL THE DISK ADDRESS, CHECK THE DATA WITH
1857                  /READ ALL.
1858                  /
1859    1131  4525            JMS I   XLOAD                   /WILL SET UP COUNTERS FOR NEXT TESTS
1860    1132  7771            7771
1861    1133  1122    TST17,  TAD     K7740
1862    1134  3134            DCA     TCNTR1                  /SETUP SECTOR COUNTER
1863    1135  1113    T17S,   TAD     K2525
1864    1136  4431            FILBUF                          /FILL OUTBOUND BUFFER
1865    1137  1115            TAD     K5000                   /FUNCTION WRITE ALL
1866    1140  3150            DCA     CMREG                   /SETUP COMMAND
1867    1141  1134            TAD     TCNTR1
1868    1142  0120            AND     K0037                   /MASK OFF SECTORS
1869    1143  3463            DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
1870    1144  1072            TAD     DRIVNO                  /GET DRIVE NUMBER
1871    1145  3464            DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
1872    1146  1463            TAD I   XLOTRK
1873    1147  4426            DISKGO                          /DISK WRITE ALL
1874    1150  1173            T17T                            /TEXT POINTER
1875    1151  5371            JMP     T17E                    /ERROR, SKIP OR STATUS
1876    1152  4432            KILBUF                          /KILL DATA BUFFER
1877    1153  1017            TAD     K1000                   /FUNCTION READ ALL
1878    1154  3150            DCA     CMREG                   /SETUP COMMAND
1879    1155  1134            TAD     TCNTR1
1880    1156  0120            AND     K0037                   /MASK OF SECTORS
1881    1157  4426            DISKGO                          /DISK READ ALL
1882    1160  1173            T17T                            /TEXT POINTER
1883    1161  5371            JMP     T17E                    /ERROR, STATUS OR SKIP
1884    1162  1113            TAD     K2525
1885    1163  4430            FIGURE                          /WORD BY WORD COMPARE OF DATA
1886    1164  7610            SKP CLA                         /THIS SECTOR O.K.
1887    1165  5371            JMP     T17E                    /ERROR, DATA
1888    1166  2134            ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
1889    1167  5335            JMP     T17S                    /TRY NEXT SECTOR
1890    1170  4437            NERROR                          /O.K. TO NEXT TEST
1891    1171  4440    T17E,   ERROR                           /ERROR, READ ALL
1892    1172  1133            TST17                           /SCOPE LOOP POINTER
1893    1173  5373    T17T,   5373                            /TEXT POINTER
1894                  /
1895    1174  5775            JMP I   .+1                     /TO NEXT TEST
1896    1175  1202            TST18
1897                  /
1898    1177  7160
              1200    PAGE
1899                  /
1900                  /VERIFY ALL SECTORS CAN BE ACCESSED.
1901                  /
1902                  /VERIFY A WRITE DATA TO ALL OF CYLINDER 0
1903                  /AND USE DATA PATTERN 5252+2525.
1904                  /MAKE THE FIRST TWO WORDS OF THE BUFFER
1905                  /EQUAL THE DISK ADDRESS, CHECK THE
1906                  /DATA WITH READ DATA.
```

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1907                    /
1908    1200  7000      NOP
1909    1201  7000      NOP
1910    1202  1122  TST18,  TAD     K7740
1911    1203  3134      DCA     TCNTR1                  /SECTOR COUNTER
1912    1204  1114  T18S,   TAD     K5252
1913    1205  4431      FILBUF                          /FILL OUTBOUND BUFFER
1914    1206  1105      TAD     K4000                   /FUNCTION WRITE DATA
1915    1207  3150      DCA     CMREG                   /SETUP COMMAND
1916    1210  1134      TAD     TCNTR1
1917    1211  0120      AND     K0037                   /MASK OF SECTORS
1918    1212  3463      DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
1919    1213  1072      TAD     DRIVNO                  /GET DRIVE NUMBER
1920    1214  3464      DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
1921    1215  1463      TAD I   XLOTRK                  /GET ADDRESS
1922    1216  4426      DISKGO                          /DISK WRITE DATA
1923    1217  1241      T18T                            /TEXT POINTER
1924    1220  5237      JMP     T18E                    /ERROR, STATUS OR SKIP
1925    1221  4432      KILBUF                          /CLEAR DATA BUFFER
1926    1222  3150      DCA     CMREG                   /SETUP COMMAND
1927    1223  1134      TAD     TCNTR1
1928    1224  0120      AND     K0037                   /MASK OFF SECTORS
1929    1225  4426      DISKGO                          /DISK READ DATA
1930    1226  1241      T18T                            /TEXT POINTER
1931    1227  5237      JMP     T18E                    /ERROR, STATUS OR SKIP
1932    1230  1114      TAD     K5252
1933    1231  4430      FIGURE                          /WORD BY WORD COMPARE OF DATA
1934    1232  7610      SKP CLA                         /THIS SECTOR O.K.
1935    1233  5237      JMP     T18E                    /ERROR, DATA
1936    1234  2134      ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
1937    1235  5204      JMP     T18S                    /TRY NEXT SECTOR
1938    1236  4437      NERROR                          /O.K. TO NEXT TEST
1939    1237  4440  T18E,   ERROR                       /ERROR, DATA BREAK
1940    1240  1202      TST18                           /SCOPE LOOP POINTER
1941    1241  5373  T18T,   5373                        /TEXT POINTER
1942                    /
1943                    /VERIFY HALF BLOCK TRANSFERS.
1944                    /
1945                    /VERIFY THAT DISK STOPS BREAK AFTER 128
1946                    /IF THE HALF BIT IS SET, THE REMAINDER OF THE
1947                    /THE BUFFER SHOULD BE 0000.
1948                    /THE FIRST TWO WORDS OF THE BUFFER SHOULD
1949                    /EQUAL THE ABSOLUTE DISK ADDRESS.
1950                    /THE DATA PATTERN USED IS 2525+5252.
1951                    /
1952    1242  1113  TST19,  TAD     K2525
1953    1243  4431      FILBUF                          /FILL BUFFER WITH DATA
1954    1244  1072      TAD     DRIVNO
1955    1245  3464      DCA I   XHITRK                  /MAKE DISK ADDRESS WORD
1956    1246  3463      DCA I   XLOTRK                  /MAKE DISK ADDRESS WORD
1957    1247  1115      TAD     K5000                   /FUNCTION WRITE ALL
1958    1250  1014      TAD     K0100                   /HALF BIT
1959    1251  3150      DCA     CMREG                   /SETUP COMMAND
1960    1252  4426      DISKGO                          /DISK WRITE ALL
1961    1253  1271      T19T                            /TEXT POINTER
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1962    1254  5267      JMP     T19E                    /ERROR, SKIP OR STATUS
1963    1255  4453      CLRALL                          /CLEAR STATUS
1964    1256  4432      KILBUF                          /ZERO BUFFER
1965    1257  1017      TAD     K1000                   /FUNCTION READ ALL
1966    1260  3150      DCA     CMREG                   /SETUP COMMAND
1967    1261  4426      DISKGO                          /DISK READ ALL
1968    1262  1271      T19T                            /TEXT POINTER
1969    1263  5267      JMP     T19E                    /ERROR, SKIP OR STATUS
1970    1264  1113      TAD     K2525
1971    1265  4427      HAFCHK                          /WORD BY WORD COMPARE DATA
1972    1266  4437  T19OK,  NERROR                      /O.K. TO NEXT TEST
1973    1267  4440  T19E,   ERROR                       /ERROR, DATA BREAK
1974    1270  1242      TST19                           /SCOPE LOOP POINTER
1975    1271  5373  T19T,   5373                        /TEXT POINTER
1976                    /
1977                    /VERIFY HALF BLOCK TRANSFERS.
1978                    /
1979                    /VERIFY THAT DISK STOPS BREAK AFTER 128
1980                    /IF THE HALF BIT IS SET, THE REMAINDER OF THE
1981                    /THE BUFFER SHOULD BE 0000.
1982                    /THE FIRST TWO WORDS OF THE BUFFER SHOULD
1983                    /EQUAL THE ABSOLUTE DISK ADDRESS.
1984                    /THE DATA PATTERN USED IS 5252+2525.
1985                    /
1986    1272  1114  TST20,  TAD     K5252
1987    1273  4431      FILBUF                          /FILL BUFFER WITH DATA
1988    1274  1072      TAD     DRIVNO
1989    1275  3464      DCA I   XHITRK                  /MAKE DISK ADDRESS WORD
1990    1276  3463      DCA I   XLOTRK                  /MAKE DISK ADDRESS WORD
1991    1277  1115      TAD     K5000                   /FUNCTION WRITE ALL
1992    1300  3150      DCA     CMREG                   /SETUP COMMAND
1993    1301  4426      DISKGO                          /DISK WRITE ALL
1994    1302  1321      T20T                            /TEXT POINTER
1995    1303  5317      JMP     T20E                    /ERROR, SKIP OR STATUS
1996    1304  4453      CLRALL                          /CLEAR STATUS
1997    1305  4432      KILBUF                          /CLEAR BUFFER
1998    1306  1017      TAD     K1000                   /FUNCTION READ ALL
1999    1307  1014      TAD     K0100                   /HALF BIT
2000    1310  3150      DCA     CMREG                   /SETUP COMMAND
2001    1311  4426      DISKGO                          /DISK READ ALL
2002    1312  1321      T20T                            /TEXT POINTER
2003    1313  5317      JMP     T20E                    /ERROR, SKIP OR STATUS
2004    1314  1114      TAD     K5252
2005    1315  4427      HAFCHK                          /WORD BY WORD COMPARE DATA
2006    1316  4437  T20OK,  NERROR                      /O.K. TO NEXT TEST
2007    1317  4440  T20E,   ERROR                       /ERROR, DATA BREAK
2008    1320  1272      TST20                           /SCOPE LOOP POINTER
2009    1321  5373  T20T,   5373                        /TEXT POINTER
2010                    /
2011                    /VERIFY HALF BLOCK TRANSFERS.
2012                    /
2013                    /VERIFY A WRITE ALL THEN READ ALL 128 WORDS,
2014                    /THE FIRST TWO WORDS OF THE BUFFER SHOULD
2015                    /EQUAL THE ABSOLUTE DISK ADDRESS.
2016                    /THE DATA PATTERN USED IS 2525+5252.
```

```
2017                    /
2018    1322  1113      TST21,  TAD     K2525
2019    1323  4431              FILBUF                          /FILL BUFFER WITH DATA
2020    1324  1072              TAD     DRIVNO
2021    1325  3464              DCA I   XHITRK                  /MAKE DISK ADDRESS WORD
2022    1326  3463              DCA I   XLOTRK                  /MAKE DISK ADDRESS WORD
2023    1327  1115              TAD     K5000                   /FUNCTION WRITE ALL
2024    1330  1014              TAD     K0100                   /HALF BIT
2025    1331  3150              DCA     CMREG                   /SETUP COMMAND
2026    1332  4426              DISKGO                          /DISK WRITE ALL
2027    1333  1352              T21T                            /TEXT POINTER
2028    1334  5335              JMP     T21E                    /ERROR, SKIP OR STATUS
2029    1335  4453              CLRALL                          /CLEAR STATUS
2030    1336  4432              KILBUF                          /ZERO BUFFER
2031    1337  1017              TAD     K1000                   /FUNCTION READ ALL
2032    1340  1014              TAD     K0100                   /HALF BIT
2033    1341  3150              DCA     CMREG                   /SETUP COMMAND
2034    1342  4426              DISKGO                          /DISK READ ALL
2035    1343  1352              T21T                            /TEXT POINTER
2036    1344  5350              JMP     T21E                    /ERROR, SKIP OR STATUS
2037    1345  1113              TAD     K2525
2038    1346  4427              MAPCHK                          /WORD BY WORD COMPARE DATA
2039    1347  4437      T210K,  NERROR                          /O.K. TO NEXT TEST
2040    1350  4440      T21E,   ERROR                           /ERROR, DATA BREAK
2041    1351  1322              TST21                           /SCOPE LOOP POINTER
2042    1352  5373      T21T,   5373                            /TEXT POINTER
2043                    /
2044    1353  5754              JMP I   .+1                     /TO NEXT TEST
2045    1354  1400              TST22
2046                    /
2047                    /
2048                    /WILL LOAD THE PROPER COUNTS FOR TEST 17 & 18
2049                    /
2050    1355  2355      LOADCT, 0
2051    1356  1755              TAD I   LOADCT                  /GET VALUE
2052    1357  3366              DCA     CONST1                  /STORE FOR FUTURE USE
2053    1360  1366              TAD     CONST1
2054    1361  3777*             DCA     COUNT
2055    1362  1366              TAD     CONST1
2056    1363  3776*             DCA     CLKCNT
2057    1364  2355              ISZ     LOADCT
2058    1365  5755              JMP I   LOADCT
2059                    /
2060    1366  7000      CONST1, 0
2061                    /
2062    1376  7162
2063    1377  7161
                1400    PAGE
2064                    /
2065                    /VERIFY ALL SECTORS CAN BE ACCESSED INDIVIDUALLY.
2066                    /
2067                    /VERIFY A WRITE ALL TO ALL OF CYLINDER 0
2068                    /USE DATA PATTERN 2525+5252
2069                    /CHECK FOR NO ERRORS IN STATUS.
2070                    /MAKE FIRST TWO WORDS OF EVERY SECTOR
```



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2071                    /EQUAL TO ADDRESS OF SECTOR.
2072                    /
2073    1400  1122      TST22,  TAD     K7740
2074    1401  3134              DCA     TCNTR1                  /SETUP SECTOR COUNTER
2075    1402  1113              TAD     K2525
2076    1403  4431              FILBUF                          /FILL BUFFER WITH DATA
2077    1404  1134      T22R1,  TAD     TCNTR1
2078    1405  0120              AND     K0037                   /MASK SECTOR BITS
2079    1406  3463              DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
2080    1407  1072              TAD     DRIVNO                  /GET DRIVE NUMBER
2081    1410  3464              DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
2082    1411  1115              TAD     K5000                   /FUNCTION WRITE ALL
2083    1412  3150              DCA     CMREG                   /SETUP COMMAND
2084    1413  1463              TAD I   XLOTRK                  /GET TRACK AND SECTOR
2085    1414  4426              DISKGO                          /DISK WRITE ALL
2086    1415  1444              T22T                            /TEXT POINTER
2087    1416  5242              JMP     T22E                    /ERROR, STATUS OR SKIP
2088    1417  2134              ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2089    1420  5204              JMP     T22R1                   /MORE SECTORS TO GO
2090                    /
2091                    /VERIFY THAT THE DATA WRITTEN ABOVE
2092                    /ON CYLINDER 0 WAS O.K. CHECK WITH READ ALL.
2093                    /
2094    1421  1122              TAD     K7740
2095    1422  3134              DCA     TCNTR1                  /COUNTER FOR 37 SECTORS
2096    1423  4432      T22R2,  KILBUF                          /CLEAR DATA BUFFER
2097    1424  1017              TAD     K1000                   /READ ALL FUNCTION
2098    1425  3150              DCA     CMREG                   /SETUP COMMAND
2099    1426  1134              TAD     TCNTR1
2100    1427  0120              AND     K0037
2101    1430  4426              DISKGO                          /DISK READ ALL
2102    1431  1444              T22T                            /TEXT POINTER
2103    1432  5242              JMP     T22E                    /ERROR, STATUS OR SKIP
2104    1433  1113              TAD     K2525
2105    1434  4433              FIGURE                          /WORD BY WORD COMPARE OF DATA
2106    1435  7610              SKP CLA                         /BUFFER O.K.
2107    1436  5242              JMP     T22E                    /ERROR, DATA
2108    1437  2134              ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2109    1440  5223              JMP     T22R2                   /MORE SECTORS TO CHECK
2110    1441  4437              NERROR                          /O.K. TO NEXT TEST
2111    1442  4440      T22E,   ERROR                           /ERROR, STATUS
2112    1443  1400              TST22                           /SCOPE LOOP POINTER
2113    1444  5373      T22T,   5373                            /TEXT POINTER
2114                    /
2115                    /VERIFY ALL SECTORS CAN BE ACCESSED INDIVIDUALLY.
2116                    /
2117                    /VERIFY A WRITE DATA TO ALL OF CYLINDER 0
2118                    /USE DATA PATTERN 5252+2525
2119                    /CHECK FOR NO ERRORS IN STATUS.
2120                    /MAKE FIRST TWO WORDS OF EVERY SECTOR
2121                    /EQUAL TO ADDRESS OF SECTOR.
2122                    /
2123    1445  1122      TST23,  TAD     K7740
2124    1446  3134              DCA     TCNTR1                  /SETUP SECTOR COUNTER
2125    1447  1114              TAD     K5252
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2126  1450  4431          FILBUF                          /FILL BUFFER WITH DATA
2127  1451  1134  T23R1,  TAD     TCNTR1
2128  1452  0120          AND     K0037                   /MASK SECTOR BITS
2129  1453  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
2130  1454  1072          TAD     DRIVNO                  /GET DRIVE NUMBER
2131  1455  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
2132  1456  1105          TAD     K4000                   /FUNCTION WRITE DATA
2133  1457  3150          DCA     CMREG                   /SETUP COMMAND
2134  1460  1463          TAD I   XLOTRK                  /SECTOR TO LOAD
2135  1461  4426          DISKGO                          /DISK WRITE ALL
2136  1462  1510          T23T                            /TEXT POINTER
2137  1463  5306          JMP     T23E                    /ERROR, STATUS OR SKIP
2138  1464  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2139  1465  5251          JMP     T23R1                   /MORE SECTORS TO GO
2140                /
2141                /VERIFY THAT THE DATA WRITTEN ABOVE
2142                /ON CYLINDER 0 WAS O.K. CHECK WITH READ DATA.
2143                /
2144  1466  1122          TAD     K7740
2145  1467  3134          DCA     TCNTR1                  /COUNTER FOR 37 SECTORS
2146  1470  4432  T23R2,  KILBUF                         /CLEAR DATA BUFFER
2147  1471  3150          DCA     CMREG                   /SETUP COMMAND
2148  1472  1134          TAD     TCNTR1
2149  1473  0120          AND     K0037
2150  1474  4426          DISKGO                          /DISK READ DATA
2151  1475  1510          T23T                            /TEXT POINTER
2152  1476  5306          JMP     T23E                    /ERROR, STATUS OR SKIP
2153  1477  1114          TAD     K5252
2154  1500  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
2155  1501  7610          SKP CLA                         /DATA O.K.
2156  1502  5306          JMP     T23E                    /ERROR, DATA
2157  1503  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2158  1504  5270          JMP     T23R2                   /MORE SECTORS TO CHECK
2159  1505  4437          NERROR                          /O.K. TO NEXT TEST
2160  1506  4440  T23E,   ERROR                          /ERROR, WRITE ALL
2161  1507  1445          TST23                           /SCOPE LOOP POINTER
2162  1510  5373  T23T,   5373                           /TEXT POINTER
2163                /
2164                /VERIFY ALL SECTORS CAN BE ACCESSED
2165                /
2166                /VERIFY A WRITE ALL TO ALL OF CYLINDER 1450
2167                /AND USE DATA PATTERN 2525+5252,
2168                /THE FIRST TWO WORDS OF THE SECTOR SHOULD
2169                /EQUAL THE DISK ADDRESS. CHECK THE DATA
2170                /WITH READ ALL.
2171                /
2172  1511  1122  T5T24,  TAD     K7740
2173  1512  3134          DCA     TCNTR1                  /SETUP SECTOR COUNTER
2174  1513  1113  T24S,   TAD     K2525
2175  1514  4431          FILBUF                          /FILL OUTBOUND BUFFER
2176  1515  7301          CLA CLL IAC
2177  1516  1072          TAD     DRIVNO                  /GET DRIVE NUMBER
2178  1517  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
2179  1520  7301          CLA CLL IAC                     /EXTENDED BIT
2180  1521  1115          TAD     K5000                   /FUNCTION WRITE ALL
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2181  1522  3150          DCA     CMREG                   /SETUP COMMAND
2182  1523  1134          TAD     TCNTR1                  /SECTOR COUNTER
2183  1524  0120          AND     K0037                   /MASK OFF SECTOR BITS
2184  1525  1065          TAD     CYL450                  /ADD IN CYLINDER
2185  1526  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
2186  1527  1463          TAD I   XLOTRK
2187  1530  4426          DISKGO                          /DISK WRITE ALL
2188  1531  1556          T24T                            /TEXT POINTER
2189  1532  5354          JMP     T24E                    /ERROR, SKIP OR STATUS
2190  1533  4432          KILBUF                          /CLEAR DATA BUFFER
2191  1534  7301          CLA CLL IAC                     /EXTENDED BIT
2192  1535  1017          TAD     K1000                   /FUNCTION READ ALL
2193  1536  3150          DCA     CMREG                   /SETUP COMMAND
2194  1537  1134          TAD     TCNTR1                  /SECTOR COUNTER
2195  1540  0120          AND     K0037                   /MASK OFF SECTORS
2196  1541  1065          TAD     CYL450
2197  1542  4426          DISKGO                          /DISK READ ALL
2198  1543  1556          T24T                            /TEXT POINTER
2199  1544  5354          JMP     T24E                    /ERROR, STATUS OR SKIP
2200  1545  1113          TAD     K2525
2201  1546  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
2202  1547  7610          SKP CLA                         /THIS SECTOR O.K.
2203  1550  5354          JMP     T24E                    /ERROR, DATA
2204  1551  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2205  1552  5313          JMP     T24S                    /TRY NEXT SECTOR
2206  1553  4437          NERROR                          /O.K. TO NEXT TEST
2207  1554  4440  T24E,   ERROR                          /ERROR, READ ALL
2208  1555  1511          TST24                           /SCOPE LOOP POINTER
2209  1556  5373  T24T,   5373                           /TEXT POINTER
2210                /
2211  1557  5760          JMP I   .+1                     /TO NEXT TEST
2212  1560  1600          TST25
2213                /
2214  1561  0000  DISK0,   0
2215  1562  0000  DISK1,   0
2216  1563  0000  DISK2,   0
2217  1564  0000  DISK3,   0
2218  1565  0000  DISK4,   0
2219  1566  0000  DISK5,   0
2220  1567  0000  DISK6,   0
2221  1570  0000  DISK7,   0
2222                /
2223        1600    PAGE
2224                /
2225                /VERIFY ALL SECTORS CAN BE ACCESSED
2226                /
2227                /VERIFY A WRITE DATA TO ALL OF CYLINDER 1450
2228                /AND USE DATA PATTERN 5252+2525,
2229                /THE FIRST TWO WORDS OF THE SECTOR SHOULD
2230                /EQUAL THE DISK ADDRESS. CHECK THE DATA
2231                /WITH READ DATA,
2232                /
2233  1600  1122  T5T25,  TAD     K7740
2234  1601  3134          DCA     TCNTR1                  /SETUP SECTOR COUNTER
2235  1602  1114  T25S,   TAD     K5252
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2236  1603  4431          FILBUF                          /FILL OUTROUND BUFFER
2237  1604  7301          CLA CLL IAC
2238  1605  1072          TAD     DRIVNO                  /GET DRIVE NUMBER
2239  1606  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
2240  1607  7301          CLA CLL IAC                     /EXTENDED BIT
2241  1610  1105          TAD     K4000                   /FUNCTION WRITE DATA
2242  1611  3150          DCA     CMREG                   /SETUP COMMAND
2243  1612  1134          TAD     TCNTR1                  /SECTOR COUNTER
2244  1613  0127          AND     K0037                   /MASK OFF SECTOR BITS
2245  1614  1065          TAD     CYL450                  /ADD IN CYLINDER
2246  1615  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
2247  1616  1463          TAD I   XLOTRK
2248  1617  4426          DISKGO                          /DISK WRITE DATA
2249  1620  1644          T25T                            /TEXT POINTER
2250  1621  5242          JMP     T25E                    /ERROR, SKIP OR STATUS
2251  1622  4432          KILBUF                          /CLEAR DATA BUFFER
2252  1623  7301          CLA CLL IAC                     /EXTENDED BIT
2253  1624  3150          DCA     CMREG                   /SETUP COMMAND
2254  1625  1134          TAD     TCNTR1                  /SECTOR COUNTER
2255  1626  0127          AND     K0037                   /MASK OFF SECTORS
2256  1627  1065          TAD     CYL450
2257  1630  4426          DISKGO                          /DISK READ DATA
2258  1631  1644          T25T                            /TEXT POINTER
2259  1632  5242          JMP     T25E                    /ERROR, STATUS OR SKIP
2260  1633  1114          TAD     K5252
2261  1634  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
2262  1635  7610          SKP CLA                         /THIS SECTOR O.K.
2263  1636  5242          JMP     T25E                    /ERROR, DATA
2264  1637  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2265  1640  5202          JMP     T25S                    /TRY NEXT SECTOR
2266  1641  4437          NERROR                          /O.K. TO NEXT TEST
2267  1642  4440  T25E,   ERROR                           /ERROR, DATA BREAK
2268  1643  1600          TST25                           /SCOPE LOOP POINTER
2269  1644  5373  T25T,   5373                            /TEXT POINTER
2270                      /
2271                      /VERIFY ALL SECTORS CAN BE ACCESSED INDIVIDUALLY.
2272                      /
2273                      /VERIFY A WRITE ALL TO ALL OF CYLINDER 1450
2274                      /USE DATA PATTERN 5252+2525
2275                      /CHECK FOR NO ERRORS IN STATUS.
2276                      /MAKE FIRST TWO WORDS OF EVERY SECTOR
2277                      /EQUAL TO ADDRESS OF SECTOR.
2278                      /
2279  1645  1122  T26T,   TAD     K7740
2280  1646  3134          DCA     TCNTR1                  /SETUP SECTOR COUNTER
2281  1647  1114          TAD     K5252
2282  1650  4431          FILBUF                          /FILL BUFFER WITH DATA
2283  1651  1134  T26R1,  TAD     TCNTR1
2284  1652  0120          AND     K0037                   /MASK SECTOR BITS
2285  1653  1065          TAD     CYL450
2286  1654  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
2287  1655  7301          CLA CLL IAC
2288  1656  1072          TAD     DRIVNO                  /GET DRIVE NUMBER
2289  1657  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
2290  1660  7301          CLA CLL IAC                     /EXTENDED BIT
```



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2291  1661  1115          TAD     K5000                   /FUNCTION WRITE ALL
2292  1662  3150          DCA     CMREG                   /SETUP COMMAND
2293  1663  1463          TAD I   XLOTRK                  /GET TRACK AND SECTOR
2294  1664  4426          DISKGO                          /DISK WRITE ALL
2295  1665  1716          T26T                            /TEXT POINTER
2296  1666  5314          JMP     T26E                    /ERROR, STATUS OR SKIP
2297  1667  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2298  1670  5251          JMP     T26R1                   /MORE SECTORS TO GO
2299                      /
2300                      /VERIFY THAT THE DATA WRITTEN ABOVE
2301                      /ON CYLINDER 1450 WAS O.K. CHECK WITH READ ALL.
2302                      /
2303  1671  1122          TAD     K7740
2304  1672  3134          DCA     TCNTR1                  /COUNTER FOR 37 SECTORS
2305  1673  4432  T26R2,  KILBUF                          /CLEAR DATA BUFFER
2306  1674  7301          CLA CLL IAC                     /EXTENDED BIT
2307  1675  1017          TAD     K1000                   /READ ALL FUNCTION
2308  1676  3150          DCA     CMREG                   /SETUP COMMAND
2309  1677  1134          TAD     TCNTR1
2310  1700  0120          AND     K0037
2311  1701  1065          TAD     CYL450
2312  1702  4426          DISKGO                          /DISK READ ALL
2313  1703  1716          T26T                            /TEXT POINTER
2314  1704  5314          JMP     T26E                    /ERROR, STATUS OR SKIP
2315  1705  1114          TAD     K5252
2316  1706  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
2317  1707  7610          SKP CLA                         /BUFFER O.K.
2318  1710  5314          JMP     T26E                    /ERROR, DATA
2319  1711  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2320  1712  5273          JMP     T26R2                   /MORE SECTORS TO CHECK
2321  1713  4437          NERROR                          /O.K. TO NEXT TEST
2322  1714  4440  T26E,   ERROR                           /ERROR, STATUS
2323  1715  1645          TST26                           /SCOPE LOOP POINTER
2324  1716  5373  T26T,   5373                            /TEXT POINTER
2325                      /
2326                      /VERIFY ALL SECTORS CAN BE ACCESSED INDIVIDUALLY.
2327                      /
2328                      /VERIFY A WRITE DATA TO ALL OF CYLINDER 1450
2329                      /USE DATA PATTERN 2525+5252
2330                      /CHECK FOR NO ERRORS IN STATUS.
2331                      /MAKE FIRST TWO WORDS OF EVERY SECTOR
2332                      /EQUAL TO ADDRESS OF SECTOR.
2333                      /
2334  1717  1122  T27T,   TAD     K7740
2335  1720  3134          DCA     TCNTR1                  /SETUP SECTOR COUNTER
2336  1721  1113          TAD     K2525
2337  1722  4431          FILBUF                          /FILL BUFFER WITH DATA
2338  1723  1134  T27R1,  TAD     TCNTR1
2339  1724  0120          AND     K0037                   /MASK SECTOR BITS
2340  1725  1065          TAD     CYL450
2341  1726  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
2342  1727  7301          CLA CLL IAC
2343  1730  1072          TAD     DRIVNO                  /GET DRIVE NUMBER
2344  1731  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
2345  1732  7301          CLA CLL IAC                     /EXTENDED BIT
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2346  1733  1105          TAD     K4000                   /FUNCTION WRITE DATA
2347  1734  3150          DCA     CMREG                   /SETUP COMMAND
2348  1735  1463          TAD I   XLOTRK                  /SECTOR TO LOAD
2349  1736  4426          DISKGO                          /DISK WRITE ALL
2350  1737  1767          T27T                            /TEXT POINTER
2351  1740  5365          JMP     T27E                    /ERROR, STATUS OR SKIP
2352  1741  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2353  1742  5323          JMP     T27R1                   /MORE SECTORS TO GO
2354                      /
2355                      /VERIFY THAT THE DATA WRITTEN ABOVE
2356                      /ON CYLINDER 1450 WAS O.K. CHECK WITH READ DATA.
2357                      /
2358  1743  1122          TAD     K7740
2359  1744  3134          DCA     TCNTR1                  /COUNTER FOR 37 SECTORS
2360  1745  4432  T27R2,  KILBUF                         /CLEAR DATA BUFFER
2361  1746  7301          CLA CLL IAC                     /FUNCTION READ DATA
2362  1747  3150          DCA     CMREG                   /SETUP COMMAND
2363  1750  1134          TAD     TCNTR1
2364  1751  0120          AND     K0037
2365  1752  1065          TAD     CYL450
2366  1753  4426          DISKGO                          /DISK READ DATA
2367  1754  1767          T27T                            /TEXT POINTER
2368  1755  5365          JMP     T27E                    /ERROR, STATUS OR SKIP
2369  1756  1113          TAD     K2525
2370  1757  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
2371  1760  7610          SKP CLA                         /DATA O.K.
2372  1761  5365          JMP     T27E                    /ERROR, DATA
2373  1762  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2374  1763  5345          JMP     T27R2                   /MORE SECTORS TO CHECK
2375  1764  4437          NERROR                          /O.K. TO NEXT TEST
2376  1765  4440  T27E,   ERROR                          /ERROR, WRITE ALL
2377  1766  1717          TST27                           /SCOPE LOOP POINTER
2378  1767  5373  T27T,   5373                           /TEXT POINTER
2379                      /
2380                      /SECTOR TIMING TEST; VERIFY CONSECUTIVE SECTORS.
2381                      /VERIFY THAT WRITE AND READ ALL ARE ACTUALLY DOING CONSECUTIVE
2382                      /SECTORS. WHEN DOING CONSECUTIVE SECTORS IN WRITE OR READ
2383                      /ALL MODE, SECTOR TRANSFERS SHOULD OCCUR EVERY 2.5 MILLI-
2384                      /SECONDS. THE PROGRAM WILL REPORT A STATUS ERROR OF
2385                      /NO DONE FLAG IF THIS DOES NOT OCCUR.
2386                      /
2387  1770  1156          TAD     HOMEMA
2388  1771  1072          TAD     DRIVNO
2389  1772  3136          DCA     TCNTR3                  /SAVE FIELD+DRIVE
2390  1773  4525  T28B,   JMS I   XLOAD
2391  1774  7700          7700
2392  1775  1122          TAD     K7740
2393  1776  3134          DCA     TCNTR1                  /SETUP SECTOR COUNTER
2394  1777  1115          TAD     K5000                   /FUNCTION WRITE ALL
2395  2000  3150          DCA     CMREG                   /SETUP COMMAND
2396  2001  7340          CLA CLL CMA
2397  2002  1120          TAD     K0037                   /SECTOR TO GO
2398  2003  4426          DISKGO                          /DISK WRITE ALL
2399  2004  2057          T28T                            /TEXT POINTER
2400  2005  5255          JMP     T28E                    /ERROR, DISK SKIP OR STATUS
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2401  2006  1166          TAD     K5300
2402  2007  3257          DCA     T28T                    /MODIFY TEXT POINTER
2403  2010  1134  T28R,   TAD     TCNTR1
2404  2011  0073          AND     K0001
2405  2012  7112          CLL RTR
2406  2013  1017          TAD     K1000                   /MAKE READ ALL OR WRITE ALL
2407  2014  1136          TAD     TCNTR3                  /GET FIELD+DRIVE
2408  2015  6746  T28IOA, DLDC                           /LOAD COMMAND REGISTER
2409  2016  1067          TAD     BGNBUF                  /GET BEGINNING OF BUFFER POINTER
2410  2017  6744  T28IOB, DLCA                           /LOAD CURRENT ADDRESS
2411  2020  1134          TAD     TCNTR1
2412  2021  0120          AND     K0037                   /MASK SECTOR BITS
2413  2022  6743  T28IOC, DLAG                           /LOAD AND GO
2414  2023  1174          TAD     KTIME
2415  2024  3135          DCA     TCNTR2                  /TIME COUNTER
2416  2025  6745  T28IOD, DRST                           /READ STATUS REGISTER
2417  2026  1105          TAD     K4000
2418  2027  7450          SNA                             /WAS STATUS 4000
2419  2030  5252          JMP     T28OK                   /YES, GOT TRANSFER DONE
2420  2031  2135          ISZ     TCNTR2                  /UPDATE TIME COUNTER
2421  2032  5225          JMP     T28IOD                  /WAIT FOR GOOD STATUS
2422  2033  1105          TAD     K4000                   /SUBTRACT, RESET STATUS
2423  2034  3146          DCA     STREG                   /SAVE FOR ERROR PRINTER
2424  2035  1134          TAD     TCNTR1
2425  2036  0073          AND     K0001
2426  2037  7112          CLL RTR
2427  2040  1017          TAD     K1000                   /MAKE READ ALL OR WRITE ALL
2428  2041  3150          DCA     CMREG                   /SAVE FOR ERROR PRINTER
2429  2042  1067          TAD     BGNBUF                  /GET START OF BUFFER
2430  2043  3152          DCA     CAREG                   /SAVE FOR PRINTER
2431  2044  1134          TAD     TCNTR1
2432  2045  0120          AND     K0037                   /MAKE SECTOR ADDRESS
2433  2046  3151          DCA     DAREG                   /SAVE FOR ERROR PRINTER
2434  2047  4447          DSKSKP                          /ERROR, HAVE TO WAIT FOR FLAG
2435  2050  5247          JMP     .-1                     /HANG IF NO SKIP
2436  2051  5255          JMP     T28E                    /ERROR, SECTOR RESPONSE NOT FOUND
2437  2052  2134  T28OK,  ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2438  2053  5210          JMP     T28R                    /MORE TO TEST
2439  2054  4437          NERROR                          /O.K. TO NEXT TEST
2440  2055  4440  T28E,   ERROR                          /ERROR, WRITE OR READ  ALL
2441  2056  1773          TST28                           /SCOPE LOOP POINTER
2442  2057  5300  T28T,   5300                           /TEXT POINTER
2443
2444                      /
2445                      /SECTOR TIMING TEST; VERIFY NON-CONSECUTIVE SECTORS.
2446                      /VERIFY THAT READ AND WRITE DATA ARE NOT DOING CONSECUTIVE
2447                      /SECTORS. WHEN TRYING TO DO CONSECUTIVE SECTORS IN READ DATA
2448                      /OR WRITE DATA MODE, SECTOR TRANSFERS SHOULD OCCUR EVERY DISK
2449                      /REVOLUTION, APROX. EVERY 40 MILLISECONDS. THE PROGRAM WILL
2450                      /REPORT AN ERROR OF A DONE FLAG IF THIS DOES NOT OCCUR
2451                      /
2452  2060  4525          JMS I   XLOAD
2453  2061  7775          7775
2454  2062  1122  TST29,  TAD     K7740
2455  2063  3134          DCA     TCNTR1                  /SECTOR COUNTER
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2456  2064  3150          DCA     CMREG                   /SETUP COMMAND
2457  2065  1120          TAD     K0037
2458  2066  4426          DISKGO                          /DISK READ DATA
2459  2067  2137          T29T                            /TEXT POINTER
2460  2070  5335          JMP     T29E                    /ERROR, SKIP OR STATUS
2461  2071  1166          TAD     K5300
2462  2072  3337          DCA     T29T                    /MODIFY TEXT POINTER
2463  2073  3143          DCA     GDREG2                  /EXPECTED STATUS
2464  2074  1134  T29R,   TAD     TCNTR1
2465  2075  0073          AND     K2001
2466  2076  7112          CLL RTR                         /MAKE READ OR WRITE
2467  2077  1136          TAD     TCNTR3                  /GET FIELD+DRIVE
2468  2100  6746  T29I0A, DLDC                            /LOAD COMMAND REGISTER
2469  2101  1067          TAD     BGNBUF
2470  2102  6744  T29I0B, DLCA                            /LOAD CURRENT ADDRESS
2471  2103  1134          TAD     TCNTR1
2472  2104  0120          AND     K0037                   /MASK SECTOR BITS
2473  2105  6743  T29I0C, DLAG                            /LOAD AND GO
2474  2106  1174          TAD     KTIME
2475  2107  3135          DCA     TCNTR2                  /TIME COUNTER
2476  2110  6745  T29I0D, DMST                            /READ STATUS REGISTER
2477  2111  7450          SNA                             /STATUS O.K.?
2478  2112  5326          JMP     T29W                    /WAIT FOR CORRECT RESPONSE (0000)
2479  2113  3146          DCA     STREG                   /NO, SAVE STATUS FOR PRINTER
2480  2114  1134          TAD     TCNTR1
2481  2115  0073          AND     K0001
2482  2116  7112          CLL RTR                         /MAKE READ OR WRITE
2483  2117  3150          DCA     CMREG                   /SAVE FOR ERROR PRINTER
2484  2120  1067          TAD     BGNBUF                  /GET START OF BUFFER
2485  2121  3152          DCA     CAREG                   /SAVE FOR ERROR PRINTER
2486  2122  1134          TAD     TCNTR1
2487  2123  0120          AND     K0037                   /MASK SECTOR ADDRESS
2488  2124  3151          DCA     DAREG                   /SAVE FOR ERROR PRINTER
2489  2125  5335          JMP     T29E                    /ERROR, SECTOR RESPONSE NOT FOUND
2490  2126  2135  T29W,   ISZ     TCNTR2                  /UPDATE TIME COUNTER
2491  2127  5310          JMP     T29I0D                  /WAIT FOR GOOD STATUS
2492  2130  4447          DSKSKP                          /ERROR, HAVE TO WAIT FOR FLAG
2493  2131  5330          JMP     .-1                     /HANG IF NO SKIP
2494  2132  2134  T29OK,  ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2495  2133  5274          JMP     T29R                    /MORE TO TEST
2496  2134  4437          NERROR                          /O.K. TO NEXT TEST
2497  2135  4440  T29E,   ERROR                           /ERROR, STATUS
2498  2136  2062          TST29                           /SCOPE LOOP POINTER
2499  2137  5300  T29T,   5300                            /MODIFIED TEXT POINTER
2500                      /
2501                      /CRC TEST
2502                      /
2503                      /DATA TRANSFER IS WORKING, NOW CHECK CRC WORD IN
2504                      /THE CRC REGISTER AFTER A READ ALL. THE CRC SHOULD BE
2505                      /ALL 2'S FOR ALL 2'S DATA PATTERN.
2506                      /
2507  2140  1110  TST30,  TAD     K7740
2508  2141  3134          DCA     TCNTR1                  /SETUP SECTOR COUNTER
2509  2142  7301  T30R,   CLA CLL IAC
2510  2143  4453          CLRALL                          /CLEAR CONTROL
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2511  2144  4432          FILBUF                          /CLEAR BUFFER AREA
2512  2145  1115          TAD     K5000                   /FUNCTION WRITE ALL
2513  2146  3150          DCA     CMREG                   /SETUP COMMAND
2514  2147  1134          TAD     TCNTR1
2515  2150  0117          AND     K0017                   /MASK SECTOR BITS
2516  2151  4426          DISKGO                          /DISK WRITE ALL
2517  2152  2211          T30T                            /TEXT POINTER
2518  2153  5777*         JMP     T30E                    /ERROR, STATUS OR SKIP
2519  2154  1017          TAD     K1000                   /FUNCTION READ ALL
2520  2155  3150          DCA     CMREG                   /SETUP COMMAND
2521  2156  1134          TAD     TCNTR1
2522  2157  0117          AND     K0017                   /MASK SECTOR BITS
2523  2160  4426          DISKGO                          /DISK READ ALL
2524  2161  2211          T30T                            /TEXT POINTER
2525  2162  5777*         JMP     T30E                    /ERROR, STATUS OR SKIP
2526  2163  1167          TAD     K6304
2527  2164  3776*         DCA     T30T                    /MODIFY TEXT POINTER
2528  2165  7301          CLA CLL IAC                     /ENABLE CLEAR CONTROL
2529  2166  4453          CLRALL                          /AND CLEAR ARK ENABLE FLOP
2530  2167  3142          DCA     GDREG1                  /STORE IN COMPARE RREGISTER
2531  2170  3143          DCA     GDREG2                  /STORE IN COMPARE REGISTER
2532  2171  5772          JMP I .+1
2533  2172  2200          T30D
2534  2176  2211
2535  2177  2207
                  2200    PAGE
2536  2200  4454  T30D,   RDCRC                           /READ CRC REGISTER
2537  2201  4443          ACCMP2                          /CHECK RESULTS
2538  2202  7610          SKP CLA                         /O.K.
2539  2203  5207          JMP     T30F                    /ERROR, CRC
2540  2204  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2541  2205  5777*         JMP     T30R                    /MORE SECTORS TO TEST
2542  2206  4437          NERROR                          /O.K. TO NEXT TEST
2543  2207  4440  T30E,   ERROR                           /ERROR, CRC
2544  2210  2142          TST30                           /SCOPE LOOP POINTER
2545  2211  6304  T30T,   6304                            /TEXT POINTER
2546                      /
2547                      /CRC TEST
2548                      /
2549                      /VERIFY THAT THE CRC WORD WRITTEN
2550                      /ON DISK IS CORRECT, COMPARE IT TO
2551                      /KNOWN VALUE IN CORE, ON A READ ALL THE
2552                      /CRC READ FROM DISK IS LEFT IN THE CRC BUFFER.
2553                      /THE CRC SHOULD BE 116047 FOR DATA 2525+5252.
2554                      /
2555  2212  1110  TST31,  TAD     K7760
2556  2213  3134          DCA     TCNTR1                  /SETUP SECTOR COUNTER
2557  2214  7301  T31R,   CLA CLL IAC
2558  2215  4453          CLRALL                          /CLEAR CONTROL
2559  2216  1113          TAD     K2525
2560  2217  4431          FILBUF                          /FILL DATA BUFFER
2561  2220  1115          TAD     K5000                   /FUNCTION WRITE ALL
2562  2221  3150          DCA     CMREG                   /SETUP COMMAND
2563  2222  1134          TAD     TCNTR1
2564  2223  0117          AND     K0017                   /MASK SECTOR BITS
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2565  2224  1110          TAD     K7760
2566  2225  4426          DISKGO                          /DISK WRITE ALL
2567  2226  2261          T31T                            /TEXT POINTER
2568  2227  5257          JMP     T31E                    /ERROR, STATUS OR SKIP
2569  2230  1017          TAD     K1000                   /FUNCTION READ ALL
2570  2231  3150          DCA     CMREG                   /SETUP COMMAND
2571  2232  1134          TAD     TCNTR1
2572  2233  0117          AND     K0017                   /MASK SECTOR BITS
2573  2234  1110          TAD     K7760
2574  2235  4426          DISKGO                          /DISK READ ALL
2575  2236  2261          T31T                            /TEXT POINTER
2576  2237  5257          JMP     T31E                    /ERROR, STATUS OR SKIP
2577  2240  1167          TAD     K6304
2578  2241  3261          DCA     T31T                    /MODIFY TEXT POINTER
2579  2242  7301          CLA CLL IAC                     /ENABLE CLEAR CONTROL AND
2580  2243  4453          CLRALL                          /CLEAR BRK ENABLE FLOP.
2581  2244  1160          TAD     CRWRD1                  /GET GOOD CRC
2582  2245  3142          DCA     GOREG1                  /STORE IN COMPARE REGISTER
2583  2246  1161          TAD     CRWRD2                  /GET GOOD CRC
2584  2247  3143          DCA     GOREG2                  /STORE IN COMPARE REGISTER
2585  2250  4454          RDCRC                           /READ CRC REGISTER
2586  2251  4443          ACCMP2                          /CHECK RESULTS
2587  2252  7610          SKP CLA                         /O.K.
2588  2253  5257          JMP     T31E                    /ERROR, CRC
2589  2254  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2590  2255  5214          JMP     T31R                    /MORE SECTORS TO TEST
2591  2256  4437          NERROR                          /O.K, TO NEXT TEST
2592  2257  4440  T31E,   ERROR                           /ERROR, CRC
2593  2260  2212          TST31                           /SCOPE LOOP POINTER
2594  2261  6304  T31T,   6304                            /TEXT POINTER
2595                      /
2596                      /VERIFY HEAD MOTION AND CAPABILITY
2597                      /OF SELECTING TWO TRACKS INDIVIDUALLY.
2598                      /
2599                      /VERIFY A WRITE ALL TO ALL OF CYLINDER 1450
2600                      /AND THEN CYLINDER 0, USE DATA PATTERN 5252+2525 ON
2601                      /CYLINDER 1450 AND 2525+5252 ON CYLINDER 0.
2602                      /CHECK FOR NO ERRORS IN STATUS.
2603                      /MAKE FIRST TWO WORDS OF EVERY SECTOR
2604                      /EQUAL TO ADDRESS OF SECTOR.
2605                      /
2606                      /FIRST WRITE CYLINDER 1450
2607                      /
2608  2262  1122  TST32,  TAD     K7740
2609  2263  3134          DCA     TCNTR1                  /SETUP SECTOR COUNTER
2610  2264  1114          TAD     K5252
2611  2265  4431          FILBUF                          /FILL BUFFER WITH DATA
2612  2266  7301          CLA CLL IAC
2613  2267  1072          TAD     DRIVND                  /GET DRIVE NUMBER
2614  2270  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
2615  2271  1134  T32R1,  TAD     TCNTR1
2616  2272  0120          AND     K0037                   /MASK SECTOR BITS
2617  2273  1065          TAD     CYL450                  /LOWER CYLINDER
2618  2274  3463          DCA I   XLOTRK                  /SETUP WORD IN BUFFER
2619  2275  7301          CLA CLL IAC
```



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2620  2276  1115          TAD     K5000                   /FUNCTION WRITE ALL
2621  2277  3150          DCA     CMREG                   /SETUP COMMAND
2622  2300  1463          TAD I   XLOTRK                  /SECTOR TO GO
2623  2301  4426          DISKGO                          /DISK WRIT ALL
2624  2302  2374          T32T                            /TEXT POINTER
2625  2303  5372          JMP     T32E                    /ERROR, STATUS OR SKIP
2626  2304  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2627  2305  5271          JMP     T32R1                   /MORE SECTORS TO GO
2628                      /
2629                      /WRITE ALL TO ALL OF CYLINDER 0
2630                      /
2631  2306  1122          TAD     K7740
2632  2307  3134          DCA     TCNTR1                  /SETUP SECTOR COUNTER
2633  2310  1113          TAD     K2525
2634  2311  4431          FILBUF                          /FILL BUFFER WITH DATA
2635  2312  1134  T32R2,  TAD     TCNTR1
2636  2313  0120          AND     K0037                   /MASK SECTOR BITS
2637  2314  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
2638  2315  1072          TAD     DRIVND                  /GET DRIVE NUMBER
2639  2316  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
2640  2317  1115          TAD     K5000                   /FUNCTION WRITE ALL
2641  2320  3150          DCA     CMREG                   /SETUP COMMAND
2642  2321  1463          TAD I   XLOTRK                  /SECTOR TO LOAD
2643  2322  4426          DISKGO                          /DISK WRITE ALL
2644  2323  2374          T32T                            /TEXT POINTER
2645  2324  5372          JMP     T32E                    /ERROR, SKIP OR STATUS
2646  2325  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2647  2326  5312          JMP     T32R2                   /MORE SECTORS TO GO
2648                      /
2649                      /VERIFY THAT THE DATA WRITTEN ABOVE
2650                      /ON CYLINDER 1450 WAS O.K. CHECK WITH READ ALL.
2651                      /
2652  2327  1122          TAD     K7740
2653  2330  3134          DCA     TCNTR1                  /COUNTER FOR 37 SECTORS
2654  2331  4432  T32R3,  KILBUF                          /CLEAR DATA BUFFER
2655  2332  7301          CLA CLL IAC
2656  2333  1017          TAD     K1000                   /READ ALL FUNCTION
2657  2334  3150          DCA     CMREG                   /SETUP COMMAND
2658  2335  1134          TAD     TCNTR1
2659  2336  0120          AND     K0037
2660  2337  1065          TAD     CYL450                  /ADD IN CYLINDER
2661  2340  4426          DISKGO                          /DISK READ ALL
2662  2341  2374          T32T                            /TEXT POINTER
2663  2342  5372          JMP     T32E                    /ERROR, STATUS OR SKIP
2664  2343  1114          TAD     K5252
2665  2344  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
2666  2345  7610          SKP CLA                         /DATA O.K.
2667  2346  5372          JMP     T32E                    /ERROR, DATA
2668  2347  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2669  2350  5331          JMP     T32R3                   /MORE SECTORS TO CHECK
2670                      /
2671                      /VERIFY THAT THE DATA WRITTEN ABOVE
2672                      /ON CYLINDER 0 WAS O.K. CHECK WITH READ ALL.
2673                      /
2674  2351  1122          TAD     K7740
```

```
2675    2352  3134          DCA     TCNTR1
2676    2353  4432  T32R4,  KILBUF                  /COUNTER FOR 37 SECTORS
2677    2354  1017                                  /CLEAR DATA BUFFER
2678    2355  3150          TAD     K1000           /READ ALL FUNCTION
2679    2356  1134          DCA     CMREG           /SETUP COMMAND
2680    2357  0120          TAD     TCNTR1
2681    2360  4426          AND     K0037
2682    2361  2374          DISKGO
2683    2362  5372          T32T                    /DISK READ ALL
2684    2363  1113          JMP     T32E            /TEXT POINTER
2685    2364  4430          TAD     K2525           /ERROR, STATUS OR SKIP
2686    2365  7610          FIGURE
2687    2366  5372          SKP CLA                 /WORD BY WORD COMPARE OF DATA
2688    2367  2134          JMP     T32E            /DATA O.K.
2689    2370  5353          ISZ     TCNTR1          /ERROR, DATA
2690    2371  4437          JMP     T32R4           /UPDATE SECTOR COUNTER
2691    2372  4440  T32E,   NERROR                  /MORE SECTORS TO CHECK
2692    2373  2262          TST32                   /O.K. TO NEXT TEST
2693    2374  5373  T32T,   5373                    /ERROR, WRITE ALL
2694                        /                       /SCOPE LOOP POINTER
2695    2375  5776          JMP I   .+1             /TEXT POINTER
2696    2376  2400          TST33                   /TO NEXT TEST
2697                        /
2698    2377  2142
              2400  PAGE
2699                        /
2700                        /VERIFY HEAD MOTION AND CAPABILITY
2701                        /OF SELECTING TWO TRACKS INDIVIDUALLY.
2702                        /
2703                        /VERIFY A WRITE DATA TO ALL OF CYLINDER 0
2704                        /THEN CYLINDER 1450. USE DATA PATTERN 2525+5252 ON
2705                        /CYLINDER 1450 AND 5252+2525 ON CYLINDER 0.
2706                        /CHECK FOR NO ERRORS IN STATUS.
2707                        /MAKE FIRST TWO WORDS OF EVERY SECTOR
2708                        /EQUAL TO ADDRESS OF SECTOR.
2709                        /
2710                        /FIRST WRITE DATA TO CYLINDER 0.
2711                        /
2712    2400  1122  TST33,  TAD     K7740
2713    2401  3134          DCA     TCNTR1
2714    2402  1114          TAD     K5252           /SETUP SECTOR COUNTER
2715    2403  4431          FILBUF
2716    2404  7300  T33R1,  CLA CLL                 /FILL BUFFER WITH DATA
2717    2405  1134          TAD     TCNTR1
2718    2406  0120          AND     K0037
2719    2407  3463          DCA I   XLOTRK          /MASK OFF SECTOR BITS
2720    2410  1072          TAD     DRIVNO          /SETUP ADDRESS WORD IN BUFFER
2721    2411  3464          DCA I   XHITRK          /GET DRIVE NUMBER
2722    2412  1105          TAD     K4000           /SETUP ADDRESS WORD IN BUFFER
2723    2413  3150          DCA     CMREG           /FUNCTION WRITE DATA
2724    2414  1463          TAD I   XLOTRK          /SETUP COMMAND
2725    2415  4426          DISKGO                  /SECTOR TO LOAD
2726    2416  2511          T33T                    /DISK WRITE DATA
2727    2417  5307          JMP     T33E            /TEXT POINTER
2728    2420  2134          ISZ     TCNTR1          /ERROR, STATUS OR SKIP
                                                    /UPDATE SECTOR COUNTER
```



```
2729    2421  5204          JMP     T33R1           /MORE SECTORS TO GO
2730                        /
2731                        /WRITE DATA TO ALL OF CYLINDER 1450
2732                        /
2733    2422  1122          TAD     K7740
2734    2423  3134          DCA     TCNTR1          /SETUP SECTOR COUNTER
2735    2424  1113          TAD     K2525
2736    2425  4431          FILBUF                  /FILL BUFFER WITH DATA
2737    2426  7301          CLA CLL IAC
2738    2427  1072          TAD     DRIVNO          /GET DRIVE NUMBER
2739    2430  3464          DCA I   XHITRK          /SETUP ADDRESS WORD IN BUFFER
2740    2431  1134  T33R2,  TAD     TCNTR1
2741    2432  0120          AND     K0037           /MASK OFF SECTOR BITS
2742    2433  1065          TAD     CYL450          /ADD IN CYLINDER
2743    2434  3463          DCA I   XLOTRK          /SETUP ADDRESS WORD IN BUFFER
2744    2435  7301          CLA CLL IAC             /EXTENDED TRACK BIT
2745    2436  1105          TAD     K4000           /FUNCTION WRITE DATA
2746    2437  3150          DCA     CMREG           /SETUP COMMAND
2747    2440  1463          TAD I   XLOTRK          /SECTOR TO LOAD
2748    2441  4426          DISKGO                  /DISK WRITE DATA
2749    2442  2511          T33T                    /TEXT POINTER
2750    2443  5307          JMP     T33E            /ERROR, STATUS OR SKIP
2751    2444  2134          ISZ     TCNTR1          /UPDATE SECTOR COUNTER
2752    2445  5231          JMP     T33R2           /MORE SECTORS TO GO
2753                        /
2754                        /VERIFY THAT THE DATA WRITTEN ABOVE
2755                        /ON CYLINDER 0 WAS O.K. CHECK WITH READ DATA.
2756                        /
2757    2446  1122          TAD     K7740
2758    2447  3134          DCA     TCNTR1
2759    2450  4432  T33R3,  KILBUF                  /COUNTER FOR 37 SECTORS
2760    2451  3150          DCA     CMREG           /CLEAR DATA BUFFER
2761    2452  1134          TAD     TCNTR1          /SETUP COMMAND
2762    2453  0120          AND     K0037
2763    2454  4426          DISKGO
2764    2455  2511          T33T                    /DISK READ DATA
2765    2456  5307          JMP     T33E            /TEXT POINTER
2766    2457  1114          TAD     K5252           /ERROR, STATUS OR SKIP
2767    2460  4430          FIGURE
2768    2461  7610          SKP CLA                 /WORD BY WORD COMPARE OF DATA
2769    2462  5307          JMP     T33E            /DATA O.K.
2770    2463  2134          ISZ     TCNTR1          /ERROR, DATA
2771    2464  5250          JMP     T33R3           /UPDATE SECTOR COUNTER
2772                        /                       /MORE SECTORS TO CHECK
2773                        /VERIFY THAT THE DATA WRITTEN ABOVE
2774                        /ON CYLINDER 1450 WAS O.K. CHECK WITH READ DATA.
2775                        /
2776    2465  1122          TAD     K7740
2777    2466  3134          DCA     TCNTR1
2778    2467  4432  T33R4,  KILBUF                  /SECTOR COUNTER
2779    2470  7301          CLA CLL IAC             /CLEAR DATA BUFFER
2780    2471  3150          DCA     CMREG           /SETUP COMMAND
2781    2472  1134          TAD     TCNTR1
2782    2473  0120          AND     K0037
2783    2474  1065          TAD     CYL450          /ADD IN CYLINDER
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2784    2475  4426          DISKGO                          /DISK READ DATA
2785    2476  2511          T33T                            /TEXT POINTER
2786    2477  5307          JMP     T33E                    /ERROR, STATUS OR SKIP
2787    2500  1113          TAD     K2525
2788    2501  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
2789    2502  7610          SKP CLA                         /DATA O.K.
2790    2503  5307          JMP     T33E                    /ERROR, DATA
2791    2504  2134          ISZ     TCNTR1                  /UPDATE SECTOR COUNTER
2792    2505  5267          JMP     T33R4                   /MORE SECTORS TO CHECK
2793    2506  4437          NERROR                          /O.K. TO NEXT TEST
2794    2507  4440  T33E,   ERROR                           /ERROR, WRITE DATA
2795    2510  2400          TST33                           /SCOPE LOOP POINTER
2796    2511  5373  T33T,   5373                            /TEXT POINTER
2797                        /
2798                        /FORCE CYLINDER ADDRESS ERROR
2799                        /
2800                        /VERIFY A CYLINDER ADDRESS ERROR IN
2801                        /STATUS REGISTER. CAN BE CAUSED BY ISSUEING
2802                        /MAINTENANCE SHIFT CRC AFTER DISK
2803                        /HAS ACCEPTED THE ADDRESS.
2804                        /
2805    2512  4525          JMS I   XLOAD
2806    2513  0001          1
2807    2514  7301  TST34,  CLA CLL IAC
2808    2515  4453          CLRALL                          /CLEAR CONTROL
2809    2516  4424          SEEK                            /SEEK ONLY TRACK 0
2810    2517  2550          T34T                            /TEXT POINTER
2811    2520  5346          JMP     T34E                    /ERROR,SKIP OR STATUS
2812    2521  7301          CLA CLL IAC
2813    2522  1156          TAD     HOMEMA
2814    2523  1072          TAD     DRIVNO
2815    2524  1105          TAD     K4000                   /TOTAL COMMAND WRITE DATA.
2816    2525  4450          LDCMD                           /LOAD COMMAND REGISTER
2817    2526  7301          CLA CLL IAC
2818    2527  1105          TAD     K4000
2819    2530  3143          DCA     GDREG2                  /EXPECTED STATUS
2820    2531  1066          TAD     TRK212
2821    2532  4452          LDADD                           /LOAD AND GO READ
2822    2533  7330          CLA CLL CML RAR
2823    2534  4455          LDMAN                           /ENTER MAINTENANCE
2824    2535  7010          RAR
2825    2536  4455          LDMAN                           /SET DR4 FOR ENABLE SHIFT
2826    2537  7010          RAR
2827    2540  4455          LDMAN                           /SHIFT CRC
2828    2541  4447          DSKSKP                          /WAIT FOR FLAG
2829    2542  5341          JMP     .-1
2830    2543  4444          RDSTAT                          /READ STATUS REGISTER
2831    2544  4442          ACCMP1                          /CHECK RESULTS
2832    2545  4437          NERROR                          /O.K. TO NEXT TEST
2833    2546  4440  T34E,   ERROR                           /ERROR, CYLINDER ADDRESS
2834    2547  2514          TST34                           /SCOPE LOOP POINTER
2835    2550  5300  T34T,   5300                            /TEXT POINTER
2836                        /
2837                        /
2838                        /FORCE CRC ERROR
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2839                        /
2840                        /VERIFY A CRC ERROR BY ENTERING MAINTENANCE
2841                        /AND SHIFTING CRC IN WRITE ALL MODE.
2842                        /
2843    2551  7301  TST35,  CLA CLL IAC
2844    2552  4453          CLRALL                          /CLEAR CONTROL
2845    2553  4432          KILBUF                          /CLEAR BUFFER AREA
2846    2554  1067          TAD     BGNBUF
2847    2555  4451          LDCUR                           /LOAD CURRENT ADDRESS
2848    2556  1156          TAD     HOMEMA
2849    2557  1072          TAD     DRIVNO
2850    2560  1115          TAD     K5000                   /TOTAL WRITE COMMAND
2851    2561  4450          LDCMD                           /LOAD COMMAND
2852    2562  4452          LDADD                           /LOAD AND GO WRITE ALL
2853    2563  7330          CLA CLL CML RAR
2854    2564  4455          LDMAN                           /ENTER MAINTENANCE
2855    2565  7010          RAR
2856    2566  4455          LDMAN                           /SET DR4 TO ENABLE SHIFT
2857    2567  7010          RAR
2858    2570  1074          TAD     K0002                   /SET AC BIT 10 DATA
2859    2571  4455          LDMAN                           /SHIFT CRC
2860    2572  4447          DSKSKP                          /SKIP ON ERROR FLAG!
2861    2573  5371          JMP     .-2                     /KEEP SHIFTING CRC TILL ERROR
2862    2574  7301          CLA CLL IAC
2863    2575  4453          CLRALL                          /CLEAR CONTROL
2864    2576  7330          CLA CLL CML RAR
2865    2577  1011          TAD     K0010
2866    2600  3143          DCA     GDREG2                  /EXPECTED STATUS REGISTER
2867    2601  1067          TAD     BGNBUF
2868    2602  4451          LDCUR                           /LOAD CURRENT ADDRESS
2869    2603  1156          TAD     HOMEMA
2870    2604  1072          TAD     DRIVNO
2871    2605  1017          TAD     K1000                   /TOTAL READ ALL COMMAND
2872    2606  4450          LDCMD                           /LOAD COMMAND REGISTER
2873    2607  4452          LDADD                           /LOAD AND GO READ ALL
2874    2610  4447          DSKSKP                          /WAIT AND SKIP ON CRC ERROR!
2875    2611  5210          JMP     .-1
2876    2612  4444          RDSTAT                          /READ STATUS REGISTER
2877    2613  4442          ACCMP1                          /CHECK RESULTS
2878    2614  4437          NERROR                          /O.K. TO NEXT TEST
2879    2615  4440  T35E,   ERROR                           /ERROR, CRC ERROR
2880    2616  2551          TST35                           /SCOPE POINTER
2881    2617  5300          5300                            /TEXT POINTER
2882                        /
2883                        /BIG ADDRESSING TEST
2884                        /FORMAT THE COMPLETE DISK SURFACE WITH
2885                        /WRITE ALL, USE DATA PATTERN 2525+5252
2886                        /MAKE FIRST TWO WORDS OF EVERY SECTOR
2887                        /EQUAL TO ABSOLUTE ADDRESS OF SECTOR.
2888                        /
2889    2620  4525          JMS I   XLOAD
2890    2621  7700          7700
2891    2622  7301  TST36,  CLA CLL IAC
2892    2623  4453          CLRALL                          /CLEAR CONTROL
2893    2624  1113          TAD     K2525
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2894  2625  4431          FILBUF                        /FILL BUFFER WITH DATA
2895  2626  3463          DCA I   XLOTRK                /COUNTER+TRACK WORD
2896  2627  1072          TAD     DRIVNO                /GET DRIVE NUMBER
2897  2630  3464          DCA I   XHITRK                /COUNTER+TRACK WORD
2898  2631  1072          TAD     DRIVNO                /CURRENT DRIVE
2899  2632  1156          TAD     HOMEMA                /CURRENT FIELD
2900  2633  1115          TAD     K5000                 /FUNCTION WRITE ALL
2901  2634  3150          DCA     CMREG                 /SETUP COMMAND
2902  2635  1067          TAD     BGNBUF                /GET START OF BUFFER
2903  2636  3152          DCA     CAREG                 /FOR ERROR PRINTER
2904  2637  4530  T36R,   TICK                          /APT TIMING
2905  2640  7330          CLA CLL CML RAR
2906  2641  3143          DCA     GOREG2                /SETUP EXPECTED STATUS COMPARE
2907  2642  1067          TAD     BGNBUF                /START OF BUFFER
2908  2643  6744  IOT4A1, DLCA                         /LOAD CURRENT ADDRESS
2909  2644  1150          TAD     CMREG                 /LAST COMMAND
2910  2645  6746  IOT6A1, DLOC                         /LOAD COMMAND REGISTER
2911  2646  1463          TAD I   XLOTRK                /SECTOR TO LOAD
2912  2647  6743  IOT3A1, DLAG                         /LOAD AND GO
2913  2650  6741  IOT1A1, DSKP                         /DISK SKIP IOT
2914  2651  5250          JMP     .-1                   /WAIT FOR FLAG
2915  2652  6745  IOT5A1, DRST                         /READ STATUS
2916  2653  1105          TAD     K4000                 /ADD IN FUDGE FACTOR
2917  2654  7440          SZA                           /STATUS O.K.????
2918  2655  5273          JMP     T36E                  /NO, STATUS ERROR
2919  2656  2463          ISZ I   XLOTRK
2920  2657  5262          JMP     .+3                   /DON'T SET EXTENDED TRACK
2921  2660  2150          ISZ     CMREG                 /YES, SET IT
2922  2661  2464          ISZ I   XHITRK                /SETUP BUFFER ALSO
2923  2662  1464          TAD I   XHITRK                /GET TRACK WORD
2924  2663  7110          CLL RAR                       /GET EXTENDED BIT TO LINK
2925  2664  7620          SNL CLA                       /WAS IT SET
2926  2665  5237          JMP     T36R                  /NO, CONTINUE
2927  2666  1463          TAD I   XLOTRK                /GET LOWER TRACK WORD
2928  2667  1170          TAD     ENDTRK                /ADD IN FUDGE FACTOR
2929  2670  7640          SZA CLA                       /DONE WITH DISK
2930  2671  5237          JMP     T36R                  /NO, MORE TO GO
2931  2672  5300          JMP     T36N                  /DONE
2932  2673  1105  T36E,   TAD     K4000                 /RESET STATUS
2933  2674  3146          DCA     STREG                 /SAVE FOR ERROR PRINTER
2934  2675  1463          TAD I   XLOTRK                /GET ADDRESS
2935  2676  3151          DCA     DAREG                 /FOR ERROR PRINTER
2936  2677  7410          SKP                           /REPORT ERROR!
2937  2700  4437  T36N,   NERROR                       /O.K. TO NEXT TEST
2938  2701  4440          ERROR                         /ERROR, STATUS
2939  2702  2622          TST36                         /SCOPE LOOP POINTER
2940  2703  5300  T36T,   5300                         /TEXT POINTER
2941  2704  5705          JMP I   .+1
2942  2705  3000          TST37-2
2943                /
2944                /THE FOLLOWING IS A ROUTINE TO CHECK THE WRITE PROTECT
2945                /FUNCTION WHEN IT IS MANUALLY SET BY THE OPERATOR.
2946                /NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS TEST.
2947                /
2948  2706  4405    MANPRO, CLASIC                        /CHECK FOR CLASSIC.
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2949  2707  4431          C8SWIT                        /ROUTINE TO EXECUTE.
2950  2710  7000          NOP
2951  2711  4404          LAS                           /GET THE SWITCHES
2952  2712  7104          CLL RAL
2953  2713  0100          AND     K0006                 /MASK DRIVE NUMBER
2954  2714  3072          DCA     DRIVNO                /SAVE DRIVE NUMBER
2955  2715  1111          TAD     K7700
2956  2716  3132          DCA     REG1                  /SETUP PASS COUNTER
2957  2717  3131          DCA     REG0                  /SETUP FLAG POINTER
2958  2720  1113          TAD     K2525                 /DATA PATTERN TO WRITE
2959  2721  4431          FILBUF                        /FILL OUTBOUND BUFFER
2960  2722  1072          TAD     DRIVNO
2961  2723  3464          DCA I   XHITRK                /SETUP ADDRESS WORD IN BUFFER
2962  2724  3463          DCA I   XLOTRK                /SETUP ADDRESS WORD IN BUFFER
2963  2725  1115          TAD     K5000                 /WRITE ALL FUNCTION
2964  2726  3150          DCA     CMREG                 /SETUP COMMAND
2965  2727  4426          DISKGO                        /WRITE ALL TO SECTOR 0
2966  2730  2773          TMPROT                        /TEXT POINTER
2967  2731  5371          JMP     MPERR                 /ERROR, STATUS
2968  2732  4405          CLASIC
2969  2733  4436          CAERR
2970  2734  7402  MPHLT1, HLT                           /HALT AND WAIT FOR OPERATOR
2971                                                    /IF ON CLASSIC CONSOLE PACKAGE
2972                                                    /HIT CONTROL E. IF NOT THEN
2973                                                    /PRESS KEY CONTINUE.
2974                /
2975  2735  4432  MPR1,   KILBUF                        /CLEAR OUTBOUND BUFFER
2976  2736  1072          TAD     DRIVNO
2977  2737  3464          DCA I   XHITRK                /SETUP ADDRESS WORD IN BUFFER
2978  2740  1115          TAD     K5000                 /WRITE ALL FUNCTION
2979  2741  3150          DCA     CMREG                 /SETUP COMMAND REGISTER
2980  2742  4426          DISKGO                        /WRITE ALL TO SECTOR 0
2981  2743  2773          TMPROT                        /TEXT POINTER
2982  2744  7200          NOP
2983  2745  7326          CLA CLL CML RTL
2984  2746  1012          TAD     K0020                 /MAKE EXPECTED STATUS
2985  2747  3143          DCA     GOREG2                /SETUP COMPARE REGISTER
2986  2750  1166          TAD     K5300
2987  2751  3373          DCA     TMPROT                /SETUP TEXT POINTER
2988  2752  1146          TAD     STREG                 /GET STATUS READ
2989  2753  4442          ACCMP1                        /CHECK RESULTS
2990  2754  7610          SKP CLA                       /STATUS O.K.
2991  2755  5371          JMP     MPERR                 /ERROR, WRITE PROTECT
2992  2756  7301          CLA CLL IAC                   /ENABLE CLEAR CONTROL
2993  2757  4453          CLRALL                        /CLEAR CONTROL
2994  2760  4432          KILBUF                        /CLEAR DATA BUFFER
2995  2761  1017          TAD     K1000                 /FUNCTION READ ALL
2996  2762  3150          DCA     CMREG                 /SETUP COMMAND
2997  2763  4426          DISKGO                        /READ ALL SECTOR 0
2998  2764  2773          TMPROT                        /TEXT POINTER
2999  2765  5371          JMP     MPERR                 /ERROR
3000  2766  1113          TAD     K2525                 /EXPECTED PATTERN
3001  2767  4430          FIGURE                        /CHECK DATA READ
3002  2770  4437          NERROR                        /ALL O.K. GO LOOP 64 TIMES
3003  2771  4440  MPERR,  ERROR                         /ERROR, WRITE PROTECT
```

```
3004    2772  2735            MPR1
3005    2773  0000    TMPROT, 0000                    /TEXT POINTER
3006    2774  4405            CLASIC
3007    2775  4436            CERR
3008    2776  7402    MPHLT2, HLT                     /SUCCESSFUL WRITE PROTECT
3009                                                  /TO REPEAT TEST: IF ON
3010                                                  /CLASSIC CONSOLE PACKAGE
3011                                                  /HIT CONTROL E. IF NOT THEN
3012                                                  /PRESS KEY CONTINUE.
3013    2777  5306            JMP     MANPRO          /REPEAT
3014          3000    PAGE
3015                  /
3016                  /BIG ADDRESSING CHECK!
3017                  /IF A DATA ERROR SHOULD HAPPEN TO OCCUR
3018                  /WITH THE FIRST TWO WORDS OF THE BUFFER, YOU
3019                  /SHOULD REALIZE THAT THE PROBLEM COULD BE
3020                  /ADDRESSING.
3021                  /
3022                  /
3023                  /VERIFY THAT THE DATA ON DISK IS CORRECT
3024                  /CHECK THE COMPLETE SURFACE
3025                  /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3026                  /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR
3027                  /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3028                  /
3029    3000  4525            JMS I   XLOAD
3030    3001  7770            7770
3031    3002  3134    TST37,  DCA     TCNTR1
3032    3003  1017            TAD     K1000           /FUNCTION READ ALL
3033    3004  1156            TAD     HOMEMA          /CURRENT FIELD
3034    3005  1072            TAD     DRIVNO          /CURRENT DRIVE
3035    3006  3150            DCA     CMREG           /SETUP COMMAND
3036    3007  1211            TAD     .+2             /GET TEXT POINTER
3037    3010  7410            SKP
3038    3011  3102            T37T                    /TEXT POINTER
3039    3012  3172            DCA     SAVPCT          /SAVE FOR CRC ERROR
3040    3013  1067            TAD     BGNBUF          /GET START OF BUFFER
3041    3014  3152            DCA     CAREG           /SAVE FOR ERROR PRINTER
3042    3015  4530    T37R,   TICK                            /APT TIMING
3043    3016  7340            CLA CLL CMA
3044    3017  3171            DCA     SOFERR          /SETUP CRC ERROR POINTER
3045    3020  4432            KILBUF                  /CLEAR DATA BUFFER
3046    3021  1134            TAD     TCNTR1          /LOWER DISK ADDRESS
3047    3022  3151            DCA     DAREG           /SAVE FOR PRINTER
3048    3023  1067            TAD     BGNBUF          /GET START OF BUFFER
3049    3024  6744    IOT4A2, DLCA                    /LOAD CURRENT ADDRESS
3050    3025  1150            TAD     CMREG           /GET COMMAND
3051    3026  6746    IOT6A2, DLDC                    /LOAD COMMAND REGISTER
3052    3027  1134            TAD     TCNTR1          /GET DISK ADDRESS
3053    3030  6743    IOT3A2, DLAG                    /LOAD DISK ADDRESS AND GO
3054    3031  6741    IOT1A2, DSKP                    /DISK SKIP IOT
3055    3032  5231            JMP     .-1             /WAIT FOR DISK SKIP
3056    3033  6745    IOT5A2, DRST                    /READ STATUS
3057    3034  3146            DCA     STREG           /SAVE FOR ERROR PRINTER
3058    3035  1146            TAD     STREG
```



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3059    3036  1105            TAD     K4000           /ADD IN FUDGE FACTOR
3060    3037  7650            SNA CLA                 /STATUS O.K.
3061    3040  5254            JMP     T37A            /NO STATUS ERRORS
3062    3041  7330            CLA CLL CML RAR         /EXPECTED STATUS
3063    3042  3143            DCA     GOREG2          /SETUP COMPARE REGISTER
3064    3043  1146            TAD     STREG           /GET STATUS READ
3065    3044  0011            AND     K0010           /MASK FOR CRC
3066    3045  7640            SZA CLA                 /WAS IT CRC ERROR
3067    3046  5252            JMP     .+4             /YES CRC ERROR
3068    3047  1166            TAD     K5300           /GET TEXT POINTER
3069    3050  3302            DCA     T37T            /SAVE IT
3070    3051  5300            JMP     T37E            /STATUS ERROR NOT CRC
3071    3052  3171            DCA     SOFERR          /SET CRC ERROR POINTER
3072    3053  5256            JMP     .+3             /DON'T CLEAR CONTROL
3073    3054  7301    T37A,   CLA CLL IAC             /ENABLE CLEAR CONTROL
3074    3055  6742    IOT2A2, DCLR                    /CLEAR CONTROL
3075    3056  1165            TAD     K5373
3076    3057  3302            DCA     T37T            /SETUP TEXT POINTER
3077    3060  1113            TAD     K2525           /GET EXPECTED DATA
3078    3061  4430            FIGURE                  /CHECK DATA READ
3079    3062  7610            SKP CLA                 /THIS ONE O.K.
3080    3063  5300            JMP     T37E            /ERROR, DATA
3081    3064  2134            ISZ     TCNTR1          /UPDATE LOWER DISK ADDRESS
3082    3065  7610            SKP CLA
3083    3066  2150            ISZ     CMREG           /SET EXTENDED BIT
3084    3067  1150            TAD     CMREG
3085    3070  0073            AND     K0001
3086    3071  7650            SNA CLA                 /IS EXTENDED SET
3087    3072  5215            JMP     T37R            /NO, CONTINUE
3088    3073  1134            TAD     TCNTR1
3089    3074  1170            TAD     ENDTRK          /ADD IN FUDGE FACTOR
3090    3075  7640            SZA CLA                 /DONE WITH DISK
3091    3076  5215            JMP     T37R            /NO, MORE TO GO
3092    3077  4437            NERROR                  /O.K. TO NEXT TEST
3093    3100  4440    T37E,   ERROR                   /ERROR, STATUS
3094    3101  3002            TST37                   /SCOPE LOOP POINTER
3095    3102  5300    T37T,   5300
3096                  /
3097                  /
3098                  /BIG ADDRESSING CHECK!
3099                  /IF A DATA ERROR SHOULD HAPPEN TO OCCUR
3100                  /WITH THE FIRST TWO WORDS OF THE BUFFER, YOU
3101                  /SHOULD REALIZE THAT THE PROBLEM COULD BE
3102                  /ADDRESSING.
3103                  /
3104                  /READ ALL SECTORS ON THE DISK AND CHECK
3105                  /THE STATUS. IF STATUS ERROR OCCURRES THEN CHECK THE DATA.
3106                  /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3107                  /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR
3108                  /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3109                  /
3110    3103  4525            JMS I   XLOAD
3111    3104  7770            7770
3112    3105  7340    TST38,  CLA CLL CMA
3113    3106  3171            DCA     SOFERR          /SETUP CRC ERROR POINTER
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3114   3107  3134          DCA     TCNTR1                  /SETUP LOWER ADDRESS
3115   3110  3135          DCA     TCNTR2                  /SETUP EXTENDED
3116   3111  1017          TAD     K1000                   /FUNCTION READ ALL
3117   3112  1072          TAD     DRIVNO                  /CURRENT DRIVE
3118   3113  1156          TAD     HOMEMA                  /CURRENT FIELD
3119   3114  3150          DCA     CMREG                   /SETUP COMMAND
3120   3115  4530  T38R,   TICK                           /APT TIMING
3121   3116  1067          TAD     BGNBUF                  /START OF BUFFER
3122   3117  4451          LDCUR                           /LOAD CURRENT
3123   3120  1150          TAD     CMREG                   /LAST COMMAND ISSUED
3124   3121  4450          LDCMD                           /LOAD COMMAND
3125   3122  1134          TAD     TCNTR1                  /LOWER ADDRESS
3126   3123  4452          LDADD                           /LOAD AND GO
3127   3124  4447          DSKSKP                          /DISK SKIP IOT
3128   3125  5324          JMP     .-1                     /HANG IF NO SKIP
3129   3126  4444          RDSTAT                          /READ STATUS
3130   3127  1105          TAD     K4000                   /SHOULD ONLY BE DONE
3131   3130  7640          SZA CLA                         /JUST DONE FLAG ?
3132   3131  5346          JMP     T38E                    /STATUS ERROR
3133   3132  2134          ISZ     TCNTR1                  /UPDATE ADDRESS
3134   3133  5336          JMP     .+3                     /DON'T SET EXTENDED TRACK
3135   3134  2150          ISZ     CMREG                   /YES, SET IT
3136   3135  2135          ISZ     TCNTR2
3137   3136  1135          TAD     TCNTR2
3138   3137  7650          SNA CLA                         /IS EXTENDED SET
3139   3140  5315          JMP     T38R                    /NO, CONTINUE
3140   3141  1134          TAD     TCNTR1
3141   3142  1170          TAD     ENDTRK                  /ADD IN FUDGE FACTOR
3142   3143  7640          SZA CLA                         /DONE WITH DISK
3143   3144  5315          JMP     T38R                    /NO, MORE TO GO
3144   3145  5356          JMP     T38OK                   /ALL O.K.
3145   3146  1113  T38E,   TAD     K2525
3146   3147  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
3147   3150  5353          JMP     .+3                     /ERROR, JUST THE STATUS
3148   3151  1165          TAD     K5373                   /TEXT POINTER
3149   3152  7410          SKP                             /DATA ERROR
3150   3153  1166          TAD     K5300                   /STATUS TEXT POINTER
3151   3154  3361          DCA     T38T                    /SETUP
3152   3155  7610          SKP CLA                         /STATUS ERROR
3153   3156  4437  T38OK,  NERROR                         /O.K. TO NEXT TEST
3154   3157  4440  T38DE,  ERROR                          /ERROR, READ DATA
3155   3160  3105          TST38                           /SCOPE LOOP POINTER
3156   3161  5300  T38T,   5300                           /TEXT POINTER
3157                       /
3158                       /
3159                       /BIG ADDRESSING CHECK!
3160                       /IF A DATA ERROR SHOULD HAPPEN TO OCCUR
3161                       /WITH THE FIRST TWO WORDS OF THE BUFFER, YOU
3162                       /SHOULD REALIZE THAT THE PROBLEM COULD BE
3163                       /ADDRESSING.
3164                       /
3165                       /CHECK DISK HEADER WORD WITH READ DATA
3166                       /IF STATUS ERROR OCCURRES THEN CHECK DATA.
3167                       /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3168                       /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR
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3169                       /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3170                       /
3171   3162  4525          JMS I   XLOAD
3172   3163  7776          7776
3173   3164  7340  T39T,   CLA CLL CMA
3174   3165  3171          DCA     SOFERR                  /NO SOFT ERRORS
3175   3166  3134          DCA     TCNTR1                  /SETUP LOWER ADDRESS
3176   3167  3135          DCA     TCNTR2                  /SETUP EXTENDED
3177   3170  1072          TAD     DRIVNO                  /CURRENT DRIVE
3178   3171  1156          TAD     HOMEMA                  /CURRENT FIELD
3179   3172  3150          DCA     CMREG                   /SETUP COMMAND
3180   3173  4530  T39R,   TICK                           /APT TIMING
3181   3174  1067          TAD     BGNBUF                  /START OF BUFFER
3182   3175  4451          LDCUR                           /LOAD CURRENT
3183   3176  1150          TAD     CMREG                   /LAST COMMAND
3184   3177  4450          LDCMD                           /LOAD COMMAND
3185   3200  1134          TAD     TCNTR1                  /LOWER ADDRESS
3186   3201  4452          LDADD                           /LOAD AND GO
3187   3202  4447          DSKSKP                          /DISK SKIP IOT
3188   3203  5202          JMP     .-1                     /HANG IF NO SKIP
3189   3204  4444          RDSTAT                          /READ STATUS
3190   3205  1105          TAD     K4000                   /SHOULD ONLY BE DONE
3191   3206  7640          SZA CLA                         /JUST DONE FLAG ?
3192   3207  5224          JMP     T39E                    /STATUS ERROR
3193   3210  2134          ISZ     TCNTR1                  /UPDATE ADDRESS
3194   3211  5214          JMP     .+3                     /DON'T SET EXTENDED TRACK
3195   3212  2150          ISZ     CMREG                   /YES, SET IT
3196   3213  2135          ISZ     TCNTR2
3197   3214  1135          TAD     TCNTR2
3198   3215  7650          SNA CLA                         /IS EXTENDED SET
3199   3216  5777'         JMP     T39R                    /NO, CONTINUE
3200   3217  1134          TAD     TCNTR1
3201   3220  1170          TAD     ENDTRK                  /ADD IN FUDGE FACTOR
3202   3221  7640          SZA CLA                         /DONE WITH DISK
3203   3222  5777'         JMP     T39R                    /NO, MORE TO GO
3204   3223  5234          JMP     T39OK                   /ALL O.K.
3205   3224  1113  T39E,   TAD     K2525
3206   3225  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
3207   3226  5231          JMP     .+3                     /ERROR, JUST STATUS
3208   3227  1165          TAD     K5373                   /TEXT POINTER
3209   3230  7410          SKP                             /ERROR
3210   3231  1166          TAD     K5300                   /STATUS ERROR POINTER
3211   3232  3237          DCA     T39T                    /SETUP
3212   3233  7610          SKP CLA
3213   3234  4437  T39OK,  NERROR                         /O.K. TO NEXT TEST
3214   3235  4440  T39DE,  ERROR                          /ERROR, READ DATA
3215   3236  3164          TST39                           /SCOPE LOOP POINTER
3216   3237  5300  T39T,   5300                           /TEXT POINTER
3217                       /
3218                       /DO A RANDOM READ DATA
3219                       /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3220                       /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR
3221                       /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3222                       /
3223   3240  1107  TST40,  TAD     K7000
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3224    3241  3140          DCA     TCNTR5                  /LENGTH OF TIME FOR THIS TEST
3225    3242  4423  T40R,   RANADD                          /GET AN ADDRESS FOR SEEK/READ
3226    3243  3136          DCA     TCNTR3                  /SAVE IT
3227    3244  7004          RAL                             /LINK IS EXTENDED
3228    3245  3137          DCA     TCNTR4                  /SAVE IT
3229    3246  1137  T40S,   TAD     TCNTR4
3230    3247  3150          DCA     CMREG                   /SETUP COMMAND
3231    3250  1136          TAD     TCNTR3
3232    3251  4426          DISKGO                          /DISK READ DATA
3233    3252  3265          T40T                            /TEXT POINTER
3234    3253  5263          JMP     T40E                    /ERROR, SKIP OR STATUS
3235    3254  1113          TAD     K2525
3236    3255  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
3237    3256  7610          SKP CLA                         /DATA O.K.
3238    3257  5263          JMP     T40E                    /DATA ERROR
3239    3260  2140          ISZ     TCNTR5
3240    3261  5242          JMP     T40R                    /LOOP
3241    3262  4437          NERROR                          /O.K. TO NEXT TEST
3242    3263  4440  T40E,   ERROR                           /ERROR, READ
3243    3264  3240          TST40                           /SCOPE LOOP POINTER
3244    3265  0000  T40T,   0000                            /TEXT POINTER
3245                        /
3246                        /RANDOM SEEK THEN WRITE THEN SEEK THEN READ TEST
3247                        /THE DATA WRITTEN IS 2525+5252  AND THE TWO
3248                        /FIRST WORDS OF THE SECTOR ARE SET TO THE DISK ADDRESS.
3249                        /
3250    3266  4525          JMS I   XLOAD
3251    3267  3777          3777
3252    3270  1111  TST41,  TAD     K7700
3253    3271  3140          DCA     TCNTR5                  /PASS COUNTER
3254    3272  4423  T41R,   RANADD                          /GENERATE RANDOM NUMBER
3255    3273  0117          AND     K0017
3256    3274  1110          TAD     K7760
3257    3275  3141          DCA     TCNTR6                  /SAVE COUNTER
3258    3276  4423          RANADD                          /RANDOM SEEK DISK ADDRESS
3259    3277  3134          DCA     TCNTR1                  /SAVE
3260    3300  7004          RAL                             /LINK IS EXTENDED BIT
3261    3301  3135          DCA     TCNTR2                  /SAVE
3262    3302  4423          RANADD                          /RANDOM SEEK/WRITE DISK ADDRESS
3263    3303  3136          DCA     TCNTR3                  /SAVE
3264    3304  7004          RAL                             /LINK IS EXTENDED BIT
3265    3305  3137          DCA     TCNTR4                  /SAVE IT
3266    3306  1113  T41S,   TAD     K2525
3267    3307  4431          FILBUF                          /FILL BUFFER
3268    3310  1137          TAD     TCNTR4                  /GET EXTENDED BIT
3269    3311  1072          TAD     DRIVNO                  /GET DRIVE NUMBER
3270    3312  3464          DCA I   XWITRK                  /DISK ADDRESS WORD IN BUFFER
3271    3313  1136          TAD     TCNTR3                  /LOWER DISK ADDRESS
3272    3314  3463          DCA I   XLOTRK                  /DISK ADDRESS WORD IN BUFFER
3273    3315  1135          TAD     TCNTR2                  /GET EXTENDED BIT
3274    3316  3150          DCA     CMREG                   /SETUP COMMAND
3275    3317  1134          TAD     TCNTR1                  /DISK ADDRESS
3276    3320  4424          SEEK                            /SEEK ONLY
3277    3321  3361          T41T                            /TEXT POINTER
3278    3322  5357          JMP     T41E                    /ERROR SKIP OR STATUS
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3279    3323  1137          TAD     TCNTR4                  /EXTENDED BIT
3280    3324  1105          TAD     K4000                   /FUNCTION WRITE DATA
3281    3325  3150          DCA     CMREG                   /SETUP COMMAND
3282    3326  1136          TAD     TCNTR3                  /DISK ADDRESS
3283    3327  4426          DISKGO                          /DISK WRITE DATA
3284    3330  3361          T41T                            /TEXT POINTER
3285    3331  5357          JMP     T41E                    /ERROR SKIP OR STATUS
3286    3332  1135          TAD     TCNTR2                  /GET EXTENDED BIT
3287    3333  3150          DCA     CMREG                   /SETUP COMMAND REGISTER
3288    3334  1134          TAD     TCNTR1                  /GET DISK ADDRESS
3289    3335  4424          SEEK                            /GO SEEK ONLY
3290    3336  3361          T41T                            /TEXT POINTER
3291    3337  5357          JMP     T41E                    /ERROR, SEEK SKIP OR STATUS
3292    3340  1137          TAD     TCNTR4                  /GET EXTENDED BIT
3293    3341  3150          DCA     CMREG                   /SETUP READ DATA COMMAND
3294    3342  1136          TAD     TCNTR3                  /DISK ADDRESS
3295    3343  4426          DISKGO                          /DISK READ DATA
3296    3344  3361          T41T                            /TEXT POINTER
3297    3345  5357          JMP     T41E                    /ERROR, SKIP OR STATUS
3298    3346  1113          TAD     K2525
3299    3347  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
3300    3350  7610          SKP CLA                         /DATA O.K.
3301    3351  5357          JMP     T41E                    /DATA ERROR
3302    3352  2141          ISZ     TCNTR6                  /COUNT TO SAME TRACKS
3303    3353  5306          JMP     T41S                    /REPEAT
3304    3354  2140          ISZ     TCNTR5                  /PASS COUNTER
3305    3355  5272          JMP     T41R                    /LOOP
3306    3356  4437          NERROR                          /O.K. TO NEXT TEST
3307    3357  4440  T41E,   ERROR                           /ERROR
3308    3360  3270          TST41                           /SCOPE LOOP POINTER
3309    3361  5373  T41T,   5373                            /TEXT POINTER
3310    3362  5763          JMP I   .+1
3311    3363  3400          TST42
3312                        /
3313                        /
3314                        /VERIFY A RECALIBRATE THEN A RANDOM WRITE DATA,
3315                        /THEN A RECALIBRATE THEN RANDOM READ DATA.
3316                        /THE DATA PATTERN WRITTEN IS 2525+5252 AND
3317                        /THE FIRST TWO WORDS OF EVERY SECTOR
3318                        /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3319                        /
3320                        /
3321    3377  3173
              3400  PAGE
3322                        /
3323    3400  1111  TST42,  TAD     K7700
3324    3401  3140          DCA     TCNTR5                  /PASS COUNTER
3325    3402  4423  T42R,   RANADD                          /RANDOM DISK ADDRESS
3326    3403  3134          DCA     TCNTR1                  /SAVE
3327    3404  7004          RAL                             /LINK IS EXTENDED BIT
3328    3405  3135          DCA     TCNTR2                  /SAVE
3329    3406  1113  T42S,   TAD     K2525
3330    3407  4431          FILBUF                          /FILL BUFFER
3331    3410  1135          TAD     TCNTR2                  /GET EXTENDED BIT
3332    3411  1072          TAD     DRIVNO                  /GET DRIVE NUMBER
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3333  3412  3464          DCA I   XWITRK                  /DISK ADDRESS WORD IN BUFFER
3334  3413  1134          TAD     TCNTR1                  /LOWER DISK ADDRESS
3335  3414  3463          DCA I   XLOTRK                  /DISK ADDRESS WORD IN BUFFER
3336  3415  4425          RECAL                           /RESTORE DRIVE
3337  3416  3451          T42T                            /TEXT POINTER
3338  3417  5247          JMP     T42E                    /ERROR SKIP OR STATUS
3339  3420  1135          TAD     TCNTR2                  /EXTENDED BIT
3340  3421  1125          TAD     K4000                   /FUNCTION WRITE DATA
3341  3422  3150          DCA     CMREG                   /SETUP COMMAND
3342  3423  1134          TAD     TCNTR1                  /DISK ADDRESS
3343  3424  4426          DISKGO                          /DISK WRITE DATA
3344  3425  3451          T42T                            /TEXT POINTER
3345  3426  5247          JMP     T42E                    /ERROR SKIP OR STATUS
3346  3427  4425          RECAL                           /RESTORE DRIVE
3347  3430  3451          T42T                            /TEXT POINTER
3348  3431  5247          JMP     T42E                    /ERROR, SKIP OR STATUS
3349  3432  1135          TAD     TCNTR2                  /GET EXTENDED BIT
3350  3433  3150          DCA     CMREG                   /SETUP READ DATA COMMAND
3351  3434  1134          TAD     TCNTR1                  /DISK ADDRESS
3352  3435  4426          DISKGO                          /DISK READ DATA
3353  3436  3451          T42T                            /TEXT POINTER
3354  3437  5247          JMP     T42E                    /ERROR, SKIP OR STATUS
3355  3440  1113          TAD     K2525
3356  3441  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
3357  3442  7610          SKP CLA                         /DATA O.K.
3358  3443  5247          JMP     T42E                    /DATA ERROR
3359  3444  2140          ISZ     TCNTR5                  /PASS COUNTER
3360  3445  5202          JMP     T42R                    /LOOP
3361  3446  4437          NERROR                          /O.K. TO NEXT TEST
3362  3447  4440  T42E,   ERROR                           /ERROR
3363  3450  3400          TST42                           /SCOPE LOOP POINTER
3364  3451  5373  T42T,   5373                            /TEXT POINTER
3365                      /
3366                      /SINGLE DRIVE VIBRATION TEST
3367                      /
3368                      /TRY TO CAUSE CYLINDER ADDRESS ERRORS BY
3369                      /DOING A FEW RANDOM SEEKS THEN A READ DATA.
3370                      /
3371  3452  1341  TST43,  TAD     TIMSTP
3372  3453  3140          DCA     TCNTR5                  /SETUP PASS COUNTER
3373  3454  4432  T43R1,  KILBUF                         /CLEAR BUFFER
3374  3455  4423          RANADD                          /GET RANDOM NUMBER
3375  3456  0120          AND     K0037
3376  3457  1122          TAD     K7740
3377  3460  3137          DCA     TCNTR4                  /SETUP COUNTER FOR SEEKS
3378  3461  4423  T43R2,  RANADD                         /GET RANDOM SEEK ADDRESS
3379  3462  3136          DCA     TCNTR3                  /SAVE IT
3380  3463  7004          RAL                             /LINK IS EXTENDED BIT
3381  3464  3135          DCA     TCNTR2                  /SAVE IT
3382  3465  1135          TAD     TCNTR2
3383  3466  3150          DCA     CMREG                   /SETUP COMMAND
3384  3467  1136          TAD     TCNTR3
3385  3470  4424          SEEK                            /SEEK ONLY A RANDOM TRACK
3386  3471  3514          T43T                            /TEXT POINTER
3387  3472  5312          JMP     T43E                    /ERROR, SKIP OR STATUS
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3388  3473  2137          ISZ     TCNTR4                  /COUNT NUMBER TO DO
3389  3474  5261          JMP     T43R2
3390  3475  1135          TAD     TCNTR2
3391  3476  3150          DCA     CMREG                   /SETUP FOR READ DATA
3392  3477  1136          TAD     TCNTR3
3393  3500  4426          DISKGO                          /LOAD AND GO READ DATA
3394  3501  3514          T43T                            /TEXT POINTER
3395  3502  5312          JMP     T43E                    /ERROR SKIP OR STATUS
3396  3503  1113          TAD     K2525
3397  3504  4430          FIGURE                          /CHECK DATA READ
3398  3505  7610          SKP CLA                         /ALL O.K.
3399  3506  5312          JMP     T43E                    /ERROR, DATA
3400  3507  2140          ISZ     TCNTR5
3401  3510  5254          JMP     T43R1                   /MORE TO TEST
3402  3511  4437          NERROR                          /P.K. TO NEXT TEST
3403  3512  4440  T43E,   ERROR                           /ERROR, SKIP, STATUS, OR DATA
3404  3513  3452          TST43                           /SCOPE LOOP POINTER
3405  3514  0000  T43T,   0000                            /TEXT POINTER
3406                      /
3407                      /CHECK DISK HEADER WORDS WITH READ DATA
3408                      /IF STATUS ERROR OCCURRES THEN CHECK DATA.
3409                      /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3410                      /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR
3411                      /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3412                      /
3413  3515  4525          JMS I   XLOAD
3414  3516  7775          7775
3415  3517  7340  TST44,  CLA CLL CMA
3416  3520  3171          DCA     SOFERR                  /SETUP CRC ERROR POINTER
3417  3521  3134          DCA     TCNTR1                  /SETUP LOWER ADDRESS
3418  3522  3135          DCA     TCNTR2                  /SETUP EXTENDED
3419  3523  1072          TAD     DRIVNO                  /CURRENT DRIVE
3420  3524  1156          TAD     HOMEMA                  /CURRENT FIELD
3421  3525  3150          DCA     CMREG                   /SETUP COMMAND
3422  3526  4530  T44R,   TICK
3423  3527  1067          TAD     BGNBUF                  /START OF BUFFER
3424  3530  4451          LOCUR                           /LOAD CURRENT ADDRESS
3425  3531  1150          TAD     CMREG                   /LAST COMMAND ISSUED
3426  3532  4450          LOCMD                           /LOAD COMMAND
3427  3533  1134          TAD     TCNTR1                  /LOWER ADDRESS
3428  3534  4452          LDADD                           /LOAD AND GO
3429  3535  4447          DSKSKP                          /DISK SKIP IOT
3430  3536  5335          JMP     .-1                     /HANG IF NO SKIP
3431  3537  4444          RDSTAT                          /READ STATUS
3432  3540  1105          TAD     K4000                   /SHOULD ONLY BE DONE
3433  3541  7640  TIMSTP,  SZA CLA                       /JUST DONE FLAG ?
3434  3542  5357          JMP     T44E                    /STATUS ERROR
3435  3543  2134          ISZ     TCNTR1                  /UPDATE ADDRESS
3436  3544  5347          JMP     .+3                     /DON'T SET EXTENDED TRACK
3437  3545  2150          ISZ     CMREG                   /YES, SET IT
3438  3546  2135          ISZ     TCNTR2
3439  3547  1135          TAD     TCNTR2
3440  3550  7650          SNA CLA                         /IS EXTENDED SET
3441  3551  5326          JMP     T44R                    /NO, CONTINUE
3442  3552  1134          TAD     TCNTR1
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3443   3553  1170          TAD     ENDTRK                  /ADD IN FUDGE FACTOR
3444   3554  7640          SZA CLA                         /DONE WITH DISK
3445   3555  5326          JMP     T44R                    /NO, MORE TO GO
3446   3556  5367          JMP     T440K                   /ALL O.K.
3447   3557  1113  T44E,   TAD     K2525
3448   3560  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
3449   3561  5364          JMP     .+3                     /ERROR, JUST STATUS
3450   3562  1165          TAD     K5373                   /TEXT POINTER
3451   3563  7410          SKP                             /ERROR
3452   3564  1166          TAD     K5300                   /STATUS ERROR POINTER
3453   3565  3372          DCA     T44T                    /SETUP
3454   3566  7610          SKP CLA
3455   3567  4437  T440K,  NERROR                          /O.K. TO NEXT TEST
3456   3570  4440          ERROR                           /ERROR, READ DATA
3457   3571  3517          TST44                           /SCOPE LOOP POINTER
3458   3572  5300  T44T,   5300                            /TEXT POINTER
3459                       /
3460   3573  5774          JMP I   .+1
3461   3574  3616          TST45-4                 /NEXT TEST
3462         3600  PAGE
3463                       /
3464                       /ROUTINE TO COMPARE CRREG1 AND CRREG2 TO
3465                       /GDREG1 AND GDREG2.
3466                       /
3467   3600  0000  COMP2,   0
3468   3601  7300          CLA CLL
3469   3602  1142          TAD     GDREG1
3470   3603  0117          AND     K0017
3471   3604  7041          CIA
3472   3605  1144          TAD     CRREG1
3473   3606  7640          SZA CLA
3474   3607  5214          JMP     CRERR                   /NOT THE SAME
3475   3610  1145          TAD     CRREG2
3476   3611  7041          CIA
3477   3612  1143          TAD     GDREG2
3478   3613  7640          SZA CLA
3479   3614  2200  CRERR,  ISZ     COMP2                   /ERROR, NOT THE SAME
3480   3615  5600          JMP I   COMP2
3481                       /
3482                       /
3483                       /VERIFY THAT WRITING ON A TRACK DOES NOT AFFECT
3484                       /AN ADJACENT TRACK. THE TEST SEQUENCE IS AS FOLLOWS:
3485                       /WRITE TRACKS 00000-00100-00040 THEN READ AND CHECK
3486                       /TRACKS 00040-00000-00100, WRITE TRACKS 00020-00120-00060
3487                       /THEN READ AND CHECK TRACKS 00060-00020-00120, ETC.
3488                       /THE CENTER TRACK IS SET TO A DATA PATTERN OF
3489                       /2525+5252. THE LOWER AND UPPER TRACKS ARE
3490                       /SET TO A DATA PATTERN OF 5252+2525, THE FIRST TWO
3491                       /WORDS OF EVERY SECTOR ARE SET TO THE ABSOLUTE
3492                       /DISK ADDRESS.
3493                       /
3494   3616  7346          CLL CLA CMA RTL
3495   3617  3175          DCA     KCNT                    /ESTABLISH PROPER COUNT
3496   3620  4525          JMS I   XLOAD
3497   3621  7750          7750
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3498   3622  1012  TST45,  TAD     K0020                   /GET STARTING POINTER
3499   3623  3134          DCA     TCNTR1                  /SAVE IT
3500   3624  1372          TAD     K7156
3501   3625  3140          DCA     TCNTR5                  /COUNTER FOR TRACKS TO DO
3502   3626  7346  T45SC,  CLA CLL CMA RTL
3503   3627  3137          DCA     TCNTR4                  /THREE TRACK COUNTER POINTER
3504   3630  1134          TAD     TCNTR1
3505   3631  3136          DCA     TCNTR3                  /WRITE CENTER TRACK FIRST
3506   3632  1113          TAD     K2525                   /DATA PATTERN FOR CENTER TRACK
3507   3633  5244          JMP     T45A1                   /GO WRITE CENTER TRACK
3508   3634  1137  T45R1,  TAD     TCNTR4                  /GET POINTER
3509   3635  7110          CLL RAR
3510   3636  7630          SZL CLA                         /WRITE UPPER OR LOWER????
3511   3637  1122          TAD     K7740                   /DO LOWER
3512   3640  1012          TAD     K0020
3513   3641  1134          TAD     TCNTR1                  /REDUCE OR UPDATE
3514   3642  3136          DCA     TCNTR3                  /SAVE TRACK TO DO
3515   3643  1114          TAD     K5252                   /USE COMPLEMENT OF CENTER TRACK
3516   3644  4431  T45A1,  FILBUF                          /FILL BUFFER WITH DATA
3517   3645  1110          TAD     K7760                   /GET SECTOR COUNTER POINTER
3518   3646  3135          DCA     TCNTR2                  /SETUP COUNTER
3519   3647  3141          DCA     TCNTR6                  /START WITH 0
3520   3650  1141  T45R2,  TAD     TCNTR6                  /GET SECTOR POINTER
3521   3651  0117          AND     K0017                   /MASK SECTORS
3522   3652  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
3523   3653  1136          TAD     TCNTR3                  /GET DISK ADDRESS
3524   3654  7104          CLL RAL                         /PUT EXTENDED BIT IN LINK
3525   3655  0110          AND     K7760
3526   3656  1463          TAD I   XLOTRK                  /ADD IN SECTORS
3527   3657  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
3528   3660  7630          SZL CLA                         /SET EXTENDED BIT????
3529   3661  7001          IAC                             /YES!!!
3530   3662  1072          TAD     DRIVNO                  /ADD IN CURRENT DRIVE
3531   3663  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
3532   3664  1464          TAD I   XHITRK                  /GET EXTENDED BIT
3533   3665  1105          TAD     K4000                   /FUNCTION WRITE DATA
3534   3666  3150          DCA     CMREG                   /SETUP COMMAND REGISTER POINTER
3535   3667  1463          TAD I   XLOTRK                  /GET CYL., SURFACE, AND SECTOR
3536   3670  4426          DISKGO                          /WRITE ALL
3537   3671  3767          T45T                            /TEXT POINTER
3538   3672  5365          JMP     T45E                    /ERROR, WRITE SKIP OR STATUS
3539   3673  1141          TAD     TCNTR6
3540   3674  1075          TAD     K0003                   /UPDATE SECTOR POINTER
3541   3675  3141          DCA     TCNTR6
3542   3676  2135          ISZ     TCNTR2                  /UPDATE SECTOR COUNTER
3543   3677  5250          JMP     T45R2                   /DO REST OF TRACK
3544   3700  2137          ISZ     TCNTR4                  /UPDATE TRACK COUNTER
3545   3701  5234          JMP     T45R1                   /DO OTHERS
3546                       /
3547   3702  7340          CLA CLL CMA
3548   3703  3144          DCA     CRREG1                  /SETUP FIRST TIME POINTER
3549   3704  7346          CLA CLL CMA RTL
3550   3705  3137          DCA     TCNTR4                  /TRACK COUNTER POINTER
3551   3706  1134          TAD     TCNTR1
3552   3707  3136          DCA     TCNTR3                  /SETUP FOR READ CENTER FIRST
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3553   3710  5320          JMP     T45A2                   /READ AND CHECK CENTER TRACK
3554   3711  1137  T45R3,  TAD     TCNTR4                  /POINTER
3555   3712  7110          CLL RAR
3556   3713  7630          SZL CLA                         /CHECK UPPER OR LOWER
3557   3714  1122          TAD     K7740                   /CHECK LOWER
3558   3715  1012          TAD     K0020
3559   3716  1134          TAD     TCNTR1                  /REDUCE OR UPDATE
3560   3717  3136          DCA     TCNTR3                  /SAVE THE TRACK TO READ
3561   3720  1110  T45A2,  TAD     K7760                   /AMOUNT OF SURFACE SECTORS
3562   3721  3135          DCA     TCNTR2                  /SETUP SECTOR COUNTER
3563   3722  3141          DCA     TCNTR6                  /START WITH 0
3564   3723  1136  T45R4,  TAD     TCNTR3                  /GET DISK ADDRESS
3565   3724  7104          CLL RAL                         /PUT EXTENDED BIT IN LINK
3566   3725  0110          AND     K7760
3567   3726  3145          DCA     CRREG2                  /SAVE RESULTS
3568   3727  7630          SZL CLA                         /SET EXTENDED BIT
3569   3730  7001          IAC                             /YES
3570   3731  3150          DCA     CRREG                   /SETUP COMMAND FOR READ DATA
3571   3732  1141          TAD     TCNTR6                  /GET SECTOR POINTER
3572   3733  0117          AND     K0017                   /MASK
3573   3734  1145          TAD     CRREG2                  /ADD IN TRACK
3574   3735  4426          DISKGO                          /READ DATA
3575   3736  3767          T45T                            /TEXT POINTER
3576   3737  5365          JMP     T45E                    /ERROR, READ SKIP OR STATUS
3577   3740  1144          TAD     CRREG1                  /GET FIRST TIME POINTER
3578   3741  7650          SNA CLA                         /FIRST TIME????
3579   3742  1113          TAD     K2525                   /NO
3580   3743  1113          TAD     K2525
3581   3744  4430          FIGURE                          /CHECK DATA READ
3582   3745  7610          SKP CLA                         /DATA ALL O.K.
3583   3746  5365          JMP     T45E                    /ERROR, DATA
3584   3747  1141          TAD     TCNTR6
3585   3750  1277          TAD     K0005                   /UPDATE SECTOR POINTER
3586   3751  3141          DCA     TCNTR6
3587   3752  2135          ISZ     TCNTR2                  /UPDATE SECTOR COUNTER
3588   3753  5323          JMP     T45R4                   /DO REST OF SURFACE
3589   3754  3144          DCA     CRREG1                  /CLEAR FIRST TIME FLAG
3590   3755  2137          ISZ     TCNTR4                  /UPDATE TRACK COUNTER
3591   3756  5311          JMP     T45R3                   /DO OTHER TRACKS
3592   3757  1134          TAD     TCNTR1                  /GET CURRENT TRACK POINTER
3593   3760  1011          TAD     K0010                   /UPDATE
3594   3761  3134          DCA     TCNTR1                  /SAVE IT
3595   3762  2140          ISZ     TCNTR5                  /UPDATE TOTAL AMOUNT TO DO
3596   3763  5226          JMP     T45SC                   /MORE TO DO
3597   3764  4437          NERROR                          /ALL O.K. TO END OF TEST
3598   3765  4440  T45E,   ERROR                           /ERROR, TRACKS AFFECTED
3599   3766  3622          TST45                           /SCOPE LOOP POINTER
3600   3767  0000  T45T,   0000                            /MODIFIED TEXT POINTER
3601                       /
3602   3770  5771          JMP I   .+1                     /TO END OF TEST
3603   3771  4462          ENDTST
3604                       /
3605   3772  7156  K7156,  7156
3606                       /
3607         4000  PAGE
```



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3608                       /
3609                       /ROUTINE TO WAIT FOR 500 MS.
3610                       /
3611   4000  0000  WTISZ,  0
3612   4001  7300          CLA CLL
3613   4002  1122          TAD     K7740                   /GET TIME CONSTANT
3614   4003  3334          DCA     RDAD
3615   4004  3331          DCA     LOMN
3616   4005  2331          ISZ     LOMN
3617   4006  5205          JMP     .-1
3618   4007  2340          ISZ     RDAD
3619   4010  5205          JMP     .-3
3620   4011  5600          JMP I   WTISZ                   /EXIT
3621                       /
3622                       /
3623                       /
3624                       /PROGRAM TO AID IN HEAD ALIGNMENT.
3625                       /GET TWO SEPARATE SEEK ADDRESS FROM
3626                       /THE SWITCH REGISTER AND SEEK ONLY BETWEEN
3627                       /THEM. SECOND ADDRESS MAY BE CHANGED AT ANY TIME.
3628                       /
3629   4012  4405  SWSEK,  CLASIC                          /CHECK FOR CLASSIC.
3630   4013  4431          C8SWIT                          /ROUTINE TO EXECUTE.
3631   4014  7000          NOP
3632   4015  4404          LAS                             /GET FIRST ADDRESS
3633   4016  3134          DCA     TCNTR1                  /SAVE IT
3634   4017  4405          CLASIC                          /CHECK FOR CLASSIC ACTIVE
3635   4020  4436          C8ERR                           /ROUTINE TO EXECUTE.
3636   4021  7402  HEDHLT, HLT                            /WAIT FOR SECOND ADDRESS. IF ON
3637                                                       /CLASSIC CONSOLE PACKAGE HIT
3638                                                       /CONTROL E. IF NOT THEN PRESS
3639                                                       /KEY CONTINUE.
3640   4022  4405  RESEK,  CLASIC                          /CHECK FOR CLASSIC
3641   4023  4431          C8SWIT                          /ROUTINE TO EXECUTE.
3642   4024  7000          NOP
3643   4025  4404          LAS                             /GET SECOND ADDRESS
3644   4026  3135          DCA     TCNTR2                  /SAVE IT
3645   4027  1135          TAD     TCNTR2
3646   4030  0101          AND     K0007                   /MASK DRIVE+EXT. BIT
3647   4031  1104          TAD     K3000                   /GET SEEK FUNCTION
3648   4032  4450          LDCMD                           /LOAD COMMAND REGISTER
3649   4033  1135          TAD     TCNTR2
3650   4034  0110          AND     K7760                   /MASK OFF CYLINDER+SURFACE
3651   4035  4452          LDADD                           /GO SEEK ONLY
3652   4036  4447          DSKSKP                          /SKIP ON DONE
3653   4037  5236          JMP     .-1
3654   4040  4453          CLRALL                          /CLEAR STATUS
3655   4041  4444          RDSTAT                          /READ STATUS
3656   4042  7640          SZA CLA                         /DRIVE DONE?
3657   4043  5240          JMP     .-3                     /NO, WAIT
3658   4044  1134          TAD     TCNTR1                  /GET FIRST ADDRESS
3659   4045  0101          AND     K0007                   /MASK DRIVE+EXT. BIT
3660   4046  1104          TAD     K3000                   /GET SEEK FUNCTION
3661   4047  4450          LDCMD                           /LOAD COMMAND REGISTER
3662   4050  1134          TAD     TCNTR1
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3603  4051  0110          AND     K7760                   /MASK OFF CYLINDER AND SURFACE
3604  4052  4452          LDADD                           /LOAD AND GO SEEK
3605  4053  4447          DSKSKP                          /WAIT FOR DONE
3606  4054  5253          JMP     .-1
3607  4055  4453          CLRALL                          /CLEAR STATUS
3608  4056  4444          RDSTAT                          /READ STATUS
3609  4057  7640          SZA CLA                         /DRIVE DONE?
3610  4060  5255          JMP     .-3                     /NO, WAIT
3611  4061  5225          JMP     RESEK+3         /CHECK FOR NEW ADDRESS
3612                /
3613                /IF ALL DRIVES HAVE BEEN TESTED INDIVIDUALLY
3614                /THEN RUN OVERLAP SEEKS AND OVERLAP SEEKS, WRITES,
3615                /AND READS ON ALL DRIVES SELECTED. ALSO CHECK FOR HALT AT PASS
3616                /COMPLETION. AFTER OVERLAP TESTS START AT FIRST
3617                /DISK DRIVE ON SYSTEM.
3618                /
3619  4062  4777    ENDTST, JMS I   (GETDRV                  /GET NEXT DRIVE.
3620  4063  2071          ISZ     DRVCNT                  /UPDATE NO. OF DRIVES COUNTER.
3621  4064  5323          JMP     NEXDSK                  /TEST NEXT DRIVE.
3622  4065  1370          TAD     DRVHAV
3623  4066  3071          DCA     DRVCNT                  /SETUP NO. OF DRIVES COUNTER.
3624  4067  4763    TSTSEK, JMS I   XLAP                    /PERFORM OVERLAP SEEKS
3625  4070  4764          JMS I   XOVRRD                  /OVERLAP SEEKS+WRITES+READS
3626  4071  3776*         DCA     DCNT2                   /START OVER AT 0.
3627  4072  4777          JMS I   (GETDRV                 /SELECT FIRST DRIVE.
3628  4073  4405    SAMDSK, CLASIC                        /CHECK FOR CLASSIC ACTIVE
3629  4074  4424          CAPASS                          /PASS COMPLETE
3630  4075  7610          SKP CLA
3631  4076  5302          JMP     .+4
3632  4077  1022          TAD     22
3633  4100  0105          AND     K4000                   /SEE IF ON APT
3634  4101  7650          SNA CLA                         /APT??
3635  4102  5307          JMP     .+5                     /NO
3636  4103  3775          DCA I   (CLKCNT                 /CLEAR APT TIMING COUNTER
3637  4104  7340          CLL CLA CMA
3638  4105  3175          DCA     KCNT
3639  4106  5323          JMP     NEXDSK                  /LOOP PROGRAM
3640  4107  4462          CRLF
3641  4110  4457          PRNTER                          /PRINT PASS COMPLETE
3642  4111  0760          NMES1
3643  4112  4457          PRNTER
3644  4113  7315          TEXEND
3645  4114  4404          LAS
3646  4115  0076          AND     K0004
3647  4116  7650          SNA CLA                         /SWITCH 9 SET?
3648  4117  5323          JMP     .+4
3649  4120  4405          CLASIC
3650  4121  4437          CBINQU
3651  4122  7402    ENDHLT, HLT                           /YES, STOP PROGRAM
3652  4123  7301    NEXDSK, CLA CLL IAC
3653  4124  4453          CLRALL                          /DCLR
3654  4125  3131          DCA     REG0
3655  4126  3132          DCA     REG1
3656  4127  5730          JMP I   .+1                     /LOOP ON PROGRAM
3657  4130  0240          TST0
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3658                /
3659                /SUBROUTINE TO ISSUE "DMAN" MAINTENANCE IOT
3660                /
3661  4131  0000    LDMN,   0
3662  4132  6747    IOT7,   DMAN                          /"DMAN" MAINTENANCE IOT
3663  4133  5731          JMP I   LDMN                    /EXIT
3664  4134  4405          CLASIC
3665  4135  4436          CBERR
3666  4136  7402    ERHLT7, HLT                           /SKIP TRAP ERROR
3667  4137  5334          JMP     .-3
3668                /
3669                /SUBROUTINE TO SHIFT, THEN READ DISK ADDRESS
3670                /INTO DATA BUFFER, 12 SHIFTS
3671                /
3672  4140  0000    RDAD,   0
3673  4141  7300          CLA CLL
3674  4142  1126          TAD     M12
3675  4143  3133          DCA     SBCNT1
3676  4144  7330          CLA CLL CML RAR                 /SET MAIN(1) ENABLE BIT
3677  4145  4455          LDMAN                           /LOAD MAINTENANCE
3678  4146  7010          RAR
3679  4147  4455          LDMAN                           /LOAD MAINTENANCE
3680  4150  7300          CLA CLL
3681  4151  1015          TAD     K0200                   /SHIFT TRACK ADDRESS BIT
3682  4152  4455          LDMAN                           /LOAD MAINTENANCE IOT
3683  4153  2133          ISZ     SBCNT1
3684  4154  5352          JMP     .-2                     /SHIFT 12 BITS
3685  4155  7300          CLA CLL
3686  4156  1012          TAD     K0020
3687  4157  4455          LDMAN                           /READ DATA BUFFER
3688  4160  3151          DCA     DAREG                   /SAVE RESULTS
3689  4161  1151          TAD     DAREG
3690  4162  5740          JMP I   RDAD                    /EXIT
3691                /
3692  4163  4200    XLAP,   OVRLAP
3693  4164  4400    XOVRRD, OVRRED
3694                /
3695  4165  0411    NMES3,  TEXT "DISK"
      4166  2313
      4167  0000
3696                /
3697  4175  7162
3698  4176  4371
3699  4177  4345
      4200          PAGE
3700                /
3701                /
3702                /ROUTINE TO DO OVERLAP SEEKS ON EXISTING DRIVES
3703                /AFTER ALL HAVE RUN THE COMPLETE DIAGNOSTIC
3704                /
3705  4200  0000    OVRLAP, 0
3706  4201  1105          TAD     K4000
3707  4202  3140          DCA     TCNTR5                  /PASS COUNTER
3708  4203  1070    OVRR1,  TAD     DRVHAV
3709  4204  3137          DCA     TCNTR4                  /SET COUNTER FOR NO. OF DRIVES.
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3770  4205  3371          DCA     DCNT2                   /START WITH DRIVE 0
3771  4206  4777  OVRR2,  JMS I   (GETDRV                 /GET NEXT DRIVE.
3772  4207  1072          TAD     DRIVNO                  /GET DRIVE NO.
3773  4210  7110          CLL RAR
3774  4211  4423          RANAND                          /SELECT A RANDOM ADDRESS
3775  4212  4406          DSKOUT                          /SEND DISK OUT
3776  4213  4453          CLRALL                          /CLEAR STATUS
3777  4214  2137          ISZ     TCNTR4                  /UPDATE DISK COUNTER
3778  4215  5206          JMP     OVRR2                   /DO ALL EXISTING DISKS
3779  4216  3371          DCA     DCNT2                   /CLEAR FOR 0
3780  4217  1070          TAD     DRVHAV                  /NO. OF DRIVES.
3781  4220  3137          DCA     TCNTR4                  /SETUP COUNTER
3782  4221  4777  OVRR3,  JMS I   (GETDRV                 /GET NEXT DRIVES.
3783  4222  1072          TAD     DRIVNO                  /GET SELECTED DRIVE.
3784  4223  7110          CLL RAR
3785  4224  4407          DSKIN                           /CHECK FOR DRIVE DONE
3786  4225  5230          JMP     NOTDON                  /DRIVE NOT DONE
3787  4226  5233          JMP     OVROK                   /DRIVE DONE AND NO ERRORS
3788  4227  5254          JMP     OVRERR                  /DRIVE ERRORS
3789  4230  2137  NOTDON, ISZ     TCNTR4                  /UPDATE NO. OF DRIVE COUNTER.
3790  4231  5221          JMP     OVRR3                   /NO, DO REST
3791  4232  5217          JMP     OVRR3-2                 /YES, RESET
3792  4233  7340  OVROK,  CLA CLL CMA
3793  4234  3137          DCA     TCNTR4
3794  4235  2140          ISZ     TCNTR5                  /UPDATE PASS COUNTER, DONE ?
3795  4236  5227          JMP     OVRR2+1                 /NO, SEND OUT
3796  4237  3371          DCA     DCNT2                   /SET FOR 0
3797  4240  1070          TAD     DRVHAV                  /NO. OF DRIVES ON SYSTEM.
3798  4241  3137          DCA     TCNTR4
3799  4242  4777  ALLBAK, JMS I   (GETDRV                 /GET NEXT DRIVE.
3800  4243  1072          TAD     DRIVNO                  /GET SELECTED DRIVE.
3801  4244  7110          CLL RAR
3802  4245  4407          DSKIN                           /CHECK FOR DRIVE DONE
3803  4246  5242          JMP     ALLBAK                  /WAIT FOR THIS DRIVE
3804  4247  7610          SKP CLA                         /WAIT FOR NEXT
3805  4250  5254          JMP     OVRERR                  /DRIVE ERRORS
3806  4251  2137          ISZ     TCNTR4                  /LAST DRIVE HOME YET
3807  4252  5242          JMP     ALLBAK                  /WAIT FOR ALL
3808  4253  4437          NERROR                          /O.K. TO NEXT
3809  4254  4440  OVRERR, ERROR                           /ERROR, OVERLAP SEEKS
3810  4255  4201          OVRLAP+1                        /SCOPE LOOP POINTER
3811  4256  5300          5300                            /TEXT POINTER
3812  4257  5600          JMP I   OVRLAP                  /TO NEXT TEST
3813
3814                      /
3815                      /ROUTINE TO GET DRIVES FROM OPERATOR.
3816                      /
3817  4260  0000  SELDSK, 0
3818  4261  4462          CRLF
3819  4262  4457          PRNTER                          /PRINT MESSAGE "RK8-E DRIVE"
3820  4263  3760          NMES1                           /MESSAGE POINTER
3821  4264  4462          CRLF
3822  4265  4457          PRNTER                          /PRINT MESSAGE "TEST"
3823  4266  6560          NMES2                           /MESSAGE POINTER
3824  4267  3370          DCA     DCNT1
3825  4270  3070          DCA     DRVHAV                  /COUNTER FOR NO. OF DRIVES.
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3826  4271  1776' NXTDSK, TAD     M4
3827  4272  3371          DCA     DCNT2                   /NO. OF POSSIBLE DRIVES.
3828  4273  4462          CRLF
3829  4274  4457          PRNTER
3830  4275  4165          NMES3
3831  4276  1370          TAD     DCNT1
3832  4277  1374          TAD     DSKON                   /COMPUTE WAY TO DISK BUFFER.
3833  4300  3372          DCA     DCNT3                   /SAVE POINTER.
3834  4301  1370          TAD     DCNT1                   /GET DRIVE NO.
3835  4302  1364          TAD     K0260
3836  4303  4436          TYPE                            /TYPE DRIVE NO.
3837  4304  1366          TAD     K0277
3838  4305  4436          TYPE                            /TYPE ?.
3839  4306  6031          KSF                             /SKIP ON KEY.
3840  4307  5306          JMP     .-1
3841  4310  6036          KRR                             /GET INPUT.
3842  4311  0367          AND     K0177
3843  4312  1215          TAD     K0200
3844  4313  3373          DCA     DCNT4                   /SAVE INPUT.
3845  4314  1373          TAD     DCNT4
3846  4315  4436          TYPE                            /ECHO INPUT.
3847  4316  1373          TAD     DCNT4
3848  4317  7041          CIA
3849  4320  1365          TAD     K0331
3850  4321  7100          CLL
3851  4322  7650          SNA CLA                         /Y OR N.
3852  4323  7360          CLA CLL CMA CML                 /Y.
3853  4324  3772          DCA I   DCNT3                   /SAVE ON FLAG.
3854  4325  7630          SZL CLA                         /WAS DRIVE SELECTED.
3855  4326  2070          ISZ     DRVHAV                  /YES.
3856  4327  1775' SPACE,  TAD     K0240                   /SPACE
3857  4330  4436          TYPE
3858  4331  2370          ISZ     DCNT1
3859  4332  2371          ISZ     DCNT2
3860  4333  5274          JMP     NXTDSK
3861  4334  1070          TAD     DRVHAV
3862  4335  7650          SNA CLA                         /ANY SELECTED.
3863  4336  5261          JMP     SELDSK+1                /TRIED TO FOOL ME.
3864  4337  1070          TAD     DRVHAV
3865  4340  7041          CIA
3866  4341  3070          DCA     DRVHAV                  /SET COUNTER FOR NO. OF DRIVES.
3867  4342  3371          DCA     DCNT2                   /START WITH DRIVE 0.
3868  4343  4345          JMS     GETDRV                  /GET FIRST DRIVE.
3869  4344  5660          JMP I   SELDSK                  /EXIT.
3870
3871                      /
3872                      /ROUTINE TO SELECT DRIVES ON SYSTEM.
3873                      /
3874  4345  0000  GETDRV, 0
3875  4346  1371          TAD     DCNT2
3876  4347  0075          AND     K0003
3877  4350  1374          TAD     DSKON                   /WAY TO BUFFER.
3878  4351  3370          DCA     DCNT1                   /SAVE POINTER FOR WAY TO BUFFER.
3879  4352  1371          TAD     DCNT2
3880  4353  0075          AND     K0003
3881  4354  7104          CLL RAL
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3880  4355  3072          DCA     DRIVNO          /SETUP DRIVE NO,
3881  4356  2371          ISZ     DCNT2           /UPDATE TO NEXT DRIVE,
3882  4357  7000          NOP
3883  4360  1770          TAD I   DCNT1           /GET BUFFER FLAG,
3884  4361  7640          SZA CLA                 /DISK ON SYSTEM?
3885  4362  5745          JMP I   GETDRV          /YES, USE DRIVNO,
3886  4363  5346          JMP     GETDRV+1        /SELECT NEXT,
3887                      /
3888  4364  0260    K0260,  0260
3889  4365  0331    K0331,  0331
3890  4366  0277    K0277,  0277
3891  4367  0177    K0177,  0177
3892  4370  0000    DCNT1,  0
3893  4371  0000    DCNT2,  0
3894  4372  0000    DCNT3,  0
3895  4373  0000    DCNT4,  0
3896  4374  1561    DSKON,  DISK0
3897                      /
3898  4375  6064
3899  4376  6110
3900  4377  4345
            4400          PAGE
3901                      /
3902                      /ROUTINE TO PERFORM RANDOM OVERLAP SEEKS, WRITES AND,
3903                      /READS ON ALL EXISTING DRIVES AFTER THEY HAVE RUN THE
3904                      /COMPLETE DIAGNOSTIC.
3905                      /
3906  4400  0000    OVRRED, 0
3907  4401  7330          CLA CLL CML RAR
3908  4402  3140          DCA     TCNTR5                  /PASS COUNTER
3909  4403  1070    OVRRD1, TAD     DRVHAV
3910  4404  3137          DCA     TCNTR4                  /SET COUNTER FOR NO. OF DRIVES.
3911  4405  3777'         DCA     DCNT2                   /START WITH DRIVE 0
3912  4406  4776    OVRRD2, JMS I   (GETDRV                 /SELECT DRIVE NO.
3913  4407  1072          TAD     DRIVNO                  /DRIVE NO. SELECTED.
3914  4410  7110          CLL RAR
3915  4411  4423          RANADD                          /SELECT A RANDOM ADDRESS
3916  4412  4406          DSKOUT                          /SEND DISK OUT
3917  4413  4453          CLRALL                          /CLEAR STATUS
3918  4414  2137          ISZ     TCNTR4                  /UPDATE DISK COUNTER
3919  4415  5206          JMP     OVRRD2                  /DO ALL EXISTING DISKS
3920  4416  3777'         DCA     DCNT2                   /CLEAR FOR 0
3921  4417  1070          TAD     DRVHAV
3922  4420  3137          DCA     TCNTR4                  /SET COUNTER FOR NO. OF DRIVES.
3923  4421  4776    OVRRD3, JMS I   (GETDRV                 /SELECT DRIVE.
3924  4422  1072          TAD     DRIVNO                  /GET DRIVE SELECTED
3925  4423  7110          CLL RAR
3926  4424  4407          DSKIN                           /CHECK THIS DRIVE
3927  4425  5232          JMP     CHKNEX                  /CHECK FOR NEXT DRIVE
3928  4426  5235          JMP     OVRDOK                  /DONE AND NO ERRORS
3929  4427  1166    POLERR, TAD     K5300
3930  4430  3324          DCA     TOVRDT                  /SETUP TEXT POINTER
3931  4431  5322          JMP     OVRDER                  /ERRORS
3932  4432  2137    CHKNEX, ISZ     TCNTR4                  /UPDATE NO. COUNTER.
3933  4433  5221          JMP     OVRRD3                  /NO, DO REST
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3934  4434  5217          JMP     OVRRD3-2                /YES, RESET
3935  4435  1072    OVRDOK, TAD     DRIVNO
3936  4436  7110          CLL RAR
3937  4437  1327          TAD DSKPOT
3938  4440  3326          DCA     DSKADD                  /COMPUTER WAY TO BUFFER,
3939  4441  1726          TAD I   DSKADD                  /GET DISK ADDRESS
3940  4442  3135          DCA     TCNTR2                  /SAVE IT
3941  4443  1326          TAD     DSKADD                  /GET POINTER
3942  4444  1076          TAD     K0004                   /ADD IN FUDGE FACTOR
3943  4445  3326          DCA     DSKADD                  /MAKE ADDRESS
3944  4446  1114          TAD     K5252                   /GET DATA PATTERN TO USE
3945  4447  4431          FILBUF                          /FILL DATA BUFFER
3946  4450  1726          TAD I   DSKADD                  /GET EXTENDED BIT
3947  4451  1072          TAD     DRIVNO                  /ADD IN DRIVE NUMBER
3948  4452  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
3949  4453  1135          TAD     TCNTR2                  /GET CYL., SURFACE, AND SECTOR
3950  4454  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
3951  4455  1464          TAD I   XHITRK                  /GET EXTENDED BIT
3952  4456  1105          TAD     K4000                   /ADD IN WRITE FUNCTION
3953  4457  3150          DCA     CMREG                   /SETUP COMMAND POINTER
3954  4460  1463          TAD I   XLOTRK                  /GET ADDRESS
3955  4461  4426          DISKGO                          /DISK WRITE DATA
3956  4462  4524          TOVRDT                          /TEXT POINTER
3957  4463  5322          JMP     OVRDER                  /ERROR, WRITE SKIP OR STATUS
3958  4464  4432          KILBUF                          /CLEAR DATA BUFFER
3959  4465  1726          TAD I   DSKADD                  /GET EXTENDED BIT
3960  4466  3150          DCA     CMREG                   /SETUP COMMAND REGISTER
3961  4467  1135          TAD     TCNTR2                  /GET DISK ADDRESS
3962  4470  4426          DISKGO                          /GO, READ DATA
3963  4471  4524          TOVRDT                          /TEXT POINTER
3964  4472  5322          JMP     OVRDER                  /ERROR
3965  4473  1114          TAD     K5252
3966  4474  4430          FIGURE                          /WORD BY WORD COMPARE DATA
3967  4475  7610          SKP CLA                         /DATA O.K, CONTINUE
3968  4476  5322          JMP     OVRDER                  /DATA ERROR
3969  4477  1072          TAD     DRIVNO                  /GET DRIVE NO, SELECTED
3970  4500  7110          CLL RAR
3971  4501  4423          RANADD                          /GENERATE RANDOM ADDRESS
3972  4502  4406          DSKOUT                          /SEND DRIVE BACK OUT
3973  4503  2140          ISZ     TCNTR5                  /UPDATE PASS COUNTER, DONE ?
3974  4504  5232          JMP     CHKNEX                  /CHECK FOR NEXT DRIVE
3975  4505  3777'         DCA     DCNT2                   /SET FOR 0
3976  4506  1070          TAD     DRVHAV                  /GET NO. OF DRIVES ON SYSTEM.
3977  4507  3137          DCA     TCNTR4
3978  4510  4776    REDBAK, JMS I   (GETDRV                 /SELECT DRIVE
3979  4511  1072          TAD     DRIVNO                  /GET DRIVE SELECTED.
3980  4512  7110          CLL RAR
3981  4513  4407          DSKIN                           /CHECK THIS DRIVE
3982  4514  5310          JMP     REDBAK                  /WAIT FOR DRIVE
3983  4515  7610          SKP CLA                         /CHECK FOR NEXT
3984  4516  5227          JMP     POLERR                  /ERROR
3985  4517  2137          ISZ     TCNTR4                  /LAST DRIVE HOME YET
3986  4520  5310          JMP     REDBAK                  /WAIT FOR ALL
3987  4521  4437          NERROR                          /O.K. TO NEXT
3988  4522  4440    OVRDER, ERROR                         /OVERLAP SEEKS+READ DATA
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3989    4523  4401            OVRRED+1                        /SCOPE LOOP POINTER
3990    4524  5300    TOVRDT, 5300                            /TEXT POINTER
3991    4525  5600            JMP I   OVRRED                  /TO NEXT TEST
3992                    /
3993    4526  0000    DSKADD, 0
3994    4527  6366    DSKPOT, DSK0A
3995                    /
3996                    /ROUTINE TO CHECK DRIVE IN AC
3997                    /
3998    4530  0000    DIN,    0
3999    4531  7104            CLL RAL                         /MAKE DRIVE NO.
4000    4532  4450            LOCMD                           /FIRST SELECT DRIVE
4001    4533  1150            TAD     CMREG
4002    4534  1015            TAD     K0200                   /ENABLE SET DONE BIT
4003    4535  4450            LOCMD                           /LOAD COMMAND
4004    4536  7332            CLA CLL CML RTR                 /MAYBE EXPECTED STATUS
4005    4537  3143            DCA     GDREG2                  /SETUP COMPARE REGISTER
4006    4540  4444            RDSTAT                          /READ STATUS
4007    4541  4447            DSKSKP                          /CHECK FOR SKIP
4008    4542  5353            JMP     NDIN                    /CHECK FOR NOT DONE
4009    4543  7332            CLA CLL CML RAR                 /EXPECTED STATUS
4010    4544  3143            DCA     GDREG2                  /SETUP COMPARE REGISTER
4011    4545  4444            RDSTAT                          /READ STATUS
4012    4546  1105            TAD     K4000                   /ADD IN FUDGE FACTOR
4013    4547  7640            SZA CLA                         /O.K.????
4014    4550  2330            ISZ     DIN                     /ERROR!!!!
4015    4551  2330            ISZ     DIN
4016    4552  5730            JMP I   DIN                     /EXIT
4017    4553  1106    NDIN,   TAD     K6000
4018    4554  7640            SZA CLA                         /SKIP IF NO ERROR
4019    4555  5350            JMP     .-5                     /ERROR EXIT
4020    4556  5730            JMP I   DIN                     /EXIT
4021                    /
4022                    /ROUTINE TO COMPARE AC TO GDREG2
4023                    /
4024    4557  0000    COMP1,  0
4025    4560  3155            DCA     ACREG
4026    4561  1155            TAD     ACREG                   /SAVE AC
4027    4562  7041            CIA
4028    4563  1143            TAD     GDREG2
4029    4564  7640            SZA CLA                         /SKIP IF O.K.
4030    4565  2357            ISZ     COMP1                   /ERROR, DON'T COMPARE
4031    4566  5757            JMP I   COMP1
4032                    /
4033                    /
4034    4576  4345
4035    4577  4371
              4600      PAGE
4036                    /
4037                    /MANUAL FUNCTION TEST
4038                    /LOAD ADDRESS 0201 OR "MANUAL".
4039                    /SET SWITCHES TO FUNCTION
4040                    /PRESS START
4041                    /MACHINE SHOULD HALT
4042                    /SET SWITCHES TO DISK ADDRESS
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4043                    /PRESS START
4044                    /MACHINE SHOULD HALT
4045                    /SET SWITCHES TO COMPLEMENT DATA PATTERN
4046                    /PRESS START
4047                    /MACHINE SHOULD HALT
4048                    /SET SWITCHES TO 0000
4049                    /PRESS START
4050                    /INCASE OF FAILURES USE NORMAL SCOPE SWITCHES
4051                    /IF LOOP IS DESIRED USE NORMAL SCOPE SWITCHES
4052                    /
4053    4600  4405    MANUAL, CLASIC                          /CHECK FOR CLASIC.
4054    4601  4431            C8SWIT                          /ROUTINE TO EXECUTE.
4055    4602  7000            NOP
4056    4603  4404            LAS
4057    4604  0326            AND     K7707                   /MASK
4058    4605  3134            DCA     TCNTR1                  /SAVE FUNCTION
4059    4606  7340            CLA CLL CMA
4060    4607  3131            DCA     REG0                    /SETUP FOR ONE PASS
4061    4610  6224            RIF                             /USE CURRENT FIELD
4062    4611  1134            TAD     TCNTR1
4063    4612  3134            DCA     TCNTR1                  /ACTUAL FUNCTION
4064    4613  1134            TAD     TCNTR1
4065    4614  0100            AND     K0006                   /MASK DISK DRIVE
4066    4615  3072            DCA     DRIVNO                  /ACTUAL DRIVE
4067    4616  4405            CLASIC                          /CHECK FOR CLASSIC.
4068    4617  4436            C8ERR                           /ROUTINE TO EXECUTE.
4069    4620  7402            HLT                             /WAIT FOR DISK ADDR. IN SWITCHES.
4070                                                          /IF ON CLASSIC CONSOLE PACKAGE
4071                                                          /HIT CONTROL E, IF NOT THEN
4072                                                          /PRESS KEY CONTINUE.
4073    4621  4405            CLASIC                          /CHECK FOR CLASSIC
4074    4622  4431            C8SWIT                          /ROUTINE TO EXECUTE.
4075    4623  7000            NOP
4076    4624  4404            LAS
4077    4625  3135            DCA     TCNTR2                  /SAVE DISK ADDRESS
4078    4626  4405            CLASIC                          /CHECK FOR CLASSIC.
4079    4627  4436            C8ERR                           /ROUTINE TO EXECUTE.
4080    4630  7402            HLT                             /WAIT FOR COMPLEMENT DATA.
4081                                                          /IF ON CLASSIC CONSOLE PACKAGE
4082                                                          /HIT CONTROL E, IF NOT THEN
4083                                                          /PRESS KEY CONTINUE.
4084    4631  4405            CLASIC                          /CHECK FOR CLASSIC
4085    4632  4431            C8SWIT                          /ROUTINE TO EXECUTE.
4086    4633  7000            NOP
4087    4634  4404            LAS
4088    4635  3136            DCA     TCNTR3                  /SAVE IT
4089    4636  4405            CLASIC                          /CHECK FOR CLASSIC.
4090    4637  4436            C8ERR                           /ROUTINE TO EXECUTE.
4091    4640  7402            HLT                             /WAIT FOR OPERATOR TO CONTINUE
4092                                                          /IF ON CLASSIC CONSOLE PACKAGE
4093                                                          /HIT CONTROL E, IF NOT THEN
4094                                                          /PRESS KEY CONTINUE.
4095    4641  1136            TAD     TCNTR3
4096    4642  4431            FILBUF                          /FILL BUFFER WITH DATA
4097    4643  7300    TMANS,  CLA CLL
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4098  4644  1134          TAD     TCNTR1                  /GET FUNCTION
4099  4645  0107          AND     K7000                   /MASK
4100  4646  1106          TAD     K6000
4101  4647  7630          SZL CLA                         /WAS IT A READ
4102  4650  7340          CLA CLL CMA                     /NO, SET A FLAG
4103  4651  3137          DCA     TCNTR4                  /READ FLAG
4104  4652  1134          TAD     TCNTR1                  /GET FUNCTION
4105  4653  0107          AND     K7000                   /MASK
4106  4654  1115          TAD     K5000
4107  4655  7640          SZA CLA                         /WAS IT A SEEK
4108  4656  5266          JMP     NTSEK                   /NOT A SEEK
4109  4657  1134          TAD     TCNTR1                  /YES
4110  4660  3150          DCA     CMREG                   /SETUP COMMAND
4111  4661  1135          TAD     TCNTR2                  /DISK ADDRESS
4112  4662  4424          SEEK                            /SEEK ONLY
4113  4663  4724          TMANT                           /TEXT POINTER
4114  4664  5322          JMP     TMANE                   /ERROR, SKIP OR STATUS
4115  4665  5321          JMP     TMANOK                  /TO HANDLER
4116  4666  1134  NTSEK,  TAD     TCNTR1                  /GET FUNCTION
4117  4667  0101          AND     K0007                   /MASK
4118  4670  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
4119  4671  1134          TAD     TCNTR1                  /FUNCTION
4120  4672  3150          DCA     CMREG                   /SETUP COMMAND
4121  4673  1135          TAD     TCNTR2                  /DISK ADDRESS
4122  4674  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
4123  4675  1137          TAD     TCNTR4                  /GET READ FLAG
4124  4676  7650          SNA CLA                         /WAS IT A READ
4125  4677  4432          KILBUF                          /YES, CLEAR BUFFER
4126  4700  1135          TAD     TCNTR2                  /GET DISK ADDRESS
4127  4701  4426          DISKGO                          /DISK GO
4128  4702  4724          TMANT                           /TEXT POINTER
4129  4703  5322          JMP     TMANE                   /ERROR
4130  4704  1137          TAD     TCNTR4                  /GET READ FLAG
4131  4705  7640          SZA CLA                         /WAS IT A READ
4132  4706  5321          JMP     TMANOK                  /WAS A WRITE, TO HANDLER
4133  4707  1150          TAD     CMREG                   /GET LAST COMMAND
4134  4710  0014          AND     K0100                   /MASK OUT HALF BIT
4135  4711  7650          SNA CLA                         /WAS IT HALF BLOCK TRANSFERS
4136  4712  5317          JMP     .+5                     /NO, COMPARE WHOLE BLOCK
4137  4713  1136          TAD     TCNTR3                  /GET GOOD WORD POINTER
4138  4714  4427          HAFCHK                          /CHECK FOR HALF BLOCK
4139  4715  5321          JMP     TMANOK                  /O.K. NO ERRORS
4140  4716  5322          JMP     TMANE                   /DATA ERROR
4141  4717  1136          TAD     TCNTR3                  /WAS A READ
4142  4720  4430          FIGURE                          /WORD BY WORD COMPARE OF DATA
4143  4721  4437  TMANOK, NERROR                         /NO ERRORS
4144  4722  4440  TMANE,  ERROR                          /ERROR IN FUNCTION SELECTED
4145  4723  4643          TMANS                           /SCOPE LOOP POINTER
4146  4724  5373  TMANT,  5373                           /TEXT POINTER
4147                      /
4148  4725  5243          JMP     TMANS                   / LOOP
4149                      /
4150  4726  7707  K7707,  7707
4151                      /
4152                      /SUBROUTINE TO WAIT FOR INTERRUPTS
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4153                      /IF INTERRUPT OCCURES GO BACK+1
4154                      /
4155  4727  0000  IONWT,  0
4156  4730  7450          SNA                             /FAST OR SLOW
4157  4731  1122          TAD     K7740                   /GET SLOW CONSTANT
4158  4732  3364          DCA     ICNTR2                  /SETUP COUNTER
4159  4733  3363          DCA     ICNTR1                  /SETUP COUNTER
4160  4734  6001          ION                             /TURN IT ON
4161  4735  2363          ISZ     ICNTR1
4162  4736  5335          JMP     .-1
4163  4737  2364          ISZ     ICNTR2
4164  4740  5335          JMP     .-3
4165  4741  6002          IOF                             /TURN IT OFF
4166  4742  5727          JMP I   IONWT                       /NO INT OCCURED
4167  4743  1022  INTADD, TAD     22
4168  4744  0016          AND     K0400
4169  4745  7640          SZA CLA                         /ON CLASSIC?
4170  4746  6031          KSF
4171  4747  5353          JMP     .+4                     /NO FLAG OR CLASSIC.
4172  4750  6032          KCC
4173  4751  6001          ION
4174  4752  5400          JMP I   0                       /RETURN TO LOOP.
4175  4753  2327          ISZ     IONWT                   /UPDATE GOT AN INTERRUPT RETURN.
4176  4754  4447          DSKSKP                          /CHECK DISK FLAG.
4177  4755  7610          SKP CLA                         /WASN'T SO ERROR.
4178  4756  5727          JMP I   IONWT                   /EXIT AND INDICATE AN INTERRUPT.
4179  4757  4405          CLASIC
4180  4760  4436          CBERR
4181  4761  7402  ERHLT1, HLT                             /ERROR, ILLEGAL INTERRUPT
4182  4762  5357          JMP     .-3
4183                      /
4184  4763  0000  ICNTR1, 0
4185  4764  0000  ICNTR2, 0
4186                      /
4187                      /SUBROUTINE TO LOAD CURRENT ADDRESS REGISTER
4188                      /
4189  4765  0000  LDCA,   0
4190  4766  3153          DCA     ADREG                   /SAVE IN ADDRESS
4191  4767  1153          TAD     ADREG
4192  4770  3152          DCA     CAREG                   /SETUP INITIAL CURRENT ADDRESS
4193  4771  1153          TAD     ADREG
4194  4772  6744  IOT4,   DLCA                            /LOAD CURRENT ADDRESS IOT
4195  4773  5765          JMP I   LDCA
4196  4774  4405          CLASIC
4197  4775  4436          CBERR
4198  4776  7402  ERHLT4, HLT                             /SKIP TRAP ERROR.
4199  4777  5374          JMP     .-3
4200                      /
4201        5000  PAGE
4202                      /
4203                      /ROUTINE TO CHECK THE WRITE PROTECT FUNCTION
4204                      /WHEN IT IS SET UNDER PROGRAM CONTROL
4205                      /NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS TEST
4206                      /
4207  5000  4405  AUTPRO, CLASIC                          /CHECK FOR CLASSIC.
```

```
4208  5001  4431          CASWIT                          /ROUTINE TO EXECUTE.
4209  5002  7200          NOP
4210  5003  4404          LAS                             /GET THE SWITCHES
4211  5004  7124          CLL RAL
4212  5005  0100          AND     K0006                   /MASK DRIVE NUMBER
4213  5006  3372          DCA     DRIVNO                  /SAVE DRIVE NUMBER
4214  5007  7344          CLA CLL CMA RAL
4215  5010  3132          DCA     REG1                    /SETUP REPEAT POINTER
4216  5011  3131          DCA     REG0
4217  5012  1113          TAD     K2525                   /DATA PATTERN TO WRITE
4218  5013  4431          FILBUF                          /FILL OUTBOUND BUFFER
4219  5014  1372          TAD     DRIVNO
4220  5015  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
4221  5016  3463          DCA I   XLOTRK                  /SETUP ADDRESS WORD IN BUFFER
4222  5017  1115          TAD     K5000                   /WRITE ALL FUNCTION
4223  5020  3150          DCA     CMREG                   /SETUP COMMAND
4224  5021  4426          DISKGO                          /WRITE ALL TO SECTOR 0
4225  5022  5070          TAPROT                          /TEXT POINTER
4226  5023  5266          JMP     APERR                   /ERROR, STATUS
4227  5024  1103  APR1,   TAD     K2000                   /FUNCTION WRITE PROTECT
4228  5025  1372          TAD     DRIVNO                  /CURRENT DRIVE
4229  5026  4450          LOCMD                           /LOAD COMMAND REGISTER
4230  5027  4452          LOADD                           /LOAD AND GO
4231  5030  4444          RDSTAT                          /READ STATUS REGISTER
4232  5031  7640          SZA CLA                         /SHOULD BE 0000 ????
4233  5032  5245          JMP     APA1                    /ERROR, STATUS
4234  5033  4432          KILBUF                          /CLEAR OUTBOUND BUFFER
4235  5034  1372          TAD     DRIVNO
4236  5035  3464          DCA I   XHITRK                  /SETUP ADDRESS WORD IN BUFFER
4237  5036  1115          TAD     K5000                   /WRITE ALL FUNCTION
4238  5037  3150          DCA     CMREG                   /SETUP COMMAND REGISTER
4239  5040  4426          DISKGO                          /WRITE ALL TO SECTOR 0
4240  5041  5070          TAPROT                          /TEXT POINTER
4241  5042  7200          NOP
4242  5043  7326          CLA CLL CML RTL
4243  5044  1012          TAD     K0020                   /MAKE EXPECTED STATUS
4244  5045  3143  APA1,   DCA     GDREG2                  /SETUP COMPARE REGISTER
4245  5046  1166          TAD     K5300
4246  5047  3270          DCA     TAPROT                  /SETUP TEXT POINTER
4247  5050  1146          TAD     STREG                   /GET STATUS READ
4248  5051  4442          ACCMP1                          /CHECK RESULTS
4249  5052  7610          SKP CLA                         /STATUS O.K.
4250  5053  5266          JMP     APERR                   /ERROR, WRITE PROTECT
4251  5054  7301          CLA CLL IAC                     /ENABLE CLEAR CONTROL
4252  5055  4453          CLRALL                          /CLEAR CONTROL
4253  5056  1017          TAD     K1000                   /FUNCTION READ ALL
4254  5057  3150          DCA     CMREG                   /SETUP COMMAND
4255  5060  4426          DISKGO                          /READ ALL SECTOR 0
4256  5061  5070          TAPROT                          /TEXT POINTER
4257  5062  5266          JMP     APERR                   /ERROR
4258  5063  1113          TAD     K2525                   /EXPECTED PATTERN
4259  5064  4430          FIGURE                          /CHECK DATA READ
4260  5065  4437          NERROR                          /ALL O.K. DO ONE MORE TIME
4261  5066  4440  APERR,  ERROR                           /ERROR, WRITE PROTECT
4262  5067  5224          APR1
```



```
4263  5070  0000  TAPROT, 0000                           /TEXT POINTER
4264  5071  4435          CLASIC
4265  5072  4436          CRERR
4266  5073  7402  APHLT1, HLT                            /SUCCESSFUL WRITE PROTECT, TO
4267                                                     /REPEAT: IF ON CLASSIC CONSOLE
4268                                                     /PACKAGE HIT CONTROL E. IF NOT
4269                                                     /PRESS KEY CONTINUE.
4270  5074  5200          JMP     AUTPRO
4271                /
4272                /ROUTINE TO GET SWITCHES
4273                /
4274  5075  0000  MYLAS,  0
4275  5076  4405          CLASIC                          /CHECK IF CLASSIC
4276  5077  4425          CHCKSW                          /GET SWITCHES
4277  5100  7604          7604                            /NOT CLASSIC, GET SWITCHES
4278  5101  5675          JMP     I MYLAS
4279                /
4280                /THIS ROUTINE WILL BE A SKIP INSTRUCTION WITHOUT
4281                /CLASSIC, OTHERWISE IT WILL EXECUTE NEXT INSTRUCTION
4282                /IN FIELD 0 AND THEN SKIP THE INSTRUCTION AFTER THAT ONE.
4283                /
4284  5102  0000  CLASIK, 0
4285  5103  3332          DCA     SAVAC                   /SAVE CURRENT AC
4286  5104  1732          TAD I   CLASIK
4287  5105  3333          DCA     ROUTMP                  /SAVE THE CLASSIC ROUTINE
4288  5106  2302          ISZ     CLASIK
4289  5107  1732          TAD     OP2
4290  5110  0377          AND     (400
4291  5111  7640          SZA CLA
4292  5112  5315          JMP     .+3
4293  5113  1332          TAD     SAVAC                   /NO RETURN TO PROGRAM
4294  5114  5742          JMP I   CLASIK
4295  5115  2302          ISZ     CLASIK
4296  5116  6211          CDF     10                      /CHANGE TO FIELD 1
4297  5117  1020          TAD     SWR
4298  5120  3776          DCA I   (SWR)                   /MOVE POINTERS TO FIELD 1
4299  5121  1731          TAD     OP1
4300  5122  3775          DCA I   (OP1)
4301  5123  1732          TAD     OP2
4302  5124  3774          DCA I   (OP2)
4303  5125  1333          TAD     ROUTMP
4304  5126  3773          DCA I   (ROUINS)                /SAVE ROUTINE IN FIELD 1
4305  5127  1332          TAD     SAVAC
4306  5130  6212          CIF     10
4307  5131  5773          JMP I   (ROUINS)                /GO TO FIELD 1
4308                /
4309  5132  0000  SAVAC,  0
4310  5133  0000  ROUTMP, 0
4311                /
4312                /ROUTINE TO WAIT FOR DISK SKIPS
4313                /
4314  5134  0000  SKWAT,  0
4315  5135  7300          CLA CLL
4316  5136  4530          TICK                            /TIMING FOR APT
4317  5137  1122          TAD     K7740                   /GET TIME CONSTANT
```

```
4318  5140  3275          DCA     MYLAS
4319  5141  3302          DCA     CLASIK
4320  5142  4447          DSKSKP                          /DSKP "DISK SKIP IOT"
4321  5143  7610          SKP CLA                         /NO SKIP OCCURRED YET
4322  5144  5352          JMP     .+6                     /GOT THE SKIP
4323  5145  2302          ISZ     CLASIK
4324  5146  5342          JMP     .-4
4325  5147  2275          ISZ     MYLAS
4326  5150  5342          JMP     .-6
4327  5151  7610          SKP CLA                         /NO SKIP OCCURRED
4328  5152  2334          ISZ     SKWAT
4329  5153  5734          JMP I   SKWAT                   /EXIT
4330                      /
4331                      /SUBROUTINE TO READ STATUS REGISTER
4332                      /
4333  5154  0000  RDST,    0
4334  5155  6745  IOT5,    DRST                            /READ STATUS IOT
4335  5156  5363          JMP     .+5
4336  5157  4405          CLASIC
4337  5160  4436          CAERR
4338  5161  7402  FRHLTS,  HLT                             /SKIP TRAP ERROR
4339  5162  5357          JMP     .-3
4340  5163  3146          DCA     STREG                   /SAVE RESULTS
4341  5164  1146          TAD     STREG
4342  5165  5754          JMP I   RDST                    /EXIT
4343  5166  1302
4344  5167  0022
4345  5170  0021
4346  5171  0020
4347  5172  0400
              5200  PAGE
4348                      /
4349                      /SUBROUTINE FOR "ERRORS," SCOPE LOOPS, AND
4350                      /ERROR TYPEOUTS.
4351                      /
4352  5200  0000  ERRO,    0
4353  5201  4527          JMS I   KAERRO                  /REPORT ERROR TO APT
4354  5202  1600          TAD I   ERRO                    /GET RESTART ADDRESS
4355  5203  3173          DCA     RESTRT                  /STORE
4356  5204  4404          LAS                             /GET SWITCH 0
4357  5205  7700          SMA CLA                         /IS IT SCOPE LOOP
4358  5206  5217          JMP     ERRA1                   /NO, CONTINUE
4359  5207  4404          LAS                             /GET SWR2
4360  5210  7006          RTL
4361  5211  7710          SPA CLA                         /INHIBIT BELL????
4362  5212  5215          JMP     .+3                     /YES
4363  5213  1356          TAD     K0207
4364  5214  4436          TYPE
4365  5215  1600          TAD I   ERRO
4366  5216  5757          JMP I   ESCOPE                  /CHECK FOR BELL
4367  5217  1600  ERRA1,  TAD I   ERRO
4368  5220  3367          DCA     RETRN2                  /STORE FOR RETURN
4369  5221  2200          ISZ     ERRO
4370  5222  7301          CLA CLL IAC
4371  5223  1200          TAD     ERRO                    /NEXT TEST POINTER
```



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4372  5224  3361          DCA     INHIRT                  /STORE FOR SPECIAL RETURN
4373  5225  4462          CRLF
4374  5226  4462          CRLF
4375  5227  1600          TAD I   ERRO                    /GET TEXT POINTER
4376  5230  0101          AND     K0007                   /MASK 9-11
4377  5231  1367          TAD     HEDTAD                  /MAKE ERROR HEADER TAD
4378  5232  3233          DCA     .+1
4379  5233  7402          HLT                             /MODIFIED HEADER TAD
4380  5234  3236          DCA     .+2
4381  5235  4457          PRNTER                          /MODIFIED HEADER POINTER
4382  5236  7402          HLT
4383  5237  4462          CRLF
4384  5240  4457          PRNTER                          /PRINT PC:
4385  5241  5750          TEXPC
4386  5242  7340          CLA CLL CMA
4387  5243  1200          TAD     ERRO                    /GET PC POINTER
4388  5244  4460          OCTEL                           /PRINT PC STORED
4389  5245  1600          TAD I   ERRO                    /GET TEXT POINTER
4390  5246  7104          CLL RAL
4391  5247  7420          SNL
4392  5250  5264          JMP     NTGD                    /NOT GD: REGISTER
4393
4394
4395  5251  3200          DCA     ERRO
4396  5252  4457          PRNTER                          /PRINT GD:
4397  5253  5752          TEXGD
4398  5254  1200          TAD     ERRO
4399  5255  7700          SMA CLA                         /WAS IT A 6 BIT OCTAL BYTE
4400  5256  5261          JMP     .+3                     /NO
4401  5257  1142          TAD     GDREG1                  /GET DATA
4402  5260  4461          TWOCT                           /PRINT TWO OCTAL
4403  5261  1143          TAD     GDREG2
4404  5262  4460          OCTEL                           /PRINT FOUR OCTAL
4405  5263  7610          SKP CLA
4406  5264  3200  NTGD,           DCA     ERRO
4407  5265  1200          TAD     ERRO                    /GET TEXT POINTER
4408  5266  7104          CLL RAL
4409  5267  7420          SNL
4410  5270  5301          JMP     NTCRC
4411  5271  3200          DCA     ERRO
4412  5272  4457          PRNTER                          /PRINT CR:
4413  5273  5754          TEXCR
4414  5274  1144          TAD     CRREG1
4415  5275  4461          TWOCT                           /PRINT
4416  5276  1145          TAD     CRREG2
4417  5277  4460          OCTEL                           /PRINT FOUR OCTAL
4418  5300  7610          SKP CLA
4419  5301  3200  NTCRC,  DCA     ERRO
4420  5302  1363          TAD     XTEXT
4421  5303  3366          DCA     PCNTR2
4422  5304  1364          TAD     XREG
4423  5305  3010          DCA     AUTO10
4424  5306  1116          TAD     K7771
4425  5307  3365          DCA     PCNTR1                  /COUNTER FOR    # OF HEADS
4426  5310  1200  STRAUT, TAD     ERRO                    /GET TEXT POINTER
```

```
4427  5311  7500          SMA
4428  5312  5350          JMP     NOTEX                   /NOT THIS ONE
4429  5313  7104          CLL RAL
4430  5314  3200          DCA     ERRO
4431  5315  1366          TAD     PCNTR2                  /GET TEXT MESSAGE POINTER
4432  5316  2366          ISZ     PCNTR2
4433  5317  2366          ISZ     PCNTR2
4434  5320  3322          DCA     .+2
4435  5321  4457          PRNTER                          /STORE FOR PRNTER
4436  5322  7402          HLT                             /PRINT XX:
4437  5323  1410          TAD I   AUTO10                  /MODIFIED TEXT POINTER
4438  5324  4460          OCTFL
4439  5325  2365  AGAIN,  ISZ     PCNTR1                  /PRINT FOUR OCTAL
4440  5326  5312          JMP     STRAUT
4441  5327  4474          LAS                             /CHECK FOR NEXT XX:
4442  5330  7006          RTL                             /GET SWITCH 5
4443  5331  0216          AND     K0400                   /SHIFT FOR TESTING
4444  5332  7650          SNA CLA                         /MASK
4445  5333  5342          JMP     CHKERR                  /WAS IT INHIBIT HALT
4446  5334  7630          SZL CLA                         /NO HALT
4447  5335  5340          JMP     .+3                     /SAME OR NEXT TEST
4448  5336  1361          TAD     INHIBT                  /SAME TEST
4449  5337  5757          JMP I   ESCOPE                  /GET RETURN
4450  5340  1360          TAD     RETRN2                  /CHECK FOR BELL
4451  5341  5757          JMP I   ESCOPE                  /GET RETURN
4452  5342  4405  CHKERR, CLASTC                         /CHECK FOR BELL
4453  5343  4436          CAFFR
4454  5344  7402  FRHLTG, HLT                             /ALL RECOVERABLE ERROR HALTS
4455  5345  4762          JMS I   XGTREG                  /CHECK FOR GET ALL REGISTERS
4456  5346  5760          JMP I   RETRN2                  /NO, TRY SAME TEST AGAIN
4457  5347  5264          JMP     NTGO                    /DUMP
4458  5350  7104  NOTEX,  CLL RAL
4459  5351  3200          DCA     ERRO
4460  5352  2366          ISZ     PCNTR2
4461  5353  2366          ISZ     PCNTR2
4462  5354  2010          ISZ     AUTO10
4463  5355  5325          JMP     AGAIN
4464                      /
4465  5356  0207  K0207,  0207
4466  5357  5470  ESCOPE, SCOPE
4467  5360  0000  RETRN2, 0
4468  5361  0000  INHIBT, 0
4469  5362  5527  XGTREG, GTREG
4470  5363  5756  XTEXT,  TEXST
4471  5364  0145  XREG,   CRREG2
4472  5365  0000  PCNTR1, 0
4473  5366  0000  PCNTR2, 0
4474  5367  1370  HEDTAD, TAD     HEDLST
4475  5370  6671  HEDLST, ERTX1
4476  5371  6704          ERTX2
4477  5372  6720          ERTX3
4478  5373  6736          ERTX4
4479  5374  6746          ERTX5
4480  5375  6760          ERTX6
4481  5376  6772          ERTX7
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```
4482  5377  7002          ERTXR
4483                      /
4484                      /
4485        5400  PAGE
4486                      /
4487                      /SUBROUTINE TO READ DATA BUFFER TO AC
4488                      /
4489  5400  0000  RDBF,   0
4490  5401  7330          CLA CLL CML RAR
4491  5402  4455          LOMAN
4492  5403  1012          TAD     K0020
4493  5404  4455          LOMAN
4494  5405  3147          DCA     DBREG                   /LOAD MAINTENANCE
4495  5406  1147          TAD     DBREG
4496  5407  3154          DCA     DTREG
4497  5410  1154          TAD     DTREG
4498  5411  5600          JMP I   RDBF                    /EXIT
4499                      /
4500                      /SUBROUTINE TO SHIFT COMMAND    REGISTER TO
4501                      /DATA BUFFER THEN READ DATA BUFFER
4502                      /
4503  5412  0000  RDCM,   0
4504  5413  7300          CLA CLL
4505  5414  1126          TAD     M12
4506  5415  3133          DCA     SRCNT1
4507  5416  7330          CLA CLL CML RAR                 /12 BIT SHIFT
4508  5417  4455          LOMAN
4509  5420  7010          RAR                             /LOAD MAINTENANCE
4510  5421  4455          LOMAN
4511  5422  7300          CLA CLL                         /LOAD MAINTENANCE
4512  5423  1216          TAD     K0400
4513  5424  4455          LOMAN                           /ENABLE BIT FOR SHIFT COMMAND
4514  5425  2133          ISZ     SRCNT1                  /LOAD AND GO
4515  5426  5224          JMP     .-2
4516  5427  7300          CLA CLL                         /SHIFT 12
4517  5430  1012          TAD     K0020
4518  5431  4455          LOMAN                           /ENABLE READ BUFFER
4519  5432  3150          DCA     CMREG                   /LOAD AND GO
4520  5433  1150          TAD     CMREG                   /SAVE IT
4521  5434  5612          JMP I   RDCM                    /EXIT
4522                      /
4523                      /ROUTINE TO ZERO WORK BUFFER
4524                      /
4525  5435  0000  KLBUF,  0
4526  5436  7340          CLA CLL CMA
4527  5437  1067          TAD     BGNBUF
4528  5440  3010          DCA     AUTO10                  /START OF BUFFER-1
4529  5441  1123          TAD     K7400                   /SETUP AUTO INDEX
4530  5442  3162          DCA     DATCNT
4531  5443  3410          DCA I   AUTO10                  /SETUP COUNTER
4532  5444  2162          ISZ     DATCNT                  /CLEAR BUFFER
4533  5445  5243          JMP     .-2                     /UPDATE COUNTER
4534  5446  5635          JMP I   KLBUF                   /NOT ALL CLEARED YET
4535                      /                               /BUFFER CLEARED
4536                      /ROUTINE TO FILL THE WORK BUFFER WITH
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```
4537                    /THE COMPLEMENT DATA THATS IN THE AC.
4538                    /
4539    5447  0000      FLBUF,  0
4540    5450  3163              DCA     SAVDAT                  /SAVE DATA WORD
4541    5451  7340              CLA CLL CMA
4542    5452  1067              TAD     BGNBUF                  /START OF BUFFER-1
4543    5453  3010              DCA     AUTO10                  /SETUP AUTO INDEX
4544    5454  1124              TAD     K7600
4545    5455  3162              DCA     DATCNT                  /SETUP COUNTER
4546    5456  1163      LPDAT,  TAD     SAVDAT                  /GET FIRST WORD
4547    5457  3410              DCA I   AUTO10                  /STORE IN BUFFER
4548    5460  1163              TAD     SAVDAT                  /GET SECOND WORD
4549    5461  7040              CMA                             /COMPLEMENT IT
4550    5462  3410              DCA I   AUTO10                  /STORE IN BUFFER
4551    5463  2162              ISZ     DATCNT                  /UPDATE COUNTER
4552    5464  5256              JMP     LPDAT                   /MORE WORDS TO GO
4553    5465  1102              TAD     K1234
4554    5466  3410              DCA I   AUTO10                  /MAKE WORD IN BUFFER-1
4555    5467  5647              JMP I   FLBUF                   /BUFFER FULL
4556                    /
4557                    /ROUTINE TO CHECK FOR WAIT AND RECALIBRATE
4558                    /
4559    5470  3326      SCOPE,  DCA     TOTST                   /SAVE SCOPE LOOP POINTER
4560    5471  4404              LAS                             /GET SWITCH 7
4561    5472  0012              AND     K0020                   /MASK
4562    5473  7640              SZA CLA                         /WAIT LOOP?
4563    5474  4434              WATISZ                          /YES
4564    5475  4404              LAS                             /GET SWITCH 6
4565    5476  0013              AND     K0040                           /MASK
4566    5477  7650              SNA CLA                         /IS IT CLEAR DISK
4567    5500  5322              JMP     NOCLR                   /NO, DON'T
4568    5501  7301              CLA CLL IAC                     /ENABLE CLEAR CONTROL
4569    5502  4453              CLRALL                          /CLEAR CONTROL
4570    5503  1152              TAD     CMREG                   /GET LAST COMMAND
4571    5504  0325              AND     K7577                   /MASK OUT SET DONE
4572    5505  4450              LDCMD                           /LOAD COMMAND
4573    5506  7326              CLA CLL CML RTL                 /ENABLE RECALIBRATE
4574    5507  4453              CLRALL                          /RECALIBRATE
4575    5510  4433              SKPWAT                          /WAIT FOR FIRST DONE
4576    5511  7000              NOP
4577    5512  1150              TAD     CMREG                   /LAST COMMAND
4578    5513  1015              TAD     K0200
4579    5514  4450              LDCMD                           /LOAD COMMAND
4580    5515  4433              SKPWAT                          /WAIT FOR SECOND DONE
4581    5516  7000              NOP
4582    5517  1150              TAD     CMREG
4583    5520  0325              AND     K7577                   /MASK SET DONE
4584    5521  3150              DCA     CMREG
4585    5522  7301      NOCLR,  CLA CLL IAC                     /ENABLE CLEAR CONTROL
4586    5523  4453              CLRALL                          /CLEAR CONTROL
4587    5524  5726              JMP I   TOTST                   /GO TO TEST
4588                    /
4589    5525  7577      K7577,  7577
4590    5526  0000      TOTST,  0
4591                    /
```



```
4592                    /ROUTINE TO GET ALL REGISTERS
4593                    /(NOTE: THIS ROUTINE WILL CAUSE ONE MAINTENANCE
4594                    /DATA BREAK TO LOCATION 0  IF THE LAST PREVIOUS
4595                    /FUNCTION EXECUTED WAS A READ DATA BREAK.)
4596                    /
4597    5527  0000      GTREG,  0
4598    5530  4404              LAS                             /GET SWITCH A
4599    5531  0011              AND     K0010                   /MASK
4600    5532  7650              SNA CLA                         /WAS IT GET ALL REGISTERS
4601    5533  5727              JMP I   GTREG                   /NO, GO BACK
4602    5534  2327              ISZ     GTREG                   /YES, UPDATE POINTER
4603    5535  4444              RDSTAT                          /READ STATUS
4604    5536  4456              RDBUF                           /READ LOWER BUFFER
4605    5537  7300              CLA CLL
4606    5540  4451              LDCUR                           /SET CA TO 0 FOR BREAK
4607    5541  7332              CLA CLL CML RTR                 /ENABLE SHIFT TO LOWER BUFFER
4608    5542  4455              LDMAN                           /BREAK IF LAST BREAK WAS A READ
4609    5543  4454              RDCRC                           /READ CRC
4610    5544  4446              RDADD                           /READ TRACK
4611    5545  4445              RDCMD                           /READ COMMAND
4612    5546  4462              CRLF
4613    5547  7301              CLA CLL IAC                     /ENABLE CLEAR CONTROL
4614    5550  4453              CLRALL                          /CLEAR CONTROL
4615    5551  1124              TAD     K7600
4616    5552  5727              JMP I GTREG                     /EXIT
4617                    /
4618                    /ROUTINE TO SEND DRIVES ON AN OVERLAP SEEK
4619                    /
4620    5553  0000      DOUT,   0
4621    5554  3327              DCA     GTREG                   /SAVE ADDRESS
4622    5555  7004              RAL
4623    5556  1072              TAD     DRIVNO                  /GET CURRENT DRIVE
4624    5557  4450              LDCMD                           /LOAD COMMAND REGISTER
4625    5560  1150              TAD     CMREG                   /GET LAST COMMAND ISSUED
4626    5561  1124              TAD     K3000                   /ADD IN SEEK ONLY FUNCTION
4627    5562  1156              TAD     HOMEMA                  /ADD IN CURRENT FIELD
4628    5563  4450              LDCMD                           /LOAD COMMAND REGISTER
4629    5564  1327              TAD     GTREG                   /GET SAVED ADDRESS
4630    5565  4452              LDADD                           /LOAD AND GO
4631    5566  4447              DSKSKP                          /WAIT FOR FIRST DONE FLAG
4632    5567  5366              JMP     .-1                     /HANG IF NO SKIP
4633    5570  5753              JMP I   DOUT                    /DISK IS OUT
4634                    /
4635                    /SUBROUTINE TO ISSUE "DCLR" CLEAR IOT
4636                    /
4637    5571  0000      CLDR,   0
4638    5572  6742      IOT2,   DCLR                            /DCLR "CLEAR IOT"
4639    5573  5771              JMP I   CLDR                    /EXIT
4640    5574  4405              CLASIC
4641    5575  4436              CBERR
4642    5576  7402      ERHLT2, HLT                             /SKIP TRAP ERROR
4643    5577  5374              JMP     .-3
4644                    /
4645          5600      PAGE
4646                    /
```

```
                        /ROUTINE TO READ OR WRITE ON DISK
                        /RETURN+1 SKIP OR STATUS ERROR
                        /RETURN+2 O.K.
                        /
5600  0000  DISKG,  0
5601  3254          DCA     SAVTRK          /SAVE TRACK ADDRESS
5602  7340          CLA CLL CMA
5603  3171          DCA     SOFERR          /SET CRC ERROR FLAG
5604  1600          TAD I   DISKG           /GET TEXT POINTER
5605  3172          DCA     SAVPCT          /SAVE IT
5606  2200          ISZ     DISKG           /UPDATE POINTER
5607  1150          TAD     CMREG           /GET COMMAND
5610  0255          AND     K7501           /MASK OFF
5611  1156          TAD     MOMEMA          /CURRENT FIELD
5612  1272          TAD     DRIVNO          /CURRENT DRIVE
5613  4450          LDCMD                   /LOAD COMMAND
5614  1267          TAD     BGNBUF          /GET BEGINNING OF BUFFER
5615  4451          LDCUR                   /LOAD CURRENT ADDRESS
5616  1254          TAD     SAVTRK          /GET TRACK+SECTOR
5617  4452          LDADD                   /LOAD AND GO
5620  4433          SKPWAT                  /WAIT FOR DISK SKIP
5621  5234          JMP     SKPERR          /ERROR, NO SKIP
5622  7330          CLA CLL CML RAR         /EXPECTED STATUS
5623  3143          DCA     GDREG2          /SETUP COMPARE REGISTER
5624  4444          RDSTAT                  /READ STATUS
5625  1105          TAD     K4000
5626  7640          SZA CLA                 /WAS STATUS 4000
5627  5236          JMP     STAERR          /ERROR, STATUS
5630  1165          TAD     K5373           /TEXT POINTER
5631  2200          ISZ     DISKG           /UPDATE FOR GOOD RETURN
5632  3572  RETRN,  DCA I   SAVPCT          /STORE IN TEXT POINTER
5633  5600          JMP I   DISKG           /EXIT
5634  1164  SKPERR, TAD     K0306           /SKIP TEXT POINTER
5635  5232          JMP     RETRN           /EXIT
5636  1146  STAERR, TAD     STREG           /GET STATUS JUST READ
5637  0011          AND     K0010           /MASK OUT CRC ERRORS
5640  7650          SNA CLA                 /WERE THERE ANY
5641  5252          JMP     HRDERR          /NO, OTHERS
5642  7300          CLA CLL
5643  1150          TAD     CMREG           /GET LAST COMMAND
5644  0107          AND     K7000           /MASK FUNCTION
5645  1106          TAD     K6000           /ADD IN FUDGE FACTOR
5646  7630          SZL CLA                 /WAS IT A READ ALL OR READ
5647  5252          JMP     HRDERR          /NO, MUST BE A WRITE
5650  3171          DCA     SOFERR          /SET CRC ERROR FLAG
5651  5230          JMP     RETRN-2         /GO CHECK DATA OR RETURN
5652  1166  HRDERR, TAD     K5300
5653  5232          JMP     RETRN           /EXIT
                        /
5654  0000  SAVTRK, 0
5655  7501  K7501,  7501
                        /
                        /ROUTINE TO COMPARE WORDS IN BUFFER TO
                        /KNOWN DATA PATTERN IN THE AC.
                        /
```



```
5656  0000  FGURE,  0
5657  3143          DCA     GDREG2          /SAVE FOR ERROR PRINTER
5660  1067          TAD     BGNBUF          /GET START OF BUFFER
5661  3153          DCA     ADREG           /SAVE FOR ERROR PRINTER
5662  1150          TAD     CMREG           /GET DISK NO. AND EXT. BIT
5663  0101          AND     K0007           /MASK THEM
5664  7041          CIA
5665  1553          TAD I   ADREG           /GET FIRST TRACK WORD
5666  7650          SNA CLA                 /WAS IT O.K. ?
5667  5273          JMP     .+4             /YES, CHECK NEXT TRACK WORD
5670  1150          TAD     CMREG           /GET DISK NO. AND EXT. BIT
5671  0101          AND     K0007           /MASK THEM
5672  5343          JMP     DTERR           /DATA ERROR
5673  2153          ISZ     ADREG           /UPDATE ADDRESS
5674  1553          TAD I   ADREG           /GET SECOND WORD
5675  7041          CIA
5676  1151          TAD     DAREG           /COMPARE TO ADDRESS
5677  7650          SNA CLA                 /WAS SECOND TRACK WORD O.K.
5700  5303          JMP     .+3             /YES, NOW CHECK DATA
5701  1151          TAD     DAREG           /GET GOOD INFO
5702  5343          JMP     DTERR           /DATA ERROR
5703  7326          CLA CLL CML RTL
5704  1123          TAD     K7400
5705  3162          DCA     DATCNT          /SETUP COUNTER
5706  2153  LPFIG,  ISZ     ADREG           /UPDATE ADDRESS
5707  1553          TAD I   ADREG           /GET DATA WORD
5710  7041          CIA
5711  1143          TAD     GDREG2          /COMPARE TO GOOD ONE
5712  7640          SZA CLA                 /WAS WORD O.K.?
5713  5344          JMP     DTERR+1         /NO, DATA ERROR
5714  1143          TAD     GDREG2          /GET GOOD DATA
5715  7040          CMA
5716  3143          DCA     GDREG2          /IT IS A COMPLEMENT DATA PATTERN
5717  2162          ISZ     DATCNT          /UPDATE BUFFER COUNTER
5720  5306          JMP     LPFIG           /MORE TO CHECK
5721  2153          ISZ     ADREG           /UPDATE ADDRESS
5722  1102          TAD     K1234
5723  7041          CIA
5724  1553          TAD I   ADREG           /GET WORD IN BUFFER+1
5725  7650          SNA CLA
5726  5331          JMP     .+3             /WAS IT O.K.
5727  1102          TAD     K1234           /YES ALL DATA O.K.
5730  5343          JMP     DTERR           /WORD LOST IN BUFFER+1
5731  7330          CLA CLL CML RAR         /EXPECTED STATUS
5732  3143          DCA     GDREG2          /SETUP COMPARE REGISTER
5733  1171          TAD     SOFERR          /GET CRC ERROR FLAG
5734  7640          SZA CLA                 /WAS IT SET
5735  5656          JMP I   FGURE           /NO THE BUFFER IS O.K.
5736  7340          CLA CLL CMA             /SETUP CRC FLAG
5737  3171          DCA     SOFERR          /RESET FLAG
5740  1166          TAD     K5300           /TEXT MESS
5741  3572          DCA I   SAVPCT          /SETUP TEXT POINTER
5742  7330          CLA CLL CML RAR         /EXPECTED STATUS
5743  3143  DTERR,  DCA     GDREG2          /SETUP COMPARE
5744  1553          TAD I   ADREG           /GET BAD WORD
```

```
4757    5745  3154            DCA     DTREG                   /SAVE FOR PRINTER
4758    5746  2256            ISZ     FGURE                   /UPDATE FOR ERROR RETURN
4759    5747  5656            JMP I   FGURE
4760                  /
4761    5750  2003    TEXPC,  TEXT    "PC:"
        5751  7200
4762    5752  0704    TEXGD,  TEXT    "GD:"
        5753  7200
4763    5754  0322    TEXCR,  TEXT    "CR:"
        5755  7200
4764    5756  2324    TEXST,  TEXT    "ST:"
        5757  7200
4765    5760  0402    TEXDB,  TEXT    "DB:"
        5761  7200
4766    5762  0315    TEXCM,  TEXT    "CM:"
        5763  7200
4767    5764  0401    TEXDA,  TEXT    "DA:"
        5765  7200
4768    5766  0301    TEXCA,  TEXT    "CA:"
        5767  7200
4769    5770  0104    TEXAD,  TEXT    "AD:"
        5771  7200
4770    5772  0424    TEXDT,  TEXT    "DT:"
        5773  7200
4771                  /
4772          6000    PAGE
4773                  /
4774                  /SUBROUTINE TO SHIFT CRC REGISTER TO DATA
4775                  /BUFFER THEN READ IT.
4776                  /
4777    6000  0000    RDCR,   0
4778    6001  7300            CLA CLL
4779    6002  1126            TAD     M12
4780    6003  3133            DCA     SBCNT1                  /12 SHIFTER
4781    6004  7330            CLA CLL CML RAR
4782    6005  4455            LDMAN                           /LOAD MAINTENANCE
4783    6006  7010            RAR
4784    6007  4455            LDMAN                           /LOAD MAINTENANCE
4785    6010  7010            RAR
4786    6011  4455            LDMAN                           /LOAD AND GO
4787    6012  2133            ISZ     SBCNT1
4788    6013  5211            JMP     .-2                     /12 BIT SHIFT
4789    6014  7300            CLA CLL
4790    6015  1212            TAD     K0020                   /ENABLE READ BUFFER
4791    6016  4455            LDMAN
4792    6017  3145            DCA     CRREG2                  /SAVE IT
4793    6020  1126            TAD     M12
4794    6021  3133            DCA     SBCNT1                  /12 BIT SHIFTER
4795    6022  7332            CLA CLL CML RTR
4796    6023  4455            LDMAN                           /LOAD MAINTENANCE
4797    6024  7010            RAR
4798    6025  4455            LDMAN                           /LOAD AND GO
4799    6026  2133            ISZ     SBCNT1
4800    6027  5225            JMP     .-2                     /12 BIT SHIFT
4801
```



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4802
4803    6030  7300            CLA CLL
4804    6031  1212            TAD     K0020                   /ENABLE READ BUFFER
4805    6032  4455            LDMAN
4806    6033  0117            AND     K0017
4807    6034  3144            DCA     CRRFG1                  /SAVE OTHER HALF
4808    6035  5600            JMP I   RDCR                    /EXIT
4809                  /
4810                  /SUBROUTINE TO PRINT TWO OCTAL
4811                  /
4812    6036  0000    TOCT,   0
4813    6037  3133            DCA     SBCNT1                  /SAVE AC
4814    6040  1133            TAD     SBCNT1
4815    6041  7010            RAR
4816    6042  7012            RTR
4817    6043  0101            AND     K0007
4818    6044  1777'           TAD     K0260
4819    6045  4436            TYPE                            /PRINT FIRST BYTE
4820    6046  1133            TAD     SBCNT1
4821    6047  0101            AND     K0007
4822    6050  1777'           TAD     K0260
4823    6051  4436            TYPE                            /PRINT SECOND BIT
4824    6052  5636            JMP I   TOCT                    /EXIT
4825                  /
4826                  /
4827                  /
4828                  /ROUTINE TO DO CRLF
4829                  /
4830    6053  0000    UPONE,  0
4831    6054  7300            CLA CLL
4832    6055  1262            TAD     K0215
4833    6056  4436            TYPE
4834    6057  1263            TAD     K0212
4835    6060  4436            TYPE
4836    6061  5653            JMP I   UPONE
4837                  /
4838    6062  0215    K0215,  0215
4839    6063  0212    K0212,  0212
4840    6064  0240    K0240,  0240
4841                  /
4842                  /ROUTINE TO PRINT FOUR OCTAL
4843                  /
4844    6065  0000    FROCT,  0
4845    6066  7006            RTL
4846    6067  7006            RTL
4847    6070  3253            DCA     UPONE
4848    6071  1310            TAD     M4
4849    6072  3236            DCA     TOCT
4850    6073  1253            TAD     UPONE
4851    6074  0101            AND     K0007
4852    6075  1777'           TAD     K0260
4853    6076  4436            TYPE
4854    6077  1253            TAD     UPONE
4855    6100  7006            RTL
4856    6101  7004            RAL
```

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4857  6102  3253          DCA     UPONE
4858  6103  2236          ISZ     TOCT
4859  6104  5273          JMP     .-11
4860  6105  1264          TAD     K0240
4861  6106  4436          TYPE
4862  6107  5665          JMP I   FROCT
4863  6110  7774    M4,   7774
4864                      /
4865                      /SUBROUTINE TO PRINT TEXT
4866                      /
4867  6111  0000    PRN,  0
4868  6112  7300          CLA CLL
4869  6113  1711          TAD I   PRN                     /GET POINTER
4870
4871
4872  6114  2311          ISZ     PRN
4873  6115  3265          DCA     FROCT
4874  6116  1665          TAD I   FROCT
4875  6117  0111          AND     K7700
4876  6120  7450          SNA
4877  6121  5345          JMP     EXIT
4878  6122  7500          SMA
4879  6123  7020          CML
4880  6124  7001          IAC
4881  6125  7012          RTR
4882  6126  7012          RTR
4883  6127  7012          RTR
4884  6130  4436          TYPE
4885  6131  1665          TAD I   FROCT
4886  6132  0112          AND     K0077
4887  6133  7450          SNA
4888  6134  5345          JMP     EXIT
4889  6135  1350          TAD     K3740
4890  6136  7500          SMA
4891  6137  1347          TAD     K4100
4892  6140  1264          TAD     K0240
4893  6141  4436          TYPE
4894  6142  2265          ISZ     FROCT
4895  6143  7300          CLA CLL
4896  6144  5316          JMP     PRN+5
4897  6145  7300    EXIT, CLA CLL
4898  6146  5711          JMP I   PRN
4899
4900                      /
4901  6147  4100    K4100,  4100
4902  6150  3740    K3740,  3740
4903                      /
4904                      /ROUTINE TO TYPE
4905                      /
4906  6151  0000    PRINT,  0
4907  6152  4405          CLASIC          /CHK FOR CLASSIC
4908  6153  4435          CBTYPE
4909  6154  7410          SKP
4910  6155  5751          JMP I   PRINT
4911  6156  6046          TLS
```



```
4912  6157  6041          TSF
4913  6160  5357          JMP     .-1
4914  6161  6042          TCF
4915  6162  7200          CLA
4916  6163  5751          JMP I   PRINT
4917                      /
4918                      /SUBROUTINE TO LOAD TRACK ADDRESS REGISTER
4919                      /
4920  6164  0000    LOAD, 0
4921  6165  3151          DCA     DAREG                   /SAVE OUTBOUND DATA
4922  6166  1151          TAD     DAREG
4923  6167  6743    IOT3, DLAG                            /LOAD DISK ADDRESS REGISTER
4924  6170  5764          JMP I   LOAD                    /EXIT
4925  6171  4405          CLASIC
4926  6172  4436          CBERR
4927  6173  7402    ERHLT3, HLT                           /SKIP TRAP ERROR.
4928  6174  5371          JMP     .-3
4929                      /
4930  6177  4364
            6200    PAGE
4931                      /
4932                      /ROUTINE TO RECALIBRATE SELECTED DRIVE OR
4933                      /SEEK ONLY POSITION IN AC ON SELECTED DRIVE.
4934                      /
4935  6200  0000    RESTOR, 0
4936  6201  7300          CLA CLL
4937  6202  1600          TAD I   RESTOR                  /GET TEXT POINTER
4938  6203  3316          DCA     SAVPC                   /SAVE FOR ERROR
4939  6204  2200          ISZ     RESTOR                  /UPDATE PC
4940  6205  1200          TAD     RESTOR                  /GET PC
4941  6206  3215          DCA     ONLY                    /SAVE FOR END OF SEEK ROUTINE
4942  6207  1072          TAD     DRIVNO                  /CURRENT DRIVE
4943  6210  1156          TAD     HOMEMA                  /CURRENT FIELD
4944  6211  4450          LDCMD                           /LOAD COMMAND
4945  6212  7326          CLA CLL CML RTL                 /ENABLE RECALIBRATE BIT
4946  6213  4453          CLRALL                          /"RECALIBRATE"
4947  6214  5232          JMP     CHECK                   /CHECK FOR ERRORS
4948                      /
4949  6215  0000    ONLY, 0
4950  6216  3317          DCA     SAVTO                   /SAVE LOWER TRACK BITS
4951  6217  1615          TAD I   ONLY                    /GET TEXT POINTER
4952  6220  3316          DCA     SAVPC                   /SAVE FOR ERROR
4953  6221  2215          ISZ     ONLY
4954  6222  1150          TAD     CMREG                   /GET COMMAND
4955  6223  0073          AND     K0001                   /MASK OFF EXTENDED BIT
4956  6224  1156          TAD     HOMEMA                  /CURRENT FIELD
4957  6225  1072          TAD     DRIVNO                  /CURRENT DRIVE
4958  6226  1104          TAD     K3000                   /SEEK ONLY FUNCTION
4959  6227  4450          LDCMD                           /LOAD COMMAND
4960  6230  1317          TAD     SAVTO                   /GET POSITION
4961  6231  4452          LDADD                           /LOAD AND GO
4962  6232  4433    CHECK, SKPWAT                         /WAIT FOR FIRST DONE FLAG
4963  6233  5314          JMP     SEKER1                  /ERROR, NO SKIP
4964  6234  7330          CLA CLL CML RAR                 /EXPECTED STATUS
4965  6235  3143          DCA     GDREG2                  /SETUP COMPARE REGISTER
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4966  6236  1122          TAD     K7740
4967  6237  3321          DCA     RNAD                    /SETUP SKIP TIMER
4968  6240  4444          RDSTAT                          /READ STATUS
4969  6241  1105          TAD     K4000
4970  6242  7650          SNA CLA                         /WAS DRIVE DONE?
4971  6243  5252          JMP     .+7                     /YES
4972  6244  1106          TAD     K6000                   /NO, DRIVE MUST BE BUSY!
4973  6245  3143          DCA     GDREG2                  /EXPECTED STATUS
4974  6246  1146          TAD     STREG                   /GET STATUS READ
4975  6247  1103          TAD     K2000                   /ADD IN FUDGE FACTOR
4976  6250  7640          SZA CLA                         /WAS DRIVE BUSY
4977  6251  5311          JMP     SEKER2                  /NO, ERROR
4978  6252  1015          TAD     K0200                   /ENABLE SET SECOND DONE FLAG
4979  6253  1150          TAD     CMREG                   /ORIGINAL COMMAND
4980  6254  4450          LDCMD                           /LOAD COMMAND
4981  6255  7332          CLA CLL CML RTR
4982  6256  3143          DCA     GDREG2                  /EXPECTED STATUS
4983  6257  4530  CHKSKP, TICK                           /APT TIMING
4984  6260  4444          RDSTAT                          /READ STATUS
4985  6261  4447          DSKSKP                          /FLAG SET?
4986  6262  7410          SKP                             /NO
4987  6263  5274          JMP     GOTSKP                  /YES GOT IT!
4988  6264  1106          TAD     K6000
4989  6265  7640          SZA CLA                         /DRIVE BUSY?
4990  6266  5311          JMP     SEKER2                  /NO, ERROR
4991  6267  2365          ISZ     RNWRD4
4992  6270  5257          JMP     CHKSKP
4993  6271  2321          ISZ     RNAD
4994  6272  5257          JMP     CHKSKP
4995  6273  5314          JMP     SEKER1                  /ERROR, NO SKIP!
4996  6274  7330  GOTSKP, CLA CLL CML RAR
4997  6275  3143          DCA     GDREG2                  /SETUP EXPECTED STATUS
4998  6276  4444          RDSTAT                          /READ STATUS
4999  6277  1105          TAD     K4000
5000  6300  7640          SZA CLA                         /WAS IT ONLY DONE FLAG
5001  6301  5311          JMP     SEKER2                  /NO, ERROR STATUS
5002  6302  1150          TAD     CMREG                   /GET LAST COMMAND
5003  6303  0320          AND     A7577                   /MASK OUT
5004  6304  4450          LDCMD                           /CLEAR STATUS
5005  6305  3143          DCA     GDREG2                  /SETUP COMPARE REGISTER
5006  6306  4444          RDSTAT                          /READ STATUS
5007  6307  7650          SNA CLA                         /WAS STATUS 0000?
5008  6310  2215          ISZ     ONLY                    /UPDATE PC
5009  6311  1166  SEKER2, TAD     K5300
5010  6312  3716  GOBAK,  DCA I   SAVPC                   /SETUP TEXT POINTER
5011  6313  5615          JMP I   ONLY                    /BACK TO TEST
5012  6314  1164  SEKER1, TAD     K0306                   /SKIP TEXT POINTER
5013  6315  5312          JMP     GOBAK                   /EXIT
5014                      /
5015  6316  0000  SAVPC,  0
5016  6317  0000  SAVTO,  0
5017  6320  7577  A7577,  7577
5018                      /
5019                      /ROUTINE TO GET A RANDOM DISK ADDRESS
5020                      /
```



```
5021  6321  0000  RNAD,   0
5022  6322  3361          DCA     SAVPOT                  /SAVE DISK NO. POINTER
5023  6323  7101          CLL IAC
5024  6324  1363          TAD     RNWRD1
5025  6325  1364          TAD     RNWRD2
5026  6326  7106          CLL RTL
5027  6327  3363          DCA     RNWRD1
5028  6330  1364          TAD     RNWRD2
5029  6331  7012          RTR
5030  6332  1363          TAD     RNWRD1
5031  6333  3364          DCA     RNWRD2
5032  6334  1364          TAD     RNWRD2
5033  6335  7420          SNL
5034  6336  5342          JMP     GOTADD                  /USE THIS AS DISK ADDRESS
5035  6337  1170          TAD     ENDTRK                  /HAVE TO CHECK BOUNDARIES
5036  6340  7200          CLA
5037  6341  1364          TAD     RNWRD2                  /GET SAME
5038  6342  3365  GOTADD, DCA     RNWRD4                  /SAVE WORD
5039  6343  1362          TAD     DSKSAV                  /GET POINTER
5040  6344  1361          TAD     SAVPOT                  /ADD IN DRIVE NUMBER
5041  6345  3361          DCA     SAVPOT                  /MAKE ADDRESS
5042  6346  1365          TAD     RNWRD4                  /GET WORD
5043  6347  3761          DCA I   SAVPOT                  /STORE IT
5044  6350  1361          TAD     SAVPOT
5045  6351  1076          TAD     K0004                   /ADD IN FUDGE FACTOR
5046  6352  3361          DCA     SAVPOT                  /MAKE ADDRESS
5047  6353  7004          RAL                             /GET THE LINK
5048  6354  3761          DCA I   SAVPOT                  /SAVE EXTENDED BIT
5049  6355  1761          TAD I   SAVPOT                  /GET IT
5050  6356  7110          CLL RAR                         /SHIFT
5051  6357  1365          TAD     RNWRD4                  /GET WORD
5052  6360  5721          JMP I   RNAD                    /EXIT
5053                      /
5054  6361  0000  SAVPOT, 0
5055  6362  6366  DSKSAV, DSK0A
5056  6363  1234  RNWRD1, 1234
5057  6364  2345  RNWRD2, 2345
5058  6365  0000  RNWRD4, 0
5059  6366  0000  DSK0A,  0
5060  6367  0000  DSK1A,  0
5061  6370  0000  DSK2A,  0
5062  6371  0000  DSK3A,  0
5063  6372  0000  DSK0B,  0
5064  6373  0000  DSK1B,  0
5065  6374  0000  DSK2B,  0
5066  6375  0000  DSK3B,  0
5067                      /
5068        6400  PAGE
5069                      /
5070                      /SUBROUTINE FOR "NO ERRORS" AND SCOPE
5071                      /LOOPS. UPDATE UP COUNTER "REG1" ON EVERY ENTRY.
5072                      /
5073  6400  0000  NERRO,  0
5074  6401  2200          ISZ     NERRO
5075  6402  7300          CLA CLL
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```
5076  6403  4530          TICK
5077  6404  1600          TAD I   NERRO                    /GET RESTART ADDRESS
5078  6405  3173          DCA     RESTRT                   /STORE
5079  6406  4405          CLASIC
5080  6407  4442          C8CKPA
5081  6410  7000          NOP
5082  6411  4404          LAS                              /GET SWITCH 4
5083  6412  0215          AND     K0200                    /MASK
5084  6413  7650          SNA CLA                          /PROGRAM HALT
5085  6414  5220          JMP     .+4
5086  6415  4405          CLASIC
5087  6416  4437          C8INOU
5088  6417  7402  STPHLT, HLT                              /STOP HALT FROM SWR0=1
5089  6420  4404          LAS                              /GET SWITCH 1
5090  6421  7004          RAL
5091  6422  7720          SMA CLA                          /IS IT SCOPE LOOP
5092  6423  5226          JMP     .+3                      /NO
5093  6424  1600          TAD I   NERRO                    /GET RETURN POINTER
5094  6425  5640          JMP I   NSCOPE                   /CHECK FOR WAIT AND RETURN
5095  6426  1131          TAD     REG0
5096  6427  7640          SZA CLA                          /1 OR 4096 PASSES
5097  6430  5233          JMP     NEXTST                   /1 PASS PER TEST
5098  6431  2132          ISZ     REG1                     /UPDATE UPCOUNTER
5099  6432  5573          JMP I   RESTRT                   /BACK TO SAME TEST
5100  6433  7301  NEXTST, CLA CLL IAC                     /ENABLE CLEAR CONTROL
5101  6434  4453          CLRALL                           /CLEAR CONTROL
5102  6435  2200          ISZ     NERRO                    /UPDATE PC STORE
5103  6436  2200          ISZ     NERRO                    /UPDATE PC STORE
5104  6437  5600          JMP I   NERRO                    /TO NEXT SEQUENTIAL TEST
5105                      /
5106  6440  5470  NSCOPE, SCOPE
5107                      /
5108                      /ROUTINE TO DO HALF BLOCK DATA CHECKS
5109                      /
5110  6441  0000  HFCHK,  0
5111  6442  3143          DCA     GDREG2                   /SETUP FOR ERROR PRINTER
5112  6443  1267          TAD     BGNBUF                   /GET START OF BUFFER
5113  6444  3153          DCA     ADREG                    /FOR ERROR PRINTER
5114  6445  1150          TAD     CMREG
5115  6446  0101          AND     K0007
5116  6447  7041          CIA
5117  6450  1553          TAD I   ADREG                    /COMPARE TO BUFFER WORD
5118  6451  7650          SNA CLA                          /SAME ?
5119  6452  5256          JMP     .+4                      /YES
5120  6453  1150          TAD     CMREG
5121  6454  0101          AND     K0007
5122  6455  5337          JMP     HFERR                    /NO
5123  6456  2153          ISZ     ADREG                    /UPDATE ADDRESS
5124  6457  1553          TAD I   ADREG
5125  6460  7041          CIA
5126  6461  1151          TAD     DAREG                    /COMPARE TO DISK ADDRESS
5127  6462  7650          SNA CLA                          /SAME????
5128  6463  5266          JMP     .+3                      /YES
5129  6464  1151          TAD     DAREG
5130  6465  5337          JMP     HFERR                    /NO
```



```
5131  6466  2153          ISZ     ADREG                    /UPDATE ADDRESS
5132  6467  7526          CLA CLL CML RTL
5133  6470  1124          TAD     K7600
5134  6471  3162          DCA     DATCNT                   /SETUP COUNTER FOR FIRST HALF
5135  6472  1553  HFR1,   TAD I   ADREG
5136  6473  7041          CIA
5137  6474  1143          TAD     GDREG2                   /COMPARE TO GOOD VALUE
5138  6475  7640          SZA CLA                          /WERE THEY THE SAME
5139  6476  5340          JMP     HFERR+1          /ERROR, DATA BREAK
5140  6477  2153          ISZ     ADREG                    /UPDATE ADDRESS POINTER
5141  6500  1143          TAD     GDREG2
5142  6501  7040          CMA
5143  6502  3143          DCA     GDREG2                   /NEXT WORD IS COMPLEMENT
5144  6503  2162          ISZ     DATCNT
5145  6504  5272          JMP     HFR1                     /MORE TO TEST IN FIRST HALF
5146  6505  1124          TAD     K7600
5147  6506  3162          DCA     DATCNT                   /SETUP COUNTER
5148  6507  3143          DCA     GDREG2                   /REST OF BUFFER SHOULD BE 0000
5149  6510  1553  HFR2,   TAD I   ADREG
5150  6511  7640          SZA CLA                          /WAS IT 0
5151  6512  5337          JMP     HFERR                    /ERROR
5152  6513  2153          ISZ     ADREG
5153  6514  2162          ISZ     DATCNT
5154  6515  5310          JMP     HFR2                     /MORE TO CHECK
5155  6516  1553          TAD I   ADREG                    /GET WORD IN BUFFER+1
5156  6517  7041          CIA
5157  6520  1102          TAD     K1234
5158  6521  7650          SNA CLA                          /WAS IT O.K.?
5159  6522  5325          JMP     .+3                      /YES
5160  6523  1102          TAD     K1234
5161  6524  5337          JMP     HFERR                    /ERROR, BUFFER+1
5162  6525  7330          CLA CLL CML RAR                  /EXPECTED STATUS
5163  6526  3143          DCA     GDREG2                   /SETUP COMPARE REGISTER
5164  6527  1171          TAD     SOFERR                   /GET CRC ERROR FLAG
5165  6530  7640          SZA CLA                          /WAS IT SET
5166  6531  5641          JMP I   HFCHK                    /NO ERRORS
5167  6532  7340          CLA CLL CMA
5168  6533  3171          DCA     SOFERR                   /RESET CRC ERROR FLAG
5169  6534  1166          TAD     K5300                    /TEXT
5170  6535  3572          DCA I   SAVPCT                   /SET UP POINTER
5171  6536  7330          CLA CLL CML RAR                  /EXPECTED STATUS
5172  6537  3143  HFERR,  DCA     GDREG2                   /SETUP COMPARE
5173  6540  1553          TAD I   ADREG                    /GET BAD WORD
5174  6541  3154          DCA     DTREG                    /SAVE FOR PRINTER
5175  6542  2241          TSZ     HFCHK
5176  6543  5641          JMP I   HFCHK
5177                      /
5178                      /SUBROUTINE TO LOAD COMMAND REGISTER
5179                      /
5180  6544  0000  LDCM,   0
5181  6545  3150          DCA     CMREG                    /SAVE OUTBOUND DATA
5182  6546  4405          CLASIC
5183  6547  4442          C8CKPA
5184  6550  7000          NOP
5185  6551  1150          TAD     CMREG
```

```
5186  6552 6746  TOT6,  DLOC                          /LOAD COMMAND REGISTER
5187  6553 5744          JMP I   LOCM                  /EXIT
5188  6554 4405          CLASIC                        /CHECK FOR CLASSIC.
5189  6555 4436          CBERR                         /ROUTINE TO EXECUTE.
5190  6556 7402  ERHLT6, HLT                           /SKIP TRAP ERROR.
5191  6557 5354          JMP     .-3
5192                     /
5193  6560 2405  NMES2,  TEXT "TEST (Y=YES OR N=NO)?"
      6561 2324
      6562 4050
      6563 3175
      6564 3105
      6565 2340
      6566 1722
      6567 4016
      6570 7516
      6571 1751
      6572 7200
5194                     /
5195       6600          PAGE
5196                     /
5197                     /ROUTINE TO CHANGE PROGRAM DEVICE CODES
5198                     /
5199  6600 4405  CHANG,  CLASIC
5200  6601 4431          CASWIT
5201  6602 7000          NOP
5202  6603 4404          LAS
5203  6604 0227          AND     K0770
5204  6605 3631          DCA I KHFCHK                  /SAVE DESIRED CODE
5205  6606 1235          TAD     CONTR1
5206  6607 3632          DCA I KNERRO
5207  6610 1236          TAD     CHNPOT
5208  6611 3233          DCA     CNGSAV
5209  6612 1633  CHANGR, TAD I   CNGSAV                 /GET ADDRESS POINTER
5210  6613 3000          DCA     0                     /SAVE IT
5211  6614 1400          TAD I   0                     /GET OLD IOT CODE
5212  6615 0234          AND     K7007                 /MASK
5213  6616 1631          TAD I KHFCHK                  /ADD IN DESIRED
5214  6617 3400          DCA I   0                     /CHANGE CORE
5215  6620 2233          ISZ     CNGSAV                /UPDATE ADDRESS POINTER
5216  6621 2632          ISZ I KNERRO                  /UPDATE CHANGE COUNTER
5217  6622 5212          JMP     CHANGR
5218  6623 4405          CLASIC
5219  6624 4436          CBERR
5220  6625 7402  CHNHLT, HLT                           /DEVICE CODES CHANGED
5221  6626 5630          JMP I   RSTRT                 /TO START PROGRAM AT
5222                                                   /LOCATION 0200: IF ON CLASSIC
5223                                                   /CONSOLE PACKAGE HIT CONTROL
5224                                                   /E. IF NOT PRESS KEY CONTINUE.
5225  6627 0770  K0770,  0770
5226                     /
5227  6630 0200  RSTRT,  BGN
5228  6631 6441  KHFCHK, HFCHK
5229  6632 6400  KNERRO, NERRO
5230                     /
```



```
5231  6633 0200  CNGSAV, 0
5232  6634 7007  K7007,  7007
5233  6635 7746  CONTR1, 7746
5234  6636 6637  CHNPOT, CHNPOT+1
5235  6637 1701          IOT1
5236  6640 5572          IOT2
5237  6641 6167          IOT3
5238  6642 4772          IOT4
5239  6643 5155          IOT5
5240  6644 6552          IOT6
5241  6645 4132          IOT7
5242  6646 2650          IOT1A1
5243  6647 2647          IOT3A1
5244  6650 2643          IOT4A1
5245  6651 2652          IOT5A1
5246  6652 2645          IOT6A1
5247  6653 3331          IOT1A2
5248  6654 3255          IOT2A2
5249  6655 3230          IOT3A2
5250  6656 3224          IOT4A2
5251  6657 3233          IOT5A2
5252  6660 3226          IOT6A2
5253  6661 2215          T28IOA
5254  6662 2017          T28IOB
5255  6663 2322          T28IOC
5256  6664 2225          T28IOD
5257  6665 2100          T29IOA
5258  6666 2102          T29IOB
5259  6667 2105          T29IOC
5260  6670 2110          T29IOD
5261                     /
5262  6671 2324  ERTX1,  TEXT    "STATUS REGISTER ERROR"
      6672 0124
      6673 2523
      6674 4222
      6675 0507
      6676 1123
      6677 2405
      6700 2240
      6701 0522
      6702 2217
      6703 2200
5263  6704 0317  ERTX2,  TEXT    "COMMAND REGISTER ERROR"
      6705 1515
      6706 0116
      6707 2440
      6710 2205
      6711 0711
      6712 2324
      6713 0522
      6714 4005
      6715 2222
      6716 1722
      6717 0000
5264  6720 0411  ERTX3,  TEXT    "DISK ADDRESS REGISTER ERROR"
```

```
                7721  2313
                7722  4001
                7723  0404
                7724  2205
                7725  2323
                7726  4022
                7727  0507
                7730  1123
                7731  2405
                7732  2240
                7733  3522
                7734  2217
                7735  2200
5265            7736  0411    FRTX4,  TEXT    "DISK DATA ERROR"
                7737  2313
                7740  4004
                7741  0124
                7742  0140
                7743  3522
                7744  2217
                7745  2200
5266            7746  0322    FRTX5,  TEXT    "CRC REGISTER ERROR"
                7747  0340
                7750  2205
                7751  0711
                7752  2324
                7753  0522
                7754  4005
                7755  2222
                7756  1722
                7757  0000
5267            7760  0401    FRTX6,  TEXT    "DATA REGISTER ERROR"
                7761  2401
                7762  4022
                7763  0507
                7764  1123
                7765  2405
                7766  2240
                7767  0522
                7770  2217
                7771  2200
5268            7772  0411    FRTX7,  TEXT    "DISK SKIP ERROR"
                7773  2313
                7774  4023
                7775  1311
                7776  2000
                7777  0522
                7200  2217
                7201  2200
5269            7202  0411    FRTX8,  TEXT    "DISK INTERRUPT ERROR"
                7203  2313
                7204  4011
                7205  1624
                7206  0522
                7207  2225
```



```
                7210  2024
                7211  4005
                7212  2222
                7213  1722
                7214  0000
5270                    /
5271            7215  4020    TEXEND, TEXT    " PASS COMPLETE"
                7216  0123
                7217  2340
                7220  0317
                7221  1520
                7222  1405
                7223  2405
                7224  0000
5272                    /
5273                    /
5274
5275                    /
5276                    /THIS ROUTINE WILL TEST FOR THE AVAILABILITY OF THE
5277                    /APT 8A TEST SYSTEM AND NOP ANY CONSOLE PACKAGE WHICH
5278                    /MIGHT HAVE BEEN SET UP.
5279                    /
5280                    /
5281            7225  0000    APTA,   0
5282            7226  1022            TAD  22                         /TEST FOR APT SYSTEM
5283            7227  0105            AND  K4000
5284            7230  7650            SNA CLA                         /ON APT ?
5285            7231  5625            JMP I APTA                      /NO
5286            7232  1022            TAD     22
5287            7233  0300            AND     K7377                   /NOP CONSOLE PACKAGE
5288            7234  3022            DCA     22
5289            7235  1107            TAD     K7000                   /NOP SWITCH REGISTER ROUTINE
5290            7236  3701            DCA I   XMYLAS                  /NOP SWITCHES
5291            7237  3362            DCA     CLKCNT
5292            7240  3072            DCA     DRIVNO                  /START WITH DRIVE 0.
5293            7241  1022            TAD     22
5294            7242  0075            AND     K0003                   /# OF DRIVES
5295            7243  3303            DCA     AERRO                   /SET COUNTER FOR NO. OF DRIVES.
5296            7244  1303            TAD     AERRO
5297            7245  7040            CMA
5298            7246  3071            DCA     DRVCNT                  /SETUP COUNTER.
5299            7247  1071            TAD     DRVCNT
5300            7250  3330            DCA     KTICK
5301            7251  1022    APTBR,  TAD     22
5302            7252  0014            AND     K0100
5303            7253  7650            SNA CLA                         /SINGLE DRIVE TEST?
5304            7254  5264            JMP     .+10                    /NO!!!!
5305            7255  7240            CLA CMA
5306            7256  3071            DCA     DRVCNT                  /COUNT OF 1.
5307            7257  1303            TAD     AERRO
5308            7260  7104            CLL RAL
5309            7261  3072            DCA     DRIVNO                  /TEST ONLY THIS DRIVE.
5310            7262  1303            TAD     AERRO                   /TEST THIS DRIVE
5311            7263  7410            SKP
5312            7264  1362            TAD     CLKCNT
```

```
5313  7065  1677          TAD I   XDSKON
5314  7066  3327          DCA     PCSAV
5315  7067  7240          CLA CMA
5316  7070  3727          DCA I   PCSAV                   /SET ACTIVE INDICATOR.
5317  7071  2362          ISZ     CLKCNT
5318  7072  2330          ISZ     KTICK
5319  7073  5251          JMP     APTAR
5320  7074  1071          TAD     DRVCNT
5321  7075  3370          DCA     DRVHAV                  /TALLY FOR AMOUNT OF DRIVES.
5322  7076  5702          JMP I   TSTOP                   /RETURN WITH CONSOLE PACKAGE
5323                                                      /NOP AND SWITCH REGISTER NOP.
5324                /
5325  7077  4374    XDSKON, DSKON
5326  7100  7377    K7377,  7377
5327  7101  5100    XMYLAS, MYLAS+3
5328  7102  0233    TSTOP,  TST0-5
5329                /
5330                /THIS ROUTINE WILL REPORT ERRORS TO THE APT SYSTEM IF REQUIRED.
5331                /IT FIRST TEST FOR APT  THEN EXECUTES THE ERROR CODING.
5332                /
5333  7103  0000    AERRO,  0
5334  7104  7200          CLA                             /MAKE SURE AC IS CLEAR
5335  7105  1022          TAD 22                          /GET CONFIGURATION
5336  7106  0105          AND K4000                       /ISOLATE APT BIT
5337  7107  7650          SNA CLA                         /ON APT
5338  7110  5703          JMP I AERRO                     /NO
5339  7111  7340          CLL CLA CMA                     /SET UP FOR GETTING ERROR PC
5340  7112  1725          TAD I PERROR                    /GET ERROR PC
5341  7113  3327          DCA PCSAV                       /STORE FOR FUTURE USE
5342  7114  6002          IOF                             /DISABLE INTERUPT SYSTEM
5343  7115  6224          RIF                             /SET UP FOR DATA FIELD IN ERROR
5344  7116  1121          TAD KCDF                        /ESTABLISHES DATA FIELD
5345  7117  3321          DCA .+2
5346  7120  1327          TAD PCSAV                       /GET ERROR ADDRESS
5347  7121  7402          HLT                             /REPLACED WITH ERROR DATA FIELD
5348  7122  6272          CIF 70                  /FIELD OF UVPROM
5349  7123  5726          JMP I K6520                     /REPORT ERROR
5350  7124  5703          JMP I AERRO                     /RETURN TO THE NORMAL REPORTING
5351                /
5352  7125  5200    PERROR, ERRO                            /POINTER TO PC IN ERROR
5353  7126  6520    K6520,  6520                            /POINTER TO UV PROM ADDRESS
5354  7127  0000    PCSAV,  0                               /PLACE WHERE ERROR PC IS STORED
5355                /
5356                /THIS ROUTINE IS A NOP IF NOT BEING USED ON THE APT LINE.
5357                /IF APT IS ENABLED A TIMING PULSE IS GENERATED AT
5358                /APPROXIMATELY 1.5 SECOND INTERVALS
5359                /
5360  7130  0000    KTICK,  0
5361  7131  1022          TAD 22                  /GET HARDWARE CONFIGURATION
5362  7132  0105          AND K4000               /TEST FOR APT EACH TIME
5363  7133  7650          SNA CLA
5364  7134  5730          JMP I KTICK                     /NO TIMING GENERATED
5365  7135  2362          ISZ CLKCNT              /SEE IF TIMING NEEDS TO BE DONE
5366  7136  5730          JMP I KTICK                     /NO, RETURN TO MAIN FLOW
5367  7137  1361          TAD COUNT                       /INIT FIRST CLOCK
```



```
5368  7140  3362          DCA CLKCNT
5369  7141  2175          ISZ KCNT                /FOR TESTS REQUIRING LONGER TIME OUT ON APT
5370  7142  5730          JMP I KTICK                     /RETURN, NOT READY TO NOTIFY APT
5371  7143  6224          RIF                             /START SETUP FOR UV PROM
5372  7144  1121          TAD KCDF
5373  7145  3347          DCA .+2                         /WILL ESTABLISH CURRENT DATA FIELD
5374  7146  6002          IOF
5375  7147  7402          HLT                             /CHANGED TO CURRENT DATA FIELD
5376  7150  6272          CIF 70                  /LOCATION OF UVPROM
5377  7151  4763          JMS I K6500             /LET APT KNOW YOU ARE RUNNING
5378  7152  7300          CLL CLA                         /MAKE SURE AC AND LINK ARE CLEAR
5379  7153  1361          TAD COUNT
5380  7154  3362          DCA CLKCNT              /INITIALIZE CLOCK COUNTER
5381  7155  1360          TAD CNT
5382  7156  3175          DCA KCNT
5383  7157  5730          JMP I   KTICK
5384                /
5385  7160  7777    CNT,    -1
5386  7161  7777    COUNT,  7777
5387  7162  0000    CLKCNT, 0
5388  7163  6500    K6500,  6500                    /POINTS TO UV PROM
5389                /
5390        7177    *7177
5391                /
5392        7177    WRKBUF=.
5393                /
5394        7177    HITRK=.
5395        7200    LOTRK=.+1
5396                /
5397        7576    ENDBUF=.+377
5398                /
5399        7577    STPCHK=.+400
5400                /
5401                $$$
```

```
0000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111100

0200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11111111  11111111  11111111  11111111  11111111  11110000  11111111

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111101

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11110011

1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111101

1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00000011

1400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  10000000

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100011

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

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  11111111  11111111  11111111  11111111  11111111  11111111

3200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3300  11111111  11111111  11111111  11111111  11111111  11111111  11110000  00000001

3400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111000

3600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100000
```



```
4000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  00000111

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  11111111  11111111  11111110  00000011

4600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

5000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5100  11111111  11111111  11111111  11111111  11111111  11111111  11111100  00011111

5200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

5400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

5600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11110000

6000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111001

6200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111100

6400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100000

6600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

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

7200
7300

7400
7500

7600
7700
```

A7577	6320	C8SETD	0613	DCLR	6742	ERHLT1	4761
ACCMP1	4442	C8SETS	0535	DCNT1	4370	ERHLT2	5576
ACCMP2	4443	C8SWIT	4431	DCNT2	4371	ERHLT3	6173
ACL	7701	C8SWST	0745	DCNT3	4372	ERHLT4	4776
ACREG	0155	C8TMP1	1021	DCNT4	4373	ERHLT5	5161
ACSAVE	1345	C8TTYI	4426	DIN	4530	ERHLT6	4556
ADREG	0153	C8TYPE	4435	DISK0	1561	ERHLT7	4136
AERRO	7103	CAF	6007	DISK1	1562	ERHLT9	5344
AGAIN	5325	CAREG	0152	DISK2	1563	ERR1	0736
ALLBAK	4242	CCNTR1	6635	DISK3	1564	ERRA1	5217
APA1	5045	CHANG	6600	DISK4	1565	ERRMES	1320
APERR	5066	CHANGR	6612	DISK5	1566	ERRO	5200
APHLT1	5073	CHECK	6232	DISK6	1567	ERROR	4440
APR1	5024	CHKCLA	1200	DISK7	1570	ERTX1	6671
APT8	7025	CHKERR	5342	DISKG	5600	ERTX2	6704
APT8R	7051	CHKNEX	4432	DISKGO	4426	ERTX3	6720
AUTO10	0010	CHKSKP	6257	DLAG	6743	ERTX4	6736
AUTPRO	5000	CHNHLT	6625	DLCA	6744	ERTX5	6746
BGN	0200	CHNPOT	6636	DLDC	6746	ERTX6	6760
BGNBUF	0067	CKCOUT	0232	DMAN	6747	ERTX7	6772
BYRETR	0506	CLASIC	4405	DOCNT	0247	ERTX8	7002
C8BY1	0230	CLASTK	5102	DONEA	0426	ESCOPE	5357
C8BY2	1300	CLDR	5571	DOPACK	0212	EXIT	6145
C8BY3	1061	CLKCNT	7162	DOSET	0251	EXTTA	0440
C8BY4	0515	CLRALL	4453	DOUT	5553	F10P1	0021
C8BY5	1116	CLRTRN	1315	DRIVNO	0072	F10P2	0022
C8CHAR	1075	CMREG	0150	DRST	6745	F1SWR	0020
C8CKP	1022	CNGSAV	6633	DRVCNT	0071	FGURE	5656
C8CKPA	4440	CNT	7160	DRVHAV	0070	FIGURE	4430
C8CKSW	4425	CNTRLC	0551	DSK0A	6366	FILBUF	4431
C8CNTR	4427	CNTRLD	0600	DSK0B	6372	FILCNT	1040
C8CONT	1145	CNTRLE	0545	DSK1A	6367	FILLER	1037
C8CRLF	4433	CNTRLL	0537	DSK1B	6373	FLBUF	5447
C8DD1	0310	CNTRLQ	0500	DSK2A	6370	FLSAVE	1347
C8DD10	1262	CNTRLR	0511	DSK2B	6374	FROCT	6065
C8DD11	0607	CNTRLS	0521	DSK3A	6371	GDREG1	0142
C8DD2	1233	CNTVAL	0252	DSK3B	6375	GDREG2	0143
C8DD3	0350	COMP1	4557	DSKADD	4526	GETCH1	0703
C8DD4	1306	COMP2	3600	DSKIN	4407	GETDAT	0456
C8DD7	0527	CONSOL	0000	DSKON	4374	GETDRV	4345
C8ECHO	4434	CONST1	1366	DSKOUT	4406	GOBAK	6312
C8ERR	4436	COUNT	7161	DSKP	6741	GOITA	0443
C8GET	0624	CRERR	3614	DSKPOT	4527	GOTADD	6342
C8HANG	1122	CRLF	4462	DSKSAV	6362	GOTOA	0454
C8INQU	4437	CRREG1	0144	DSKSKP	4447	GOTSKP	6274
C8OCTA	4432	CRREG2	0145	DTERR	5743	GTF	6004
C8PASS	4424	CRWRD1	0160	DTREG	0154	GTREG	5527
C8PAUS	4441	CRWRD2	0161	ENDBUF	7576	HAFCHK	4427
C8PRNT	4430	CYL450	0065	ENDHLT	4122	HEDHLT	4021
CARDPS	0666	DAREG	0151	ENDIT	0742	HEDLST	5370
C8RETD	0614	DATCNT	0162	ENDTRK	0170	HEDTAD	5367
C8RETR	0536	DBREG	0147	ENDTST	4062	HFCHK	6441

HFEPR	6537	K0240	6064	LDCMD	4450	OVRDOK	4435
HFR1	6472	K0260	4364	LDCUR	4451	OVRERR	4254
HFR2	6510	K0277	4366	LDMAN	4455	OVRLAP	4200
HITRK	7177	K0306	0164	LDMN	4131	OVROK	4233
HOMEMA	0156	K0331	4365	LOADCT	1355	OVRR1	4203
HRDERR	5652	K0400	0016	LOTRK	7200	OVRR2	4206
ICNTR1	4763	K0770	6627	LPDAT	5456	OVRR3	4221
ICNTR2	4764	K1000	0017	LPFIG	5706	OVRRD1	4403
INDEXA	0455	K1234	0102	M12	0126	OVRRD2	4406
INHIBT	5361	K2000	0103	M4	6110	OVRRD3	4421
INMODE	1076	K2525	0113	MANPRO	2706	OVRRED	4400
INTADD	4743	K3000	0104	MANUAL	4600	PASCNT	0250
INTRQ	0363	K3740	6150	MESA	0747	PCLF	6662
IONWAT	4441	K4000	0105	MESAC	1333	PCNTR1	5365
IONWT	4727	K4100	6147	MESFL	1341	PCNTR2	5366
IOT1	1001	K5000	0115	MESMAN	1146	PCSAV	7127
IOT1A1	2650	K5252	0114	MESMQ	1336	PCSAVE	1344
IOT1A2	3031	K5300	0166	MESPAS	0253	PERROR	7125
IOT2	5572	K5373	0165	MESPC	1330	PNTBUF	1120
IOT2A2	3055	K5403	0364	MPERR	2771	POLERR	4427
IOT3	6167	K6000	0106	MPHLT1	2734	PRINT	6151
IOT3A1	2647	K6304	0167	MPHLT2	2776	PRN	6111
IOT3A2	3030	K6500	7163	MPR1	2735	PRNTER	4457
IOT4	4772	K6520	7126	MQA	7501	PRSFLD	0222
IOT4A1	2643	K7000	0107	MQL	7421	PSIE	6665
IOT4A2	3024	K7007	6634	MQSAVE	1346	PSKE	6663
IOT5	5155	K7156	3772	MYAC	1317	PSKF	6661
IOT5A1	2652	K7377	7100	MYLAS	5075	PSTB	6664
IOT5A2	3033	K7400	0123	NOIN	4553	PTSTOR	0336
IOT6	6552	K7501	5655	NERRO	6400	RANADD	4423
IOT6A1	2645	K7577	5525	NERROR	4437	RDAD	4140
IOT6A2	3026	K7600	0124	NEXOSK	4123	RDADD	4446
IOT7	4132	K7700	0111	NEXTST	6433	RDBF	5400
K0001	0073	K7707	4726	NL7775	7346	RDBUF	4456
K0002	0074	K7740	0122	NMES1	0760	RDCM	5412
K0003	0075	K7760	0110	NMES2	6560	RDCMD	4445
K0004	0076	K7771	0116	NMES3	4165	RDCR	6000
K0005	0077	KAERRO	0127	NOCLR	5522	RDCRC	4454
K0006	0100	KCDF	0121	NOSET	0242	RDST	5154
K0007	0101	KCNT	0175	NOTDON	4230	RDSTAT	4444
K0010	0011	KHFCHK	6631	NOTEX	5350	REALPC	1316
K0017	0117	KILBUF	4432	NSCOPE	6440	RECAL	4425
K0020	0012	KLBUF	5435	NTCLAS	1270	REDBAK	4510
K0037	0120	KNERRO	6632	NTCRC	5301	REDOA	0415
K0040	0013	KRMF	0362	NTGD	5264	REG0	0131
K0077	0112	KTICK	7130	NTSEK	4666	REG1	0132
K0100	0014	KTIME	0174	NXTDSK	4274	RESEK	4022
K0177	4367	LAS	4404	OCTEL	4460	RESTOR	6200
K0200	0015	LDAD	6164	ONLY	6215	RESTRT	0173
K0207	5356	LDADD	4452	OP1	0021	RETRN	5632
K0212	6063	LDCA	4765	OP2	0022	RETRN2	5360
K0215	6062	LDCM	6544	OVRDER	4522	RNAD	6321

RNWRD1	6363	T14SE	1063	T29IOA	2100	T40R	3242
RNWRD2	6364	T15E	1106	T29IOB	2102	T40S	3246
RNWRD4	6365	T15T	1110	T29IOC	2105	T40T	3265
ROUINS	1302	T16E	1126	T29IOD	2110	T41E	3357
ROUTMP	5133	T16T	1130	T290K	2132	T41R	3272
RSTRT	6630	T17E	1171	T29R	2074	T41S	3306
SAMDSK	4073	T17S	1135	T29T	2137	T41T	3361
SAVAC	5132	T17T	1173	T29W	2126	T42E	3447
SAVDAT	0163	T18E	1237	T2E	0323	T42R	3402
SAVPC	6316	T18S	1204	T30D	2200	T42S	3406
SAVPCT	0172	T18T	1241	T30E	2207	T42T	3451
SAVPDT	6361	T19E	1267	T30R	2142	T43E	3512
SAVTO	6317	T190K	1266	T30T	2211	T43R1	3454
SAVTRK	5654	T19T	1271	T31E	2257	T43R2	3461
SBCNT1	0133	T1E	0275	T31R	2214	T43T	3514
SCOPE	5470	T20E	1317	T31T	2261	T44E	3557
SDKP	1000	T200K	1316	T32E	2372	T440K	3567
SEEK	4424	T20T	1321	T32R1	2271	T44R	3526
SEKER1	6314	T21E	1350	T32R2	2312	T44T	3572
SEKER2	6311	T210K	1347	T32R3	2331	T45A1	3644
SELDSK	4260	T21T	1352	T32R4	2353	T45A2	3720
SETUP1	1233	T22E	1442	T32T	2374	T45E	3765
SETUP2	0225	T22R1	1404	T33E	2507	T45R1	3634
SKPERR	5634	T22R2	1423	T33R1	2404	T45R2	3650
SKPWAT	4433	T22T	1444	T33R2	2431	T45R3	3711
SKWAT	5134	T23E	1506	T33R3	2450	T45R4	3723
SOFERR	0171	T23R1	1451	T33R4	2467	T45SC	3626
STAERR	5636	T23R2	1470	T33T	2511	T45T	3767
STCON	0157	T23T	1510	T34E	2546	T4E	0404
STPCHK	7577	T24E	1554	T34T	2550	T4T	0406
STPHLT	6417	T24S	1513	T35E	2615	T5E	0420
STRAUT	5310	T24T	1556	T36E	2673	T5T	0422
STREG	0146	T25E	1642	T36N	2700	T6E	0435
SWR	0020	T25S	1602	T36R	2637	T6T	0437
SWSEK	4012	T25T	1644	T36T	2703	T7E	0451
T0E	0256	T26E	1714	T37A	3054	T7T	0453
T10E	0571	T26R1	1651	T37E	3100	T8E	0477
T10R	0542	T26R2	1673	T37R	3015	T8R	0456
T10T	0573	T26T	1716	T37T	3102	T8T	0501
T11E	0637	T27E	1765	T38DE	3157	T9E	0532
T11R1	0602	T27R1	1723	T38E	3146	T90K	0531
T11R2	0612	T27R2	1745	T38OK	3156	T9R	0507
T11R3	0616	T27T	1767	T38R	3115	T9T	0534
T11T	0641	T28E	2055	T38T	3161	TABLA	0461
T12A	0673	T28IOA	2015	T39DE	3235	TABLB	0471
T12E	0677	T28IOB	2017	T39E	3224	TAPROT	5070
T12R	0654	T28IOC	2022	T390K	3234	TCNTR1	0134
T13A	0747	T28IOD	2025	T39R	3173	TCNTR2	0135
T13E	0753	T28OK	2052	T39T	3237	TCNTR3	0136
T13R	0707	T28R	2010	T3E	0355	TCNTR4	0137
T14KE	1067	T28T	2057	T3T	0357	TCNTR5	0140
T14R	1013	T29E	2135	T40E	3263	TCNTR6	0141

TEXAD	5770	TST32	2262	XDOLPT	1112
TEXCA	5766	TST33	2400	XDOSW	0520
TEXCM	5762	TST34	2514	XDOUT	0006
TEXCR	5754	TST35	2551	XDSKON	7077
TEXDA	5764	TST36	2622	XERRO	0040
TEXDB	5760	TST37	3002	XFGURE	0030
TEXDT	5772	TST38	3105	XFLBUF	0031
TEXEND	7015	TST39	3164	XFROCT	0060
TEXGD	5752	TST4	0400	XGTREG	5362
TEXPC	5750	TST40	3240	XHFCHK	0027
TEXST	5756	TST41	3270	XHITRK	0064
THSFLD	0035	TST42	3400	XIONWT	0041
TICK	4530	TST43	3452	XKLBUF	0032
TIMSTP	3541	TST44	3517	XLAP	4163
TMANE	4722	TST45	3622	XLAS	0004
TMANOK	4721	TST5	0411	XLDAD	0052
TMANS	4643	TST6	0423	XLDCA	0051
TMANT	4724	TST7	0440	XLDCM	0050
TMPCNT	0746	TST8	0454	XLDMN	0055
TMPROT	2773	TST9	0502	XLOAD	0125
TOCT	6036	TSTCHA	0715	XLOTRK	0063
TOTST	5526	TSTSEK	4067	XMYLAS	7101
TOVRDT	4524	TTYLPT	1121	XNERRO	0037
TRK212	0066	TWOCT	4461	XONLY	0024
TST0	0240	TYPE	4436	XOVRRD	4164
TST0P	7102	UPAROW	0615	XPRINT	0036
TST1	0265	UPONE	6053	XPRN	0057
TST10	0540	WATISZ	4434	XRDAD	0046
TST11	0600	WATMES	0651	XRDBF	0056
TST12	0645	WRKBUF	7177	XRDCM	0045
TST13	0702	WTISZ	4000	XRDCR	0054
TST14	1010	XC8CKP	1041	XRDST	0044
TST14P	0757	XC8CNT	0400	XREG	5364
TST15	1073	XC8CRL	1023	XRESTR	0025
TST16	1111	XC8ECH	1063	XRNAD	0023
TST17	1133	XC8ERR	1207	XSDKP	0047
TST18	1202	XC8IND	0635	XSKWAT	0033
TST19	1242	XC8OCT	1000	XTABLA	0457
TST2	0301	XCAPAS	0200	XTABLB	0460
TST20	1272	XC8PAU	0337	XTEXT	5363
TST21	1322	XC8PNT	0303	XTICK	0130
TST22	1400	XC8PSW	0656	XTOCT	0061
TST23	1445	XC8SW	0262	XWTISZ	0034
TST24	1511	XC8TTY	0272		
TST25	1600	XC8TYP	1077		
TST26	1645	XCLAS	0005		
TST27	1717	XCLDR	0053		
TST28	1773	XCOMP1	0042		
TST29	2062	XCOMP2	0043		
TST3	0326	XCRLF	0062		
TST30	2140	XDIN	0007		
TST31	2212	XDISKG	0026		

ERRORS DETECTED: 0

LINKS GENERATED: 136

RUN-TIME: 34 SECONDS

4K CORE USED


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ACSAVE   358    361    564    795    941    974   1026#
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AERRO   1223   5295   5296   5307   5310   5333#  533A   5350
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ALLBAK  3799#  3803   3807
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APERR   4226   4250   4257   4261#
APHLT1  1061   4266#
APR1    4227#  4262
APT8    1285   5281#  5285
APT8R   5301#  5319
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AUTPRO  1270   4207#  4270
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C8BY2    988    990   1000#
C8BY3    801    804    810#
C8BY4    445#   626
C8BY5    863    868#   876
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C8CKP    724    733    737#
C8CKPA    88#  5040   5183
C8CKSW    66#  4276
C8CNTR    70#
C8CONT   881    893#
C8CRLF    78#
C8D01    261#   282
C8D010   964    985#
C8D011   529    533#
C8D02    760#   762
C8D03    308    314#
C8D04    725#   734
C8D07    457    461#
C8ECHO    80#
C8ERR     84#  2969   3007   3635   3725   406A   4079   4090   4180   4197   4265   4337   4493   4641
         4926   5149   5219
C8GET    136    151    432    435    463    478    487    535    557#   565    594    806    818    828
         957    985    991    998   1000
C8HANG   866    874#   880    886    892
C8INQU    86#  3710   5087
C8OCTA    76#
C8PASS    64#  3689
C8PAUS    90#
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C8RETD 531 536 539#
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C8SETD 527 532 534 538#
C8SETS 429 434 442 455 461 467#
C8SWIT 74# 1291 2949 3630 3641 4054 4074 4085 4208 5200
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C8TMP1 722 725 729 732 736#
C8TTYI 68#
C8TYPE 82# 4908
CAF 49# 497
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CHANG 1268 5199#
CHANGR 5209# 5217
CHECK 4947 4962#
CHKCLA 134 307 359 588 622 802 919# 924 926 954
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CLDR 1173 4637# 4639
CLKCNT 2256 3696 5291 5312 5317 5365 536A 5380 5387#
CLRALL 1106# 1316 133A 1340 1399 1651 1671 1685 1708 1716 1757 1774 1963 1996
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CLRTRN 1011 1014 1016#
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1866 1878 1915 1926 1959 1966 1992 2000 2025 2033 2083 2098 2133 2147
2181 2193 2242 2253 2292 2308 2347 2362 2395 2428 2456 2483 2513 2520
2562 2570 2621 2641 2657 267A 2723 2746 2760 2780 2981 2989 2921 2964
2979 2996 3035 3050 3083 3084 3119 3123 3135 3179 3183 3195 3230 3274
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COMP2 1165 3467# 3479 3480
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CRLF 1114# 1286 3700 3817 3820 3827 4373 4374 4383 4612
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CRREG2 1238# 3475 3567 3573 4416 4471 4792
CRWRD1 1249# 25A1
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2458 2516 2523 2566 2574 2623 2643 2661 2681 2725 2748 2763 2784 2965
2980 2997 3232 3283 3295 3343 3352 3393 3536 3574 3955 3962 4127 4224
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DLAG 1075# 2413 2473 2912 3053 4923
DLCA 1076# 2410 2470 2908 3049 4190
DLDC 1078# 2408 2468 2910 3051 5186
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DRVCNT 1187# 1289 3680 3683 529A 5299 5306 5320
DRVHAV 1186# 1288 3682 3768 3780 3797 3824 3854 3860 3863 3865 3989 3921 3976
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ERR1 660 664 670#
ERR41 4358 4367#
ERRMES 967 1020#
ERRO 1162 4352# 4354 4365 4367 4369 4371 4375 4387 4389 4395 4398 4406 4407
4411 4419 4426 4430 4459 5352
ERROR 1095# 1320 1341 1371 1404 1433 1452 1472 1491 1520 1554 1592 1638 1676
1725 1796 1800 1823 1847 1891 1939 1973 2007 2040 2111 2160 2207 2267
2322 2376 2440 2497 2543 2592 2691 2794 2833 2879 2938 3003 3093 3154
3214 3242 3307 3362 3403 3456 3598 3809 3988 4144 4261
ERTX1 4475 5262#
ERTX2 4476 5263#
ERTX3 4477 5264#
ERTX4 4478 5265#
ERTX5 4479 5266#
ERTX6 4480 5267#
ERTX7 4481 5268#
ERTX8 4482 5269#
ESCOPE 4366 4449 4451 4466#
EXIT 4877 4888 4897#
EXITA 381 389#
F1OP1 56#
F1OP2 57#

F1SWR 55#
FGURE 1154 4702# 4749 4758 4759
FIGURE 1093# 1885 1933 2105 2154 2201 2261 2316 2370 2665 2685 2767 2788 3001
3078 3146 3206 3236 3299 3354 3397 3448 3581 3946 4142 4259
FILBUF 1090# 1864 1913 1953 1987 2019 2076 2126 2175 2236 2282 2337 2560 2611
2634 2715 2736 2894 2959 3267 3330 3516 3945 4096 4218
FILCNT 758 761 765#
FILLER 756 764#
FLBUF 1155 4539# 4555
FLSAVE 364 561 797 943 982 1028#
FROCT 1178 4844# 4862 4873 4874 4885 4894
GDREG1 1235# 2530 2582 3469 4401
GDREG2 1236# 1307 1315 1394 1400 1653 1697 1710 1717 1760 1781 1788 2463 2531
2584 2819 2866 2906 2985 3063 3477 4005 4010 4028 4244 4483 4670 4703
4729 4732 4734 4746 4755 4965 4973 4982 4997 5005 5111 5137 5141 5143
5148 5163 5172
GETCH1 642# 650
GETDAT 369 370 377 403#
GETDRV 3679 3687 3771 3782 3799 3867 3872# 3885 3886 3912 3923 3978
GOBAK 5010# 5013
GOITA 375 392#
GOTADD 5034 5038#
GOTOA 397 398 399 400 401#
GOTSKP 4987 4996#
GTF 47# 363 796 942
GTREG 4469 4597# 4601 4602 4616 4621 4629
HAFCHK 1088# 1971 2005 2038 4138
HEDHLT 1063 3636#
HEDLST 4474 4475#
HEDTAD 4377 4474#
HFCHK 1153 5110# 5166 5175 5176 5224
HFERR 5122 5130 5139 5151 5161 5172#
HFR1 5135# 5145
HFR2 5149# 5154
HITRK 1069 1182 5394#
HOMEMA 1247# 1273 1274 1382 2387 2813 2848 2869 2899 3033 3118 3178 3420 4627
4660 4943 4956
HRDERR 4684 4690 4693#
ICNTR1 4159 4161 4184#
ICNTR2 4158 4163 4185#
INDEXA 367 376 396 402#
INHIBT 4372 4448 4468#
INMODE 379 428 443 634 829 833 837#
INTADD 1411 4167#
INTRQ 1282 1411#
IONWAT 1096# 1358 1362 1369
IONWT 1163 4155# 4166 4175 4178
IOT1 1740# 5235
IOT1A1 2913# 5242
IOT1A2 3054# 5247
IOT2 4638# 5236
IOT2A2 3074# 5248
IOT3 4923# 5237

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IOT3A1  2912#  5243
IOT3A2  3053#  5249
IOT4    4194#  5238
IOT4A1  2908#  5244
IOT4A2  3049#  5250
IOT5    4334#  5239
IOT5A1  2915#  5245
IOT5A2  3056#  5251
IOT6    5186#  5240
IOT6A1  2910#  5246
IOT6A2  3051#  5252
IOT7    3722#  5241
K0001   1189#  1279  2404  2425  2465  2481  3085  4955
K0002   1190#  1241  1695  1759  2858
K0003   1191#  1283  1330  3540  3874  3878  5294
K0004   1192#  3706  3942  5045
K0005   1193#  1564  3585
K0006   1194#  1385  2953  4065  4212
K0007   1195#  3646  3659  4117  4376  4707  4713  4817  4821  4851  5115  5121
K0010   1135#  2865  3065  3593  4599  4682
K0017   1209#  1531  2515  2522  2564  2572  3255  3470  3521  3572  4806
K0020   1136#  1754  2984  3498  3512  3558  3746  4243  4492  4517  4561  4798  4804
K0037   1210#  1868  1880  1917  1928  2078  2100  2128  2149  2183  2195  2244  2255  2284
        2310   2339  2364  2397  2412  2432  2457  2472  2487  2616  2636  2659  2680  2718
        2741   2762  2782  3375
K0040   1137#  1393  1580  4565
K0077   1204#  1618  4886
K0100   1138#  1835  1841  1958  1999  2024  2032  4134  5302
K0177   3841   3891#
K0200   1139#  1388  1333  1353  1365  1665  1700  1776  3741  3842  4002  4578  4978  5083
K0227   4363   4465#
K0212   4834   4839#
K0215   4832   4838#
K0240   3855   4840#  4860  4892
K0260   3834   3888#  4818  4822  4852
K0277   3836   3890#
K0306   1253#  4679  5012
K0331   3848   3889#
K0400   1140#  1294  1354  4168  4443  4512
K0770   5203   5225#
K1000   1141#  1817  1840  1877  1965  1998  2031  2097  2192  2307  2486  2427  2519  2569
        2656   2677  2871  2995  3032  3116  4253
K1234   1196#  4553  4738  4743  5157  5160
K2000   1197#  4227  4975
K2525   1205#  1863  1884  1952  1970  2018  2037  2075  2104  2174  2200  2336  2369  2559
        2633   2684  2735  2787  2893  2954  3000  3077  3145  3205  3235  3266  3298  3329
        3355   3396  3447  3506  3579  3580  4217  4258
K3020   1198#  1701  1762  3647  3660  4626  4958
K3740   4889   4902#
K4000   1199#  1914  2132  2241  2346  2417  2422  2722  2745  2815  2818  2916  2932  3059
        3130   3190  3280  3340  3432  3533  3693  3766  3952  4012  4672  4969  4999  5283
        5336   5362
K4100   4891   4901#
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K5000   1207#  1812  1834  1865  1957  1991  2023  2082  2180  2291  2394  2512  2561  2620
        2640   2850  2903  2963  2978  4106  4222  4237
K5252   1206#  1912  1932  1986  2004  2125  2153  2235  2260  2281  2315  2610  2664  2714
        2766   3515  3944  3965
K5300   1255#  1390  2401  2461  2986  3068  3150  3210  3452  3929  4245  4693  4752  5009
        5169
K5373   1254#  3075  3148  3208  3450  4675
K5403   1282   1412#
K6000   1200#  4017  4100  4688  4972  4988
K6304   1256#  2526  2577
K6500   5377   5388#
K6520   5349   5353#
K7000   1201#  1381  3223  4099  4105  4687  5289
K7007   5212   5232#
K7156   3500   3605#
K7377   5287   5326#
K7400   1213#  4529  4724
K7521   4659   4697#
K7577   4571   4583  4589#
K7600   1214#  4544  4615  5133  5146
K7700   1203#  1619  2955  3252  3323  4875
K7707   4057   4150#
K7740   1212#  1607  1861  1910  2073  2094  2123  2144  2172  2233  2279  2303  2334  2358
        2392   2454  2608  2631  2652  2674  2712  2733  2757  2776  3376  3511  3557  3613
        4157   4317  4966
K7760   1202#  2507  2555  2565  2573  3256  3517  3525  3561  3566  3650  3663
K7771   1208#  4424
KAERRO  1223#  4353
KCDF    1211#  1275  5344  5372
KCNT    1262#  3495  3696  5369  5382
KHFCHK  5204   5213  5224#
KILBUF  1289#  1811  1874  1925  1964  1997  2030  2096  2146  2190  2251  2305  2360  2511
        2654   2676  2759  2778  2845  2975  2994  3045  3373  3958  4125  4234
KLBUF   1156   4525#  4534
KNERRO  5206   5216  5229#
KRMF    1277   1417#
KTICK   1224   5300  5318  5360#  5364  5366  5370  5383
KTIME   1261#  2414  2474
LAS     1116#  2951  3632  3643  3705  4056  4076  4087  4210  4356  4359  4441  4560  4564
        4598   5082  5089  5202
LDAD    1172   4920#  4924
LDADD   1102#  1387  1703  1766  2821  2852  2873  3126  3186  3428  3651  3664  4238  4630
        4666   4961
LDCA    1171   4189#  4195
LDCM    1170   5180#  5187
LDCMD   1104#  1310  1335  1356  1367  1384  1666  1702  1764  1777  1787  2816  2851  2872
        3124   3184  3426  3648  3661  4000  4003  4229  4572  4579  4624  4628  4662  4944
        4959   4980  5004
LDCUR   1105#  2847  2868  3122  3182  3424  4606  4664
LDMAN   1108#  2823  2825  2827  2854  2856  2859  3737  3739  3742  3747  4491  4493  4508
        4510   4513  4518  4608  4782  4784  4786  4791  4796  4798  4805
LDMN    1175   3615  3616  3721#  3723
LOADCT  1215   2050#  2051  2057  2058
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LOTRK 1070 1141 5395#
LPDAT 4546# 4552
LPFIG 4726# 4736
M12 1219# 3734 4505 4779 4793
M4 1655 1687 3825 4848 4863#
MANPRO 1269 2948# 3013
MANUAL 1267 4353#
MESA 629 680#
MESAC 973 1022#
MESFL 981 1024#
MESHAN 889 894#
MESMQ 977 1023#
MESPAS 147 176#
MESPC 969 1021#
MPERR 2967 2991 2999 3003#
MPHLT1 1059 2970#
MPHLT2 1062 3008#
MPR1 2975# 3004
MQA 51# 365 798 944
MQL 50# 560
MQSAVE 366 559 799 945 978 1027#
MYAC 1006 1012 1018#
MYLAS 1126 4274# 427A 4318 4325 4327
NDIN 400A 4017#
NERRO 1161 5073# 5074 5077 5093 5102 5103 5104 5229
NERROR 1094# 1319 1342 1378 1403 1432 1451 1471 1490 1519 1553 1591 1637 1675
1724 1795 1822 1846 1890 1938 1972 2006 2039 2110 2159 2206 2266 2321
2375 2439 2496 2542 2591 2690 2793 2832 2878 2937 3002 3092 3153 3213
3241 3336 3361 3402 3456 3597 3808 3947 4143 4260
NEXDSK 3681 3699 3712#
NEXTST 5097 5100#
NL7775 1080# 1751
NMES1 1732# 3702 3819
NMES2 3822 5193#
NMES3 3755# 3829
NOCLR 4567 4585#
NOSET 162 167#
NOTOON 3786 3789#
NOTEX 4428 4458#
NSCOPE 5094 5106#
NTCLAS 956 991#
NTCRC 4410 4419#
NTGO 4392 4406# 4457
NTSEK 4108 4116#
NXTDSK 3828# 3859
OCTEL 1111# 4388 4404 4417 4438
ONLY 1150 4941 4949# 4951 4953 5008 5011
OP1 1146# 4299 4300
OP2 1147# 4289 4301 4302
OVRDER 3931 3957 3964 3968 398A#
OVRDOK 3928 3935#
OVRERR 3788 3805 3809#
OVRLAP 3752 3765# 3810 3812

OVROK 3787 3792#
OVRR1 3768#
OVRR2 3771# 377A 3795
OVRR3 3782# 3790 3791
OVRRD1 3909#
OVRRD2 3912# 3919
OVRRD3 3923# 3933 3934
OVRRED 3753 3906# 3989 3991
PASCNT 144 148 173#
PCLF 43# 865 867
PCNTR1 4425 4439 4472#
PCNTR2 4421 4431 4432 4433 4460 4461 4473#
PCSAV 5314 5316 5341 5346 5354#
PCSAVE 948 997 999 1025#
PERROR 5340 5352#
PNTBUF 854 85A 864 870# 877 883
POLERR 3929# 3984
PRINT 1160 4906# 4910 4916
PRN 1177 4A47# 4A69 4A72 4896 489A
PRNTER 1110# 3701 3703 3A18 3821 3A28 4381 4384 4396 4412 4435
PRSFLD 1159 1276 1284#
PSIE 46#
PSKE 44#
PSKF 42# 878
PSTB 45# 865
PTSTOR 259 261 272 281 283#
RANADD 1084# 1609 1613 1617 3225 3254 3258 3262 3325 3374 3378 3774 3915 3971
RDAD 1168 3614 3618 3732# 3750
RDADD 1101# 4610
RDBF 1176 4489# 449A
RDBUF 1109# 4604
RDCM 1167 4503# 4521
RDCMD 1100# 4611
RDCR 1174 4777# 4808
RDCRC 1107# 2536 2585 4609
RDST 1166 4333# 4342
RDSTAT 1099# 1311 1317 1395 1401 1667 1704 1711 1718 1769 17A2 17A9 2830 2876
3129 3189 3431 3655 366A 4006 4011 4231 4603 4671 4968 4984 4998 5006
REALPC 952 970 1017#
RECAL 1085# 1429 1468 1487 1575 3336 3346
REDBAK 3978# 3982 398A
REDDA 370# 378
REG0 1225# 1298 1352 1649 1750 2957 3714 4060 4216 5095
REG1 1226# 2956 3715 4215 5098
RESEK 3640# 3671
RESTOR 1151 4935# 4937 4939 4940
RESTRT 1260# 1271 4355 5078 5099
RETRN 4677# 4680 4692 4694
RETRN2 4368 4450 4456 4467#
RNAD 1149 4967 4993 5021# 5052
RNWRD1 5024 5027 5030 5056#
RNWRD2 5025 5028 5031 5032 5037 5057#
RNWRD4 4991 5038 5042 5051 505A#

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ROUINS   1004#  4304    4307
ROUTMP   4287   4303    4310#
RSTRT    5221   5227#
SAMOSK   3688#
SAVAC    4285   4293    4305    4309#
SAVDAT   1252#  4540    4546    4548
SAVPC    4938   4952    5010    5015#
SAVPCT   1259#  3039    4456    4677    4753    5170
SAVPDT   5022   5040    5041    5043    5044    5046    5048    5049    5054#
SAVTO    4950   4960    5016#
SAVTRK   4652   4665    4696#
SBCNT1   1227#  3735    3743    4506    4514    4780    4787    4794    4799    4813    4814    4820
SCOPE    4466   4559#   5106
SDKP     1169   1739#   1742    1743
SEEK     1086#  1448    1465    1484    1506    1538    1572    1624    1630    2809    3276    3289    3385    4112
SEKER1   4963   4995    5012#
SEKER2   4977   4990    5001    5009#
SELDSK   1287   3816#   3862    3868
SETUP1    960#
SETUP2    153#
SKPERR   4668   4679#
SKPWAT   1092#  1388    1767    1778    4575    4580    4667    4962
SKWAT    1157   4314#   4328    4329
SOFERR   1258#  3044    3071    3113    3174    3416    4654    4691    4747    4751    5164    5168
STAERR   4674   4681#
STCON    1248#  1652    1696    1709
STPCHK   1071   5399#
STPHLT   1057   5088#
STRAUT   4426#  4440
STREG    1239#  2423    2479    2933    2988    3057    3058    3064    4247    4340    4341    4681    4974
SWR      1008   1009    1145#   4297    4298
SWSEK    3629#
T0E      1314   1320#
T10E     1574   1577    1592#
T10R     1569#  1586    1590
T10T     1573   1576    1594#
T11E     1626   1632    1638#
T11R1    1609#  1636
T11R2    1617#
T11R3    1621#  1634
T11T     1625   1631    1640#
T12A     1662   1672#
T12E     1670   1676#
T12R     1657#  1674
T13A     1694   1721#
T13E     1707   1714    1720    1725#
T13R     1689#  1723
T14KE    1768   1779    1800#
T14R     1756#  1794
T14SE    1772   1785    1792    1796#
T15E     1816   1821    1823#
T15T     1815   1820    1825#
T16E     1839   1845    1847#
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T16T     183A   1844    1849#
T17E     1875   1883    1887    1891#
T17S     1863#  1889
T17T     1874   1882    1893#
T18E     1924   1931    1935    1939#
T18S     1912#  1937
T18T     1923   1930    1941#
T19E     1962   1969    1973#
T190K    1972#
T19T     1961   196A    1975#
T1E      1337   1341#
T20E     1995   2003    2007#
T200K    2006#
T20T     1994   2002    2009#
T21E     2028   2036    2040#
T210K    2039#
T21T     2027   2035    2042#
T22E     2087   2103    2107    2111#
T22R1    2077#  2089
T22R2    2096#  2109
T22T     2086   2102    2113#
T23E     2137   2152    2156    2160#
T23R1    2127#  2139
T23R2    2146#  2158
T23T     2136   2151    2162#
T24E     2189   2199    2203    2207#
T24S     2174#  2205
T24T     2188   2198    2209#
T25E     2250   2259    2263    2267#
T25S     2235#  2265
T25T     2249   2258    2269#
T26E     2296   2314    2318    2322#
T26R1    2283#  229A
T26R2    2305#  2320
T26T     2295   2313    2324#
T27E     2351   2368    2372    2376#
T27R1    2338#  2353
T27R2    2360#  2374
T27T     2350   2367    237A#
T28E     2400   2436    2440#
T28IOA   2408#  5253
T28IOB   2410#  5254
T28IOC   2413#  5255
T28IOD   2416#  2421    5256
T280K    2419   2437#
T28R     2403#  2438
T28T     2399   2402    2442#
T29E     2460   2489    2497#
T29IOA   2468#  5257
T29IOB   2470#  5258
T29IOC   2473#  5259
T29IOD   2476#  2491    5260
T290K    2494#
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T29R      2464#   2495
T29T      2459    2462    2499#
T29W      2478    2490#
T2E       1359    1364    1371#
T30D      2533    2536#
T30E      2518    2525    2539    2543#
T30R      2509#   2541
T30T      2517    2524    2527    2545#
T31E      2568    2576    2588    2592#
T31R      2557#   2590
T31T      2567    2575    2578    2594#
T32E      2625    2645    2663    2667    2683    2687    2691#
T32R1     2615#   2627
T32R2     2635#   2647
T32R3     2654#   2669
T32R4     2676#   2689
T32T      2624    2644    2662    2682    2693#
T33E      2727    2750    2765    2769    2786    2790    2794#
T33P1     2716#   2729
T33R2     2740#   2752
T33R3     2759#   2771
T33R4     2778#   2792
T33T      2726    2749    2764    2785    2796#
T34E      2811    2833#
T34T      2810    2835#
T35E      2879#
T36E      2918    2932#
T36N      2931    2937#
T36R      2904#   2926    2930
T36T      2940#
T37A      3061    3073#
T37E      3070    3080    3093#
T37R      3042#   3087    3091
T37T      3038    3069    3076    3095#
T38DE     3154#
T38E      3132    3145#
T38OK     3144    3153#
T38R      3120#   3139    3143
T38T      3151    3156#
T39DE     3214#
T39E      3192    3205#
T39OK     3204    3213#
T39R      3180#   3199    3203
T39T      3211    3216#
T3E       1389    1398    1404#
T3T       1386    1391    1406#
T40E      3234    3238    3242#
T40R      3225#   3240
T40S      3229#
T40T      3233    3244#
T41E      3278    3285    3291    3297    3301    3307#
T41R      3254#   3305
T41S      3266#   3303
```



```
T41T      3277    3284    3290    3296    3309#
T42E      3338    3345    3348    3354    3358    3362#
T42R      3325#   3360
T42S      3329#
T42T      3337    3344    3347    3353    3364#
T43E      3387    3395    3399    3403#
T43R1     3373#   3401
T43R2     3378#   3389
T43T      3386    3394    3405#
T44E      3434    3447#
T44OK     3446    3455#
T44R      3422#   3441    3445
T44T      3453    3458#
T45A1     3507    3516#
T45A2     3553    3561#
T45E      3538    3576    3583    3598#
T45R1     3508#   3545
T45R2     3520#   3543
T45R3     3554#   3591
T45R4     3564#   3588
T45SC     3502#   3596
T45T      3537    3575    3600#
T4E       1431    1433#
T4T       1430    1435#
T5E       1450    1452#
T5T       1449    1454#
T6E       1467    1470    1472#
T6T       1466    1469    1474#
T7E       1486    1489    1491#
T7T       1485    1488    1493#
T8E       1508    1520#
T8R       1503#   1514    1518
T8T       1507    1522#
T9E       1540    1554#
T9OK      1550    1553#
T9R       1535#   1547    1552
T9T       1539    1556#
TABLA      404     406#
TABLB      405     415#
TAPROT    4225    4240    4246    4256    4263#
TCNTR1    1228#   1501    1503    1511    1512    1532    1537    1542    1543    1545    1567    1569    1583    1584
          1608    1635    1656    1673    1688    1722    1755    1765    1793    1862    1867    1879    1888    1911
          1916    1927    1936    2074    2077    2088    2095    2099    2108    2124    2127    2138    2145    2148
          2157    2173    2182    2194    2204    2234    2243    2254    2264    2280    2283    2297    2304    2309
          2319    2335    2338    2352    2359    2363    2373    2393    2403    2411    2424    2431    2437    2455
          2464    2471    2480    2486    2494    2508    2514    2521    2540    2556    2563    2571    2589    2609
          2615    2626    2632    2635    2646    2653    2658    2668    2675    2679    2688    2713    2717    2728
          2734    2740    2751    2758    2761    2770    2777    2781    2791    3031    3046    3052    3081    3088
          3114    3125    3133    3140    3175    3185    3193    3200    3259    3275    3286    3326    3334    3342
          3351    3417    3427    3495    3442    3499    3504    3513    3551    3559    3592    3594    3633    3658
          3662    4058    4062    4063    4064    4098    4104    4109    4116    4119
TCNTR2    1229#   1502    1505    1509    1515    1534    1535    1548    1551    1568    1571    1579    1581    1587
          1610    1623    1654    1657    1663    1672    1686    1689    1698    1721    2415    2420    2475    2490
```

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         3115    3136    3137    3176    3196    3197    3261    3273    3286    3328    3331    3339    3349    3381
         3382    3390    3418    3438    3439    3518    3542    3562    3587    3644    3645    3649    3940    3949
         3961    4077    4111    4121    4126
TCNTR3   1230#   1612    1621    1659    1660    1691    1692    2389    2407    2467    3226    3231    3863    3271
         3282    3294    3379    3384    3392    3505    3514    3523    3552    3560    3564    4088    4095    4137
         4141
TCNTR4   1231#   1614    1629    3228    3229    3265    3268    3279    3292    3377    3388    3583    3588    3944
         3550    3554    3590    3769    3777    3781    3789    3793    3798    3806    3910    3918    3922    3932
         3977    3985    4103    4123    4130
TCNTR5   1232#   1616    1627    3224    3239    3253    3304    3324    3359    3372    3400    3501    3595    3767
         3794    3938    3973
TCNTR6   1233#   1620    1633    3257    3302    3519    3520    3539    3541    3563    3571    3584    3586
TEXAD    4769#
TEXCA    4768#
TEXCM    4766#
TEXCR    4413    4763#
TEXDA    4767#
TEXDB    4765#
TEXDT    4770#
TEXEND   3704    5271#
TEXGO    4397    4762#
TEXPC    4385    4761#
TEXST    4470    4764#
THSFLD   1159#
TICK     1117#   2934    3942    3120    3180    3422    4316    4983    5076
TIMSTP   3371    3433#
TMANE    4114    4139    4140    4144#
TMANOK   4115    4132    4139    4143#
TMANS    4097#   4145    4148
TMANT    4113    4128    4146#
TMPCNT    641     649     679#
TMPROT   2966    2981    2987    2998    3005#
TOCT     1179    4812#   4824    4849    4858
TOTST    4559    4587    4590#
TOVRDT   3930    3956    3963    3990#
TRK212   1184#   1447    1464    1530    1753    2420
TST0     1306#   1321    3717    5328
TST0P    5322    5328#
TST1     1333#   1342
TST10    1567#   1593
TST11    1597    1607#   1639
TST12    1650#   1677
TST13    1684#   1726
TST14    1730    1753#   1797    1801
TST14P   1730#
TST15    1812#   1820
TST16    1834#   1848
TST17    1861#   1892
TST18    1096    1910#   1940
TST19    1952#   1974
TST2     1353#   1372
TST20    1986#   2008
TST21    2018#   2041
```



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TST22    2045    2073#   2112
TST23    2123#   2161
TST24    2172#   2208
TST25    2212    2233#   2268
TST26    2279#   2323
TST27    2334#   2377
TST28    2390#   2441
TST29    2454#   2498
TST3     1381#   1405
TST30    2507#   2544
TST31    2555#   2593
TST32    2608#   2692
TST33    2696    2712#   2795
TST34    2807#   2834
TST35    2843#   2880
TST36    2891#   2939
TST37    2942    3031#   3094
TST38    3112#   3155
TST39    3173#   3215
TST4     1408    1429#   1434
TST40    3223#   3243
TST41    3252#   3308
TST42    3311    3323#   3363
TST43    3371#   3404
TST44    3415#   3457
TST45    3461    3498#   3599
TST5     1437    1445#   1453
TST6     1462#   1473
TST7     1482#   1492
TST8     1501#   1521
TST9     1530#   1555
TSTCHA    636     643     652#    669
TSTSEK   3684#
TTYLPT    441     474     476     493     855     871#    887
TWOCT    1112#   4402    4415
TYPE     1113#   3835    3837    3845    3854    4364    4819    4823    4833    4835    4853    4861    4884    4893
UPAROW    444     477     485     495     526     545#    551
UPONE    1180    4830#   4836    4847    4850    4854    4857
WAITSZ   1091#   4563
WATMES    592     598#
WRKBUF   1067    1185    5392#
WTISZ    1158    3611#   3620
XC8CKP     89     200     794#    809     811
XC8CNT     71     357#    362     387     388     389     391     433     459     464     479     488     530     595
           807     830     885
XC8CRL     79     145     150     386     550     672     674     752#    763     890     965     984
XC8ECH     81     635     642     826#    831     835
XC8ERR     85     939#    947     995    1001
XC8INQ     87     155     586#    590     596     597     891     989
XC8OCT     77     149     631     719#    735     971     975     979     983
XC8PAS     65     132#    140     156     157
XC8PAU     91     305#    310     311     313     314
XC8PNT     73     146     256#    258     260     264     275     591     628     888     966     968     972     976
```

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                980
XC8PSW           75      533     619#     622      676
XC8SW            67      137      152     199#     206      958      986      992
XC8TTY           69      223#     231      462      593      805      827
XC8TYP           83      271      280      383      385      547      549      633      671      728      755      760      832      853#
                869
XCLAS          1115     1127#
XCLDR          1106     1173#
XCOMP1         1097     1164#
XCOMP2         1098     1165#
XCRLF          1114     1180#
XDIN           1083     1129#
XDISKG         1087     1152#
XDOLPT          857      864#
XDOSW           447      448#
XDOUT          1082     1128#
XDSKON         5313     5325#
XERRO          1095     1162#
XFGURE         1093     1154#
XFLBUF         1090     1155#
XFROCT         1111     1178#
XGTREG         4455     4469#
XHFCHK         1088     1153#
XHITRK         1182#    1871     1920     1955     1989     2021     2081     2131     2178     2239     2289     2344     2614     2639
               2721     2739     2897     2922     2923     2961     2977     3270     3333     3531     3532     3948     3951     4118
               4220     4236
XIONWT         1096     1163#
XKLBUF         1089     1156#
XLAP           3684     3752#
XLAS           1116     1126#
XLDAD          1102     1172#
XLOCA          1105     1171#
XLDCM          1104     1170#
XLDMN          1108     1175#
XLOAD          1215#    1647     1859     2390     2452     2805     2889     3029     3110     3171     3250     3413     3496
XLOTRK         1181#    1869     1872     1918     1921     1956     1990     2022     2079     2084     2129     2134     2185     2186
               2246     2247     2286     2293     2341     2348     2618     2622     2637     2642     2719     2724     2743     2747
               2895     2911     2919     2927     2934     2962     3272     3335     3522     3526     3527     3535     3950     3954
               4122     4221
XMYLAS         5290     5327#
XNERRO         1094     1161#
XONLY          1086     1150#
XOVRRD         3685     3753#
XPRINT         1113     1160#
XPRN           1110     1177#
XRDAD          1101     1168#
XRDBF          1109     1176#
XRDCM          1100     1167#
XRDCR          1107     1174#
XRDST          1299     1166#
XREG           4422     4471#
XRESTR         1085     1151#
XRNAD          1084     1149#
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XSDKP          1103     1169#
XSKWAT         1092     1157#
XTABLA          368      404#
XTABLB          395      405#
XTEXT          4420     4470#
XTICK          1117     1224#
XTOCT          1112     1179#
XWTISZ         1091     1158#
.L0357          312      317#
.L0360          279      318#
.L0361          278      319#
.L0362          276      320#
.L0363          273      321#
.L0364          271      280      322#
.L0365          262      323#
.L0366          229      230      324#
.L0367          228      325#
.L0370          227      326#     1332     1414#
.L0371          200      327#     1329     1415#
.L0372          155      328#     1287     1416#
.L0373          149      329#     1285     1417#
.L0374          145      150      339#     1270     1418#
.L0375          138      153      331#     1269     1419#
.L0376          136      151      332#     1268     1420#
.L0377          134      307      333#     1267     1421#
.L0560          498      503#
.L0561          462      504#
.L0562          445      486      494      505#
.L0563          444      477      485      495      506#
.L0564          441      474      476      493      507#
.L0565          432      435      463      478      487      508#
.L0566          393      509#
.L0567          386      510#
.L0570          384      511#
.L0571          383      385      512#
.L0572          379      428      443      513#
.L0573          373      382      390      392      394      514#
.L0574          366      515#
.L0575          364      516#
.L0576          359      517#
.L0577          358      361      518#     1566     1599#
.L0752          670      683#
.L0753          666      684#
.L0754          662      685#
.L0755          658      686#
.L0756          654      687#
.L0757          640      688#
.L0760          635      642      689#
.L0761          634      690#
.L0762          632      691#
.L0763          631      692#
.L0764          626      693#
.L0765          593      694#
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.L0766    591    628    695#
.L0767    588    620    696#
.L0770    564    697#
.L0771    561    698#
.L0772    559    699#
.L0773    550    672    674    700#
.L0774    548    637    647    657    661    665    667    701#
.L0775    547    549    633    671    702#
.L0776    546    703#   1658   1690   1734#
.L0777    530    595    704#   1655   1687   1735#
.L1162    891    896#
.L1163    888    897#
.L1164    807    830    885    898#
.L1165    806    810    828    899#
.L1166    805    827    900#
.L1167    802    901#
.L1170    799    902#
.L1171    797    903#
.L1172    795    904#
.L1173    759    905#
.L1174    754    906#
.L1175    727    907#
.L1176    726    908#
.L1177    723    909#   1752   1898#
.L1365    1009   1031#
.L1366    996    1032#
.L1367    989    1033#
.L1370    971    975    979    983    1034#
.L1371    966    968    972    976    980    1035#
.L1372    965    984    1036#
.L1373    960    1037#
.L1374    958    986    992    1038#
.L1375    957    985    991    998    1000   1039#
.L1376    951    1010   1040#  2054   2062#
.L1377    922    1041#  2054   2063#
.L2176    2527   2534#
.L2177    2518   2525   2535#
.L2377    2541   2698#
.L3377    3199   3203   3321#
.L4175    3696   3757#
.L4176    3686   3758#
.L4177    3679   3687   3759#
.L4375    3855   3898#
.L4376    3825   3899#
.L4377    3771   3782   3799   3900#
.L4576    3912   3923   3978   4034#
.L4577    3911   3920   3975   4035#
.L5173    4304   4307   4343#
.L5174    4302   4344#
.L5175    4300   4345#
.L5176    4298   4346#
.L5177    4290   4347#
.L6177    4818   4822   4852   4930#
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.V0000    960    1037#
.V0007    666    6A4#   726    908#
.V0020    1009   1031#  4298   4346#
.V0021    4300   4345#
.V0022    4302   4344#
.V0040    632    691#
.V0077    273    321#
.V0100    278    319#   393    509#
.V0177    227    326#
.V0200    228    325#
.V0212    759    905#
.V0215    654    687#   754    906#
.V0240    279    318#
.V0260    727    907#
.V0262    958    986    992    1038#
.V0272    462    504#   593    694#   805    827    900#
.V0277    384    511#   670    683#
.V0303    591    628    695#   888    897#   966    968    972    976    980    1035#
.V0336    546    703#
.V0400    138    153    331#   530    595    704#   807    830    885    898#   922    1041#  4290   4347#
.V0515    626    693#
.V0615    444    477    485    495    506#
.V0624    136    151    332#   432    435    463    478    487    508#   806    810    828    899#   957
          985    991    998    1000   1039#
.V0635    155    328#   891    896#   989    1033#
.V0745    445    486    494    505#
.V1000    149    329#   631    692#   971    975    979    983    1034#
.V1023    145    150    330#   386    510#   550    672    674    700#   965    984    1036#
.V1041    200    327#
.V1063    635    642    689#
.V1075    229    230    324#   373    382    390    392    394    514#   548    637    647    657    661
          665    667    701#
.V1076    379    428    443    513#   634    690#
.V1077    271    280    322#   383    385    512#   547    549    633    671    702#
.V1121    441    474    476    493    507#
.V1200    134    307    333#   359    517#   588    620    696#   802    901#
.V1302    4304   4307   4343#
.V1345    358    361    518#   564    697#   795    904#
.V1346    366    515#   559    699#   799    902#
.V1347    364    516#   561    698#   797    903#
.V2142    2541   2698#
.V2207    2518   2525   2535#
.V2211    2527   2534#
.V2706    1269   1419#
.V3173    3199   3203   3321#
.V3740    276    320#
.V4260    1287   1416#
.V4345    3679   3687   3759#  3771   3782   3799   3900#  3912   3923   3978   4034#
.V4364    4818   4822   4852   4930#
.V4371    3686   3758#  3911   3920   3975   4035#
.V4374    1658   1690   1734#
.V4600    1267   1421#
.V5000    1270   1418#
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.V5102      951     1010    1040#
.V6064     3855     3898#
.V6110     1655     1687    1735#   3825    3899#
.V6600     1268     1420#
.V7025     1285     1417#
.V7160     1332     1414#   1566    1599#   1752    1898#
.V7161     1329     1415#   2054    2063#
.V7162     2056     2062#   3696    3757#
.V7402      312      317#    996    1032#
.V7510      662      685#
.V7520      658      686#
.V7600      498      503#
.V7700      262      323#
.V7774      723      909#
```