

IDENTIFICATION

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 AUTHOR: JOHN VROBEL

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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 SWR951.

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 DM8E 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 DPI-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.

SWR3=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 PROCEED TO
NEXT TEST AFTER EACH ERROR TYPEOUT. IF SWR1=1
THE PROGRAM WILL PROCEED 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 APPROX. 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.

- SET SWITCH LABELED "RUN/LOAD" TO THE "LOAD" POSITION.
- 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 SHR4#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
CONSIDERED AN ERROR CONDITION. IN ALL CASES ACCESS
"ERRORS" SECTION 6 IN THIS DOCUMENTATION.
- L. FOR THE ABSOLUTE 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 DOC-
UMENTATION. (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.

H. 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 "APH11" 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 TYPEDOUTS 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 WHITE 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 SURTEST 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 SURTEST.
- 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 PREVIOUSLY, 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

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 "DLOC"
- ERHLT7 SKIP TRAP FOR IOT "DMAN"

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 OCCURES 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 SWR0=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 TOT 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:15352 ST:4010 CM:1000 DA:10001 CA:7000 AD:7010 DT:5250

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

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

THE FOLLOWING IS AN 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 SWR0=1

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

SEQ 0014

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

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

6744 DLCA

AC
--

CURRENT ADDRESS

0-11

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

6745 ORST

AC
--

TRANSFER DONE
READY TO SEEK, READ, OR WRITE.
NOT USED

0

SEEK FAIL
DISK FILE READY
CONTROL BUSY ERROR
TIME OUT ERROR
WRITE LOCK ERROR
CRC ERROR
DATA RATE ERROR
DRIVE STATUS ERROR
CYLINDER ADDRESS ERROR

1

2

3

4

5

6

7

8

9

10

11

6746 DLDC

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

AC
--

READ DATA
READ ALL
WRITE LOCK
SEEK ONLY
WRITE DATA
WRITE ALL
NOT USED
NOT USED
ENABLE INTERRUPT
ENABLE SET TRANSFER DONE ON SEEK DONE
HALF BLOCK 128 WORDS
EXTENDED MEMORY ADDRESS
EXTENDED MEMORY ADDRESS
EXTENDED MEMORY ADDRESS
UNIT SELECT
UNIT SELECT
EXTENDED CYLINDER ADDRESS

0-2#0

0-2#1

0-2#2

0-2#3

0-2#4

0-2#5

0-2#6

0-2#7

3

4

5

6

7

8

9

10

11

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 OCLR "CLEAR CONTROL".

AC
--

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

9. PROGRAM DESCRIPTION

THE RK8E DRIVE CONTROL TEST VERIFIES BASIC FUNCTIONAL OPERATION
OF THE RK8E CONTROL LOGIC WITH THE RK8S DISK DRIVE(S). THE
PROGRAM IS COMPRISED OF MANY INDIVIDUAL SUBTESTS WHICH
ARE AUTOMATICALLY RUN IN A SEQUENTIAL 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(OVLAP,
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 SECTION 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 AVAILABLE 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 EXECUTION AND WAIT IN A
LOOP FOR A CONTINUE. THE ONLY WAY TO CONTINUE
WILL BE TO TYPE A CONTROL O, 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

SR0000 4000

UNDER SCORING INDICATES OPERATOR RESPONSE

10.7 END OF PASS

AN INDICATION WILL BE GIVEN WHEN THE DIAGNOSTIC HAS MADE A SUCCESSFUL 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 THAN 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
---	-----	-----	-----
APT-8 HOOKS	-----		
-----	-----		

11.

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 EXPLAINED 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 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

SEQ 0021

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 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.

```

1 /
2 /RKAE DRIVE CONTROL TEST
3 /
4 /MAINDEC=00-0HRKB=G=L
5 /
6 /COPYRIGHT (C) 1972, 1976 DIGITAL EQUIP. CORP.
7 /
8 /MAYNARD, MASS. 01750
9 /
10 0001 / FIELD 1
11 /
12 /CONSOL SRC =V2-00-CONSOLE PACKAGE
13 /
14 /THE PROGRAM SHOULD CHECK FOR A CONTROL CHARACTER FROM THE TERMINAL
15 /EVERY FIVE(5) SECONDS OR SOONER.
16 /
17 /LOCATIONS THAT NEED TO BE SET UP FOR USING THE CONSOLE PACKAGE.
18 /
19 /CNTVAL IN XCAPASS THIS LOCATION DETERMINES THE NUMBER OF
20 /PROGRAM COMPLETIONS THAT ARE NEEDED BEFORE THE PASS MESSAGE IS TYPED
21 /THE VALUE SHOULD PUT THE PASS MESSAGE OUT IN THE RANGE OF 1 TO 5 MINUTES.
22 /THIS SHOULD BE A POSITIVE NUMBER.
23 /
24 /CASTRY THIS IS FOUND IN CNTRL ROUTINE CONTROL R PART
25 /IT IS THE RETURN WHEN CONTROL R IS ENTERED (RESTART PROGRAM)
26 /THE RETURN JUMPS TO XDOSW WHICH CONTAINS CASTRY SO PUT THE LABEL CASTRY
27 /WHERE YOU WANT TO RESTART THE PROGRAM.
28 /
29 /
30 /SETUP1 IN XCERR THIS IS THE MASK BIT FOR HALT ON ERROR
31 /PLACE THE CORRECT BIT IN THIS LOCATION FOR HALTING ON ERRORS.
32 /
33 /SETUP2 IN XCAPASS THIS IS THE MASK FOR HALT A END OF PASS.
34 /
35 /THE CALL TABLE IS A CONDITIONAL ASSEMBLY.
36 /TO ASSEMBLE THE CALL REMOVE THE / BEFORE CONSOL=0.
37 /IN COMBINING THE CONSOL PACKAGE TO A DIAGNOSTIC.
38 /THE CALL TABLE IS TO BE AT THE BEGINNING OF A PROGRAM.
39 /
40 /
41 0000 CONSOL=0
42 6661 PSKF= 6661
43 6662 PCLF= 6662
44 6663 PSKE= 6663
45 6664 PSTB= 6664
46 6665 PSIE= 6665
47 6004 GTF= 6004
48 7701 ACL= 7701
49 6007 CAF= 6007
50 7421 MDL= 7421
51 7501 MQA= 7501
52 /
53 0020 *20
54 /
55 0020 0000 F1SWR, 0

```

```

56 0021 4000 F1OP1, 4000
57 0022 0000 F1OP2, 0
58 /
59 /FDFD CONSOL <
60 /
61 /
62 0024 *24
63 /
64 4424 C0PASS= JMS I .
65 0024 0000 XCAPAS . /C0 PASS COMPLETION ROUTINE
66 4425 C0CKSW= JMS I .
67 0025 0062 XCBSW . /CHECK SW REG SETTING
68 4426 C0TTVI= JMS I .
69 0026 0072 XC0TTY . /FETCH CONSOL CHAR
70 4427 C0CNTR= JMS I .
71 0027 0000 XC0CNT . /CHECK FOR CONTROL CHAR
72 4430 C0PRNT= JMS I .
73 0030 0303 XC0PNT . /C0 PRINT A BUFFER
74 4431 C0SWIT= JMS I .
75 0031 0656 XC0PSW . /SET UP PSEUDO SW. REG
76 4432 C0OCTA= JMS I .
77 0032 1000 XC0OCT . /CONVERT TO ASCII AND PRINT
78 4433 C0CRLF= JMS I .
79 0033 1023 XC0CRL . /DO A CARRIAGE RETURN+LINE FEED
80 4434 C0ECHO= JMS I .
81 0034 1063 XC0ECH . /CHECK INPUT CHAR
82 4435 C0TYPE= JMS I .
83 0035 1077 XC0TYP . /C0 PRINT ONE CHAR
84 4436 C0ERR= JMS I .
85 0036 1207 XC0ERR . /C0 ERROR HANDLER
86 4437 C0INQU= JMS I .
87 0037 0635 XC0INQ . /LOOK FOR OPERATOR INTERVENTION
88 4440 C0CKPA= JMS I .
89 0040 1041 XC0CKP . /CHECK IF CONTROL CHAR
90 4441 C0PAUS= JMS I .
91 0041 0337 XC0PAU . /IF CONSOL PACKAGE RETURN CALL PLUS ONE
92 / /IF NOT USING CONSOL REPLACE CALL WITH
93 / /A HLT AND THEN GO TO THE HALT
94 /
95 /*****
96 / *20 /PSEUDO SWITCH REGISTER
97 /
98 /
99 / *21 /HARDWARE INDICATORS
100 / /0000=USE FRONT PANEL SWITCH REGISTER
101 / /0000=USE THE PSEUDO SWITCH REGISTER LOC.20
102 /
103 / *22 /SYSTEM CONFIGURATION
104 / /0000=CONSOL PACKAGE SET ACTIVE
105 / /0000=CONSOL PACKAGE SET DEACTIVE
106 /
107 / *23 /RESERVED FOR FUTURE USE
108 /
109 /
110 0020 *200

```

```

111 /
112 /*****
113 /CSPASS
114 /THIS IS CALLED AT THE END OF EACH PROGRAM COMPLETION
115 /THE VALUE OF ** CNTVAL** WILL BE DETERMINED BY THE TIME IT TAKES
116 /THE PROGRAM TO COMPLETE THIS MANY CSPASS TO BE IN THE 1 TO 4 MINUTE
117 /RANGE
118 / CSPASS=JMS XCBPAS
119 /EX. OF CALL          CSPASS
120 /                    MLT
121 /                    JMP START1          /HALT IF NON CONSOL PACKAGE
122 /                                /CONTINUE RUNNING THIS PROGRAM
123
124 /RETURN TO LOCATION CALL PLUS ONE WITH THE AC=0 IF NON CONSOL PACKAGE AND MLT
125 /IF CONTINUE TO RUN THEN RETURN TO CALL PLUS2 AC=0
126 /THE LOCATION SETUP2 IS THE MASK BIT FOR THE HALT AT END OF PASS
127 /CHECK THAT IT IS CORRECT FOR THE CURRENT PROGRAM
128
129 /CALLS USED BY XCBPAS ARE  CHKCLA-XCBCLRF-XCBCTA-XCBSSW-XCBPNT-XCBIND-
130
131
132 XCBPAS, 0
133 0200 0200 CLA
134 0201 7200 JMS CHKCLA          /IS WORD 22 BIT 3 ACTIVE CONSOLE?
135 0202 4777 JMP DOPACK          /IS CLASSIC
136 0203 5212 JMS CBGET          /GET REGISTERS.
137 0204 4776 JMS XCBSSW         /DEACTIVE CONSOL CHECK SW SETTING
138 0205 4262 AND 4000          /FOR HALT ON END OF CSPASS
139 0207 7647 SZA CLA           /1= HALT 0 CONTINUE
140 0217 5600 JMP I XCBPAS       /GO TO HALT
141 0211 5230 JMP CBY1          /CONTINUE ON RUNNING PROGRAM
142 0212 4232 DOPACK, JMS CKCOUT /CLASS CHECK CSPASS COUNT
143 0213 5230 JMP CBY1          /CSPASS COUNT NOT DONE REED PROGRAM
144 0214 2250 ISZ PASCNT        /CSPASS COUNT DONE SET CSPASS COUNT
145 0215 4774 JMS XCBCLRF
146 0216 4303 JMS XCBPNT        /CBPNT BUFFER
147 0217 0253 MESPAS
148 0220 1250 TAD PASCNT        /GET NUMBER
149 0221 4773 JMS XCBCTA        /CONVERT IT TO ASCII
150 0222 4774 JMS XCBCLRF      /DO A CARRIAGE RETURN
151 0223 4776 JMS CBGET        /GET REGISTERS.
152 0224 4262 JMS XCBSSW       /CHECK A HALT AT END OF CSPASS
153 0225 0375 SETUP2, AND 4000 /MASK BIT
154 0226 7647 SZA CLA           /HALT 1= NO SKIP CONTINUE =0
155 0227 4772 JMS XCBIND        /STOP PROGRAM EXECUTION-LOOK FOR INPUT
156 0230 2200 CBY1, ISZ XCBPAS  /BUMP RETURN
157 0231 5600 JMP I XCBPAS
158 0232 0300 CKCOUT, 0
159 0233 1251 TAD DOSET        /CHECK IF SET UP NEEDED
160 0234 7640 SZA CLA           /0=SET UP CSPASS COUNT VALUE
161 /                                /1=CSPASS COUNT VALUE OK
162 0235 5242 JMP NOSET        /CSPASS COUNT VALUE OK
163 0236 1252 TAD CNTVAL        /GET COUNT VALUE FOR THIS PROG
164 0237 7740 CMA              /SET TO NEGATIVE
165 0240 3247 DCA DOCNT        /STORE IN HERE

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166 0241 2251 ISZ DOSET        /INDICATE VALUE SET UP
167 0242 2247 NOSET, ISZ DOCNT  /COUNT THE NUMBER OF PASSES
168 0243 5230 JMP CBY1          /EXIT FOR ANOTHER PASS
169 0244 3251 DCA DOSET        /SET TO CBPNT CSPASS
170 0245 2232 ISZ CKCOUT       /BUMP RETURN FOR
171 0246 5632 JMP I CKCOUT     /CSPASS CBTYPE OUT
172 0247 0000 DOCNT, 0
173 0250 0000 PASCNT, 0
174 0251 0200 DOSET, 0
175 0252 0000 CNTVAL, 0
176 0253 0410 MESPAS, TEXT "DMRKRF PASS "
177 0254 2213
178 0255 0206
179 0256 4040
180 0257 2001
181 0260 2323
182 0261 4000
183
184 /*****
185 /THIS ROUTINE CAN BE USED INPLACE OF A READ THE SWITCHES LAS.
186 /ROUTINE THAT WILL CHECK WHERE TO READ THE
187 /CA SWITCHES FROM IE. FROM PANEL OR PSEUDO SWITCH REGISTER
188 /THE SELECTION IS DETERMINED BY THE STATE OF BIT 0 IN LOCATION 21.
189
190 /CBCKSW= JMS XCBSSW
191 /EX. JMS XCBSSW          /READ THE CBSWIT REGISTER
192 /                                /RETURN WITH THE CONTENTS OF SWITCH REGISTER
193
194 /RETURN TO NEXT LOCATION FOLLOWING CALL WITH THE AC= TO VALUE OF CBSWIT SETTING
195
196 /CALLS USED ARE-XCBCKPA=
197
198
199 XCBSSW, 0
200 0262 0200 JMS XCBCKPA       /GO CHECK THE IF ANY CONTRL
201 0263 4771 NOP
202 0264 7200 TAD 21            /GET WD FOR INDICATOR
203 0265 1221 SPA CLA          /CHECK IF FROM PANEL 4000
204 0266 7712 TAD 7614        /ON LAS AND SKIP GET FROM PANEL WITH LAS
205 0267 7614 TAD 20
206 0270 1220 JMP I XCBSSW     /PSEUDO SWITCH
207 0271 5662 /EXIT WITH STATUS BIT IN AC.
208
209 /*****
210
211 /CATTYI
212 /THIS ROUTINE WILL LOOK FOR A INPUT FROM THE TERMINAL
213 /AND REMOVE ANY PARITY BITS, THEN MAKE IT A BIT ASCII.
214 /
215 CATTYI= JMS XCATTY

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```

215 /EX. JMS XC8TTYI /READ CHAR FROM THE CONSOL DEVICE
216 / / /RETURN TO CALL PLUS ONE AC CONTAINS THE CHAR
217
218
219 /CALLS USED -NONE-BUT C8CHAR IS OFF PAGE AND IN ROUTINE CALLED XC8RECH0
220
221 /
222 /
223 0272 0000 XC8TTY, 0
224 0273 6031 KSF /LOOK FOR KEYBOARD FLAG
225 0274 5273 JMP -1
226 0275 6036 KRR /GET CHAR
227 0276 0370 AND (177 /MASK FOR 7 BITS
228 0277 1367 TAD (200 /ADD THE EIGHTH BIT
229 0300 3766 DCA C8CHAR /STORE IT
230 0301 1766 TAD C8CHAR
231 0302 5672 JMP I XC8TTY /EXIT
232
233
234
235 /*****
236
237 /CBPRNT
238
239 /THIS ROUTINE WILL TYPE THE CONTENTS OF THE CA PRINT BUFFER, THE LOCATION
240 /OF THE BUFFER WILL BE IN THE ADDRS FOLLOWING THE CALL, PRINTING OF THE BUFFER
241 /WILL STOP WHEN A 00 CHAR IS DETECTED. CHARACTERS ARE PACKED 2 PER WORD.
242
243 / CBPRNT= JMS XC8PNT
244
245
246 /EX. JMS XC8PNT /CBPRNT THE CONTENTS OF THE FOLLOWING BUFFER
247 / HESS77 /LOCATION OF CBPRNT BUFFER
248
249 /CBPRNT WILL USE THE LOCATION FOLLOWING THE CALL AS THE POINTER FOR THE
250 /CBPRNT ROUTINE, RETURN TO CALL PLUS TWO WITH AC= 0
251
252 /CALLS USED ARE-XC8TYPE-XC8PNT
253
254
255
256 0303 0000 XC8PNT, 0
257 0304 7300 CLA CLL
258 0305 1703 TAD I XC8PNT /GET CBPRNT BUFFERS STARTING LOCATION
259 0306 3336 DCA PTSTOR /STORE IN PTSTOR
260 0307 2303 ISZ XC8PNT /BUMP RETURN
261 0310 1736 C8001, TAD I PTSTOR /GET DATA WORD
262 0311 0365 AND (7700 /MASK FOR LEFT BYTE
263 0312 7450 SNA /CHECK IF 00 TERMINATE
264 0313 5703 JMP I XC8PNT /EXIT
265 0314 7500 SMA /IS AC MINUS
266 0315 7020 CML /MAKE CHAR A 300 AFTER ROTATE
267 0316 7001 IAC /MAKE CHAR A 200 AFTER ROTATE
268 0317 7012 RTR
269 0320 7012 RTR

```

```

270 /PUT CHAR IN BITS 4-11 MAKE IT A BIT ASCII
271 0321 7012 RTR /CBPRNT IT ON CONSOLE
272 0322 4764 JMS XC8TYPE /GET DATA WORD
273 0323 1736 TAD I PTSTOR /MASK FOR RIGHT BYTE
274 0324 0363 AND (0077 /CHECK IF 00 TERMINATOR
275 0325 7450 SNA /EXIT
276 0326 5703 JMP I XC8PNT /EXIT
277 0327 1367 TAD (3740 /ADD FUDGE FACTOR TO DETERMINE IF 200
278 0328 7500 SMA /OR 300 IS TO BE ADD TO CHAR
279 0331 1361 TAD (100 /ADD 100
280 0332 1360 TAD (240 /AND 200
281 0333 4764 JMS XC8TYPE /CBTYPE ONLY BITS 4-11
282 0334 2336 ISZ PTSTOR /BUMP POINTER FOR NEXT WORD
283 0335 5310 JMP C8001 /DO AGAIN
284 0336 0000 PTSTOR, 0 /STOR FOR CBPRNT BUFFER
285
286 /*****
287
288 /C8PAUS
289 /THIS ROUTINE WILL CHECK IF THE CONSOL PACKAGE IS ACTIVE, IF ACTIVE
290 /IT WILL RETURN TO CALL PLUS ONE AC= 0, AND DO THAT INSTRUCTION.
291 /IF THE CONSOL PACKAGE IS NOT ACTIVE THE CALL WILL BE REPLACED
292 /WITH A 7402 HALT AND THEN RETURN TO THE HALT.
293
294 / C8PAUS= JMS XC8PAU
295 /
296 /EX. JMS XC8PAUS /CHECK IF ON ACTIVE CONSOL IF NOT HALT HERE
297 / ANYTHING /RETURN HERE IF ON ACTIVE CONSOL
298 /
299 /
300
301 /CALLS USED ARE -CHKCLA-
302
303
304
305 0337 0000 XC8PAU, 0
306 0340 7300 CLA CLL
307 0341 4777 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
308 0342 5350 JMP C8003 /GO ON CONSOL PART RETURN CALL+1
309 0343 7040 CMA /DEACTIVE CONSOLE PACKAGE PUT HLT IN CALL
310 0344 1337 TAD XC8PAU /GET CORRECT RETURN ADDR
311 0345 3337 DCA XC8PAU /SET UP RETURN
312 0346 1357 TAD (7402 /GET CODE FOR HLT
313 0347 3737 DCA I XC8PAU /PUT HLT IN CALL LOCATION
314 0350 5737 C8003, JMP I XC8PAU /GO TO HALT OR RETURN TO NEXT LOCATION
315
316
317 0357 7402
318 0360 0240
319 0361 0100
320 0362 3740
321 0363 0077
322 0364 1077
323 0365 7700
324 0366 1075

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325 0367 0200
326 0370 0177
327 0371 1041
328 0372 0634
329 0373 1000
330 0374 1023
331 0375 0400
332 0376 0624
333 0377 1000
334 0400
335
336
337
338
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357 0400 0200
358 0401 3777
359 0402 4776
360 0403 5206
361 0404 1777
362 0405 5600
363 0406 6004
364 0407 3775
365 0410 7501
366 0411 3774
367 0412 3255
368 0413 1257
369 0414 3256
370 0415 1656
371 0416 7450
372 0417 5226
373 0420 1773
374 0421 7650
375 0422 5243
376 0423 2255
377 0424 2256
378 0425 5215

PAGE
/*****

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

/EX. JMS XCBNTR /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=XCBTYPE=XCBRLF=CBGET=UPAROW=XCBTYI=XCBPSW=
/
/
/
XCBNTR, 0
DCA ACSAVE /SAVE THE AC
JMS CHKCLA /CHECK LOC. 22 BITS FOR CONSOLE BIT
JMP .+3 /ON ACTIVE CONSOLE
TAD ACSAVE /DEACTIVE CONSOLEGET AC FOR RETURN
JMP I XCBNTR /EXIT NOT ON ACTIVE CONSOLE

DCA FLSAVE
DCA MQSAVE /SAVE THE MQ
DCA INDEXA /SET DISPLACEMENT INTO TABLE R
TAD XTARLA /GET ADDR OF TABLE A
DCA GETDAT /CONTAINS POINTER TO CONTROL CHAR
TAD I GETDAT /GET CONTROL CHAR FROM TABLE
SNA /CHECK FOR A 0 END OF TABLE
JMP DONEA /END OF TABLE NO CONTROL CHAR
TAD CACHAR /COMPARE CHAR TO CONTROL CHAR
SNA CLA /0 IF MATCH
JMP GOITA /MATCH
ISZ INDFXA /NO MATCH NOT END OF TABLE REDO
TAD GETDAT /BUMP INDEX FOR EXIT WHEN CONTROL FOUND
JMP REDOA /BUMP GETDAT FOR COMPARE OF NEXT CNTRL CHAR.

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379 0426 1773
380 0427 7640
381 0430 5240
382 0431 1773
383 0432 4771
384 0433 1370
385 0434 4771
386 0435 4767
387 0436 2200
388 0437 5600
389 0440 2200
390 0441 1773
391 0442 5600
392 0443 1773
393 0444 1366
394 0445 3773
395 0446 1260
396 0447 1255
397 0450 3254
398 0451 1654
399 0452 3254
400 0453 5654
401 0454 0000
402 0455 0000
403 0456 0000
404 0457 0461
405 0460 0471
406 0461 7575
407 0462 7564
408 0463 7557
409 0464 7556
410 0465 7555
411 0466 7573
412 0467 7574
413 0470 0000
414
415 0471 0551
416 0472 0537
417 0473 0500
418 0474 0511
419 0475 0521
420 0476 0545
421 0477 0600
422
423
424
425
426
427
428 0500 3772
429 0501 1335
430 0502 7640
431 0503 5306
432 0504 4765
433 0505 5600

DONEA, TAD INMODE /CHECK IF PROGRAM EXPECTS CHAR
SZA CLA /1=CHAR EXPECTED 0= NO CHAR EXPECTED
JMP EXITA /CHAR EXPECTED
TAD CACHAR /GET CHAR -NOT CONTROL+NOT EXPECTED
JMS XCBTYPE /CAPRNT CHAR
TAD (277 /GET CODE FOR "?"
JMS XCBTYPE
JMS XCBRLF
TAD XCBNTR
JMP I XCBNTR /BUMP RETURN
ISZ XCBNTR /EXIT CALL+2
TAD CACHAR /BUMP RETURN FOR MAIN PROGRAM CHECK OF CHAR
JMP I XCBNTR /PUT CHAR IN AC.
GOITA, TAD CACHAR /EXIT
TAD (100 /GET THE CONTENTS OF CHAR
DCA CACHAR /ADD 100 TO FORM A GOOD ASCII CHARACTER
TAD XTARLA /RESTORE CORRECT CHAR
TAD INDEXA /GET START OF TABLE R
DCA GOTOA /GET NOW FAR INTO TABLE
TAD I GOTOA /STORE IT
DCA GOTOA /GET THE ROUTINE STARTING ADDRESS
JMP I GOTOA /STORE IT IN HERE
GOTOA, 0000 /GOTO CONTROL CHAR ROUTINE
INDEXA, 0000 /ADD OF CNTRL ROUTINE TO EXECUTE
GETDAT, 0000 /DISPLACEMENT INTO CNTRL TABLE
XTARLA, TARLA /LOCATION OF ADDR OF CONTROL CHAR.
XTARLB, TARLB /ADDRS OF TABLE A
TARLA, 7575 /ADDRS OF TABLE B
7564 /CNTRL C BACK TO MONITOR 203
7557 /CNTRL L SWITCH ERROR PRINTING DEVICE 214
7556 /CNTRL Q START DISPLAYING CHAR. AGAIN 221
7555 /CNTRL R BACK TO BEGINNING OF PROGRAM 222
7573 /CNTRL S STOP SENDING CHAR TO DISPLAY WAIT FOR CNTRL Q 223
7574 /CNTRL E CONTINUE WITH PROGRAM 205
0000 /CONTROL D CHANGE SWITCH REGISTER ON FLY

TARLB, CNTRL C
CNTRL L
CNTRL Q
CNTRL R
CNTRL S
CNTRL E
CNTRLO

/CONTROL D
/START SENDING CHAR. TO THE DISPLAY
/THIS WILL RETURN CONTROL TO CALL THAT WAS SET BY
/THE CALL FOR CONTROL S.
/
/
CNTRLO, DCA INMODE /SET SORT FLAG FOR UNEXPECTED CHAR
TAD CASETS /CHECK IF CONTROL S TYPED IN
SZA CLA
JMP HYRET0 /CONTROL S TYPED IN
JMS CBGET /NO CONTROL S TYPED PREVIOUSLY
JMP I XCBNTR /LEAVE VIA CNTR ENTRY ADDRESS

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434 0506 3335 RYRETR, DCA C8SET5 /CLEAR THE SOFT FLAG
435 0507 4765 JMS C8GET /RESTORE REGISTERS
436 0510 5736 JMP I C8RETR /EXIT TO ADDRESS SET BY CONTROL S
437 /
438 /
439 /CONTROL R
440 /GO TO THE QUESTION C8SWIT
441 0511 3764 CNTRLR, DCA TTYLPT /CLEAR THE TYPE FLAG SET TO TTY
442 0512 3335 DCA C8SET5 /CLEAR SOFT FLAG FOR CNTRL S
443 0513 3772 DCA INMODE
444 0514 4763 JMS UPAROW /PRINT THE * AND C8CHAR
445 0515 3762 C8BY4, DCA C8SWST /CLEAR FLAG FOR CNTRL D OR R
446 0516 6203 CDF C8F
447 0517 5720 JMP I X00SW /GO TO ADDR5 OF C8SWIT
448 0520 0200 X00SW, RGN /00SW IS LABEL FOR C8SWIT QUESTION
449 /
450 /
451 /CONTROL S
452 /STOP SENDING CHAR. TO DISPLAY UNTIL A "Q" IS RECEIVED
453 /
454 /
455 0521 1335 CNTRL5, TAD C8SET5 /IF1 DO NOT STORF IN C8RETR
456 0522 7640 SZA CLA
457 0523 5327 JMP C8D07 /DONT SET UP C8RETR
458 0524 7001 TAC /MAKE RETURN CALL PLUS 2
459 0525 1200 TAD XC8CNT /GET RETURN FOR THIS CALL
460 0526 3336 DCA C8RETR /STORE IT HERE FOR USE BE CNTRL Q
461 0527 2335 C8D07, ISZ C8SET5 /SET FLAG TO SAVE CALL
462 0530 4761 JMS XC8TTYI /LOOK FOR THE INPUT
463 0531 4765 JMS C8GET /GET REGISTERS
464 0532 4200 JMS XC8CNTR /CHECK FOR THE CONTROL CHAR
465 0533 7200 CLA
466 0534 5321 JMP CNTRL5 /IF NOT A CNTRL Q R C REASK
467 0535 0000 C8SET5, 0
468 0536 0000 C8RETR, 0
469 /
470 /SWITCH OUTPUT FROM ONE OUTPUT DEVICE TO ANOTHER -THE TWO OUTPUTS ARE THE
471 /CONSOLE AND THE PRINTER WITH DEVICE CODE 66.
472 /
473 /
474 0537 1764 CNTRL1, TAD TTYLPT /GET PRESENT C8SWIT INDICATOR
475 0540 7040 CMA /COMPLEMENT IT
476 0541 3764 DCA TTYLPT /STOR NEW C8SWIT
477 0542 4763 JMS UPAROW /CAPRNT * AND CHAR ON NEW DEVICE
478 0543 4765 JMS C8GET /RESTORE THE REGISTERS
479 0544 5600 JMP I XC8CNT /EXIT
480 /
481 /CONTROL E
482 /CONTINUE RUNNING FROM A INQUIRE OR ERROR
483 /
484 /
485 0545 4763 CNTRLE, JMS UPAROW /PRINT THE CONTROL CHAR
486 0546 3762 DCA C8SWST /CLEAR ENTRY FLAG.
487 0547 4765 JMS C8GET /GET THE REGISTERS
488 0550 5600 JMP I XC8CNT /RETURN TO CALL PLUS ONE

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489 /
490 /
491 /CONTROL C
492 /RETURN TO MONITOR CONTROL C
493 0551 3764 CNTRLC, DCA TTYLPT /CLEAR THE LPT FLAG TO PRINT ON DISPLAY
494 0552 3762 DCA C8SWST /CLEAR ENTRY FLAG.
495 0553 4763 JMS UPAROW /CAPRNT * AND LETTER IN CHAR
496 0554 6203 CDF C8F /GO TO 0 FLD
497 0555 6007 CAF /CLEAR THE WORLD
498 0556 5760 JMP I (7600) /GO TO DIAGNOSTIC MONITOR
499 /*****
500 /
501 /
502 /
503 0560 7600
504 0561 0272
505 0562 0745
506 0563 0615
507 0564 1121
508 0565 0624
509 0566 0100
510 0567 1023
511 0570 0277
512 0571 1077
513 0572 1076
514 0573 1075
515 0574 1346
516 0575 1347
517 0576 1200
518 0577 1345
519 0600
520 /
521 /CONTROL D
522 /CHANGE THE SWITCH REGISTER ANYTIME CNTRL D AND RETURN TO
523 /THE PROGRAM RUNNING.
524 /
525 /
526 0600 4215 CNTRLD, JMS UPAROW
527 0601 1213 TAD C8SETD /CHECK IF THE RETURN ADDR5 IS SAFE
528 0602 7640 SZA CLA
529 0603 5207 JMP C8D011 /DO NOT CHANGE THE RETURN ADDR5
530 0604 1777 TAD XC8CNT /GET THE RETURN ADDR5 AND SAVE IT
531 0605 3214 DCA C8RETD /SAVE THE RETURN HERE
532 0606 2213 ISZ C8SETD /INDICATE RETURN SAVED DONT DESTROY
533 0607 4256 C8D011, JMS XC8PSW /GO CHANGE THE SWITCH REGISTER
534 0610 3213 DCA C8SETD /CLEAR THE FLAG
535 0611 4224 JMS C8GET /RESTORE THE AC MQ LINK ETC
536 0612 5614 JMP I C8RETD /RETURN TO THE PROGRAM
537 /
538 0613 0000 C8SETD, 0
539 0614 0000 C8RETD, 0
540 /
541 /
542 /

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543 /THIS WILL TYPE A UP ARROW AND THE CHAR IN C8CHAR.
544
545 0615 0000 UPAROW, 0 /CBPNT THE "*" AND THE CHAR C8TYPED IN
546 0616 1376 TAD (336 /CODE FOR "
547 0617 4775 JMS XC8TYPE /C8TYPE THE CHAR
548 0620 1774 TAD C8CHAR
549 0621 4775 JMS XC8TYPE
550 0622 4773 JMS XC8CRLF
551 0623 5615 JMP I UPAROW /EXIT
552
553
554
555 /*****
556
557 0624 0000 C8GET, 0
558 0625 7200 CLA
559 0626 1772 TAD MQSAVE
560 0627 7421 MQL /RESTORE MQ
561 0630 1771 TAD FLSAVE
562 0631 7004 RAL /RESTORE THE LINK
563 0632 7200 CLA
564 0633 1770 TAD ACSAVE /RESTORE THE AC
565 0634 5624 JMP I C8GET /GET THE REGISTERS
566
567
568
569 /*****
570
571 /CBINQU
572 /CBINQU ROUTINE WILL PRINT A WAITING
573 /AND THE PROGRAM IS EXPECTING A CONTROL CHAR INPUT
574 /IF CONTINUE FROM CONTROL CHAR RETURN IS CALL PLUS ONE
575 /IF NO CONTROL CHAR ENTERED THEN WAITING IS REPRINTED
576 /AND PROGRAM WAITS FOR A CONTROL CHAR AGAIN.
577
578 / CBINQU = JMS XC8ING
579
580 /EX. JMS XC8ING /CB WILL PRINT A WAITINGAND WAIT FOR INPUT
581 / DO ANYTHING /RETURN IS CALL PLUS ONE AC =0 CONTINUE
582
583 /CALLS USED ARE -CHKCLA-XCAPNT-XC8TYI-C8GET-XC8CNTR-
584
585
586 0635 0000 XC8ING, 0
587 0636 7300 CLA CLL
588 0637 4767 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
589 0640 7410 SKP /ACTIVE CONSOLE PACKAGE
590 0641 5635 JMP I XC8ING /NOT CONSOLE LEAVE
591 0642 4766 JMS XC8PNT
592 0643 0651 WATMES /INQUIR WAITTING
593 0644 4765 JMS XC8TYI /GET CHARACTER
594 0645 4224 JMS C8GET
595 0646 4777 JMS XC8CNTR /CHECK IF CONTROL CHARACTER
596 0647 5635 JMP I XC8ING /EXIT AND CONTINUE
597 0650 5236 JMP XC8ING+1 /REASK

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598 0651 2701 WATMES, TEXT "WAITING "
599 0652 1124
600 0653 1116
601 0654 0740
602 0655 0000
603
604
605 /*****
606
607 /C8SWIT
608 /ROUTINE WILL CHECK IF CONSOL IS ACTIVE IF IT IS ACTIVE DISPLAY
609 /SW QUESTION . IN NOT ACTIVE IT WILL NOT PRINT THE SW QUESTION BUT
610 /RETURN TO CALL PLUS ONE AC=0.
611 /C8SWIT WILL SET UP THE PSEUDO SWITCH
612 /REGISTER WITH THE NEW DATA ENTERED
613 /
614 / C8SWIT = JMS XC8PSW
615
616 /EX. JMS XC8PSW /SET UP PSEUDO C8SWIT REGISTER IF
617 /ON THE CONSOL PACKAGE. RETURN IS CALL PLUS ONE AC = 0
618
619 /CALLS USED ARE -CHKCLA-XCAPSW-XCAPNT-XC8OCTA-XC8TYPE-
620
621
622 0656 0000 XC8PSW, 0
623 0657 4767 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
624 0660 7410 SKP /ACTIVE CONSOLE
625 0661 5656 JMP I XC8PSW /DEACTIVE CONSOLE PACKAGE
626
627 0662 1345 TAD C8SWST /RETURN WITHOUT ASKING PSEUDO SWITCH
628 0663 7640 SZA CLA /IS THE SW FLAG SET FOR SWITCH?
629 0664 5764 JMS C8BY4 /SKIP IF ONE ENTRY AT A TIME OK
630 0665 2345 ISZ C8SWST /SECOND ENTRY WITH OUT A EXIT GO TO SW QUESTION
631 0666 4766 JMS XC8PNT /FIRST ENTRY SET FLAG
632 0667 0747 MESA /CBPNT SR=
633 0670 1020 TAD 20 /GET CONTENTS OF SW
634 0671 4763 JMS XC8OCTA /CONVERT IT TO ASCII
635 0672 1362 TAD (40 /GET SPACE
636 0673 4775 JMS XC8TYPE
637 0674 2761 ISZ INMODE /SET FLAG FOR CHAR EXECTED
638 0675 4760 JMS XC8ECHO /LOOK FOR INPUT
639 0676 4315 JMS TSTCHA /NOT CONTROL TEST IT IS LEGAL
640 0677 1774 TAD C8CHAR /STORE NEW CHAR IN SW REG
641 0700 3020 DCA 20
642
643 0701 1357 TAD (-3 /GET A MINUS 3
644 0702 3346 DCA THPCNT /STORE IN TEMP COUNT
645 0703 4760 JMS XC8ECHO /GET NEXT CHAR
646 0704 4315 JMS TSTCHA /CHECK IF CR+GOOD CHAR
647 0705 1020 TAD 20 /GET C8SWIT REGISTER
648 0706 7106 RTL CLL /ROTATE IT LEFT 3 PLACES
649 0707 7004 RAL
650 0710 1774 TAD C8CHAR /GET CHAR+ADD IT TO PREVIOUS CONTENTS
651 0711 3020 DCA 20 /SAVE NEW CONTENTS

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649 0712 2346 TSZ THPCNT /BUMP COUNT
650 0713 5303 JMP GETCH1 /JMP BACK+GET NEXT CHAR
651 0714 5342 JMP ENDTT /END 4 CHAR CATTYPED IN
652 0715 0000 TSTCHA, 0
653 0716 7041 CTA /CNPL CHAR IN AC
654 0717 1356 TAD (215 /TEST IF IT IS A CARRIAGE RETURN
655 0720 7650 SNA CLA /SKIP IN NOT CR,
656 0721 5342 JMP ENDTT /WAS CARRIAGE RETURN
657 0722 1774 TAD CACHAR /NOT CR, GET CHAR
658 0723 1355 TAD (-260 /CHECK IF IT IS IN RANGE
659 0724 7710 SPA CLA /IF NOT POSITIVE CAERR CHAR SMALLER THEN 260
660 0725 5336 JMP ERR1 /CAERR -CHAR TOO SMALL
661 0726 1774 TAD CACHAR /GET CHAR
662 0727 1354 TAD (-270 /GET A -270+CHECK IF IT IS LARGER THEN 7
663 0728 7720 SNA CLA /SKIP IF LESS THEN 7
664 0731 5336 JMP ERR1 /CAERR ON CHAR NOT IN RANGE
665 0732 1774 TAD CACHAR /GET CHAR
666 0733 2353 AND (7 /MASK FOR RIGHT BYTE
667 0734 3774 DCA CACHAR /STORE IN CHAR
668 /GET CHAR IN AC
669 0735 5715 JMP I TSTCHA /EXIT
670 0736 1352 ERR1, TAD (277 /CAPRNT
671 0737 4775 JMS XCATYPE /?
672 0740 4773 JMS XCACRLF /
673 0741 5266 JMP CARPS /EXIT+ASK AGAIN
674 0742 4773 ENDTT, JMS XCACRLF /DO A CR LF
675 0743 3345 DCA CRSWST /CLEAR THE PSW ENTRY FLAG
676 0744 5656 JMP I CARPSW /EXIT ROUTINE
677 0745 0000 CARSWST, 0
678
679 0746 0000 THPCNT, 0
680 0747 2322 MESA, TEXT "SR= "
681 0750 7540
682 0751 0000

681
682
683 0752 0277
684 0753 0207
685 0754 7510
686 0755 7520
687 0756 0215
688 0757 7775
689 0760 1263
690 0761 1076
691 0762 0040
692 0763 1200
693 0764 0515
694 0765 0272
695 0766 0303
696 0767 1200
697 0770 1345
698 0771 1347
699 0772 1346
700 0773 1023
701 0774 1275

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702 0775 1077
703 0776 0336
704 0777 0400
705 1000
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PAGE

/CROCTA

/OCTAL TO ASCII CONVERSION
/THIS ROUTINE WILL TAKE THE OCTAL NUMBER IN THE AC AND CONVERT IT TO ASCII
/THE RESULT WILL BE PRINTED ON THE CONSOL TERMINAL
/ CROCTA= JMS XCROCT
/
/EX, JMS XCROCTA /AC CONTAINS NUMBER TO BE CHANGE
/ RETURN IS TO CALL PLUS ONE AC=0
/
/CALLS USED ARE -XCATYPE=

XCROCT, 0
CLL RTL
RTL
DCA CATMP1 /POSITION THE FIRST CHAR FOR PRINTING
TAD (-4 /SAVE CORRECT POSITIONED WORD HERE
DCA CACKP /STORE COUNTER IN HERE
TAD CATMP1 /GET FIRST NUMBER
AND (0007 /MASK
TAD (260 /ADD THE PRINT CONSTANT
JMS XCATYPE /TYPE THE NUMBER
TAD CATMP1 /
RTL
RAL /PUT NEXT NUMBER IN POSITION
DCA CATMP1 /STORE IT
TSZ CACKP /DONE YET WITH FOUR NUMBERS
JMP CROCT /NOT YET DO MORE
JMP I XCROCT /DONE WITH FOUR
CATMP1, 2
CACKP, 0

/*****
/CACRLF
/CATYPE CR AND LF WITH FILLERS FOLLOWING EACH LF AND CR
/
/ CACRLF= JMS XCACRLF
/
/EX, JMS XCACRLF /CAPRNT A CR AND LF WITH FILL
/ /RETURN TO CALL PLUS ONE AC =0
/CALLS USED ARE -XCATYPE=

XCACRLF, 0
CLA CLL
TAD (215 /GET CODE FOR CR
JMS XCATYPE

```

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756 1227 1237 TAD FILLER
757 1230 7240 CMA
758 1231 5240 DCA FILCNT /STORE FILLER IN WFRF
759 1232 1373 TAD /GET CODE FOR LF
760 1233 4277 CADDP, JMS XCRTYPE
761 1234 2240 ISZ /CHECK ON FILLER CHAR
762 1235 5233 JMP CADDP /TYPE A NON PRINTING CHAR
763 1236 5623 JMP CADDP /EXIT
764 1237 0204 FILLER, 0004 /FILLER SET FOR 4 CHAR
765 1240 0200 FILCNT, 0 /COUNTER FOR FILL
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//*****
 /CACKPA
 /THIS ROUTINE WILL CHECK IF A CHARACTER WAS ENTERED FROM THE
 /TERMINAL. IF THE FLAG IS SET AND THE CONSOLE PACKAGE IS
 /ACTIVE A CHECK IS MADE TO DETERMINE IF IT IS A CONTROL CHAR.
 /IF IT WAS A CONTROL CHAR THEN ITS CONTROL FUNCTION IS PERFORMED.
 /IF NOT A CONTROL CHARACTER OR A CONTROL E-D-L-O-IT WILL DO
 /THE CONTROL FUNCTION AND RETURN TO CALL PLUS 2.
 /A NON CONTROL CHARACTER WILL BE PRINTED AND A "2" IT WILL RETURN TO
 /CALL PLUS 2.
 /IF NO FLAG IS SET OF THE CONSOLE IS NOT ACTIVE THE RETURN IS TO
 /CALL PLUS 1.

```

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

```

/CALLS USED ARE -XCRTYPE-XCENR-CGET-

```

XCCKMP, 0
DCA ACSAVE /SAVE THE AC
GTF /SAVE THE FLAGS
DCA FLSAVE /SAVE THE FLAGS
MOA /PUT MO IN AC
DCA MOSAVE /SAVE THE MO
KSF /CHECK THE KEYBOARD FLAG
JMP CARY3 /EXIT TO CALL PLUS 1
JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
SKP /ACTIVE CONSOLE PACKAGE
JMP CARY3 /EXIT TO CALL PLUS 1
JMS XCRTYPE /GET THE CHAR
JMS CGET /GET THE FLAGS
JMS XCENR /CHECK IF CONTROL CHAR.
NOP /RETURN IF A CONTINUE CHAR.
ISZ /JUMP RETURN FOR CALL PLUS 2
CARY3, JMS CGET /GET REGISTERS

```

```

811 1262 5641 JMP I XCCKMP /SAY GOOD BY
812
813
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//*****
 /CBECHO
 /THIS ROUTINE WILL LOOK FOR A CHAR FROM THE KEYBOARD. STORE IT IN LOCATION CHAR
 /CHECK IF IT WAS A CONTROL CHARACTER -SET INMODE -PRINT CHARACTER

```

/ CBECHO = JMS XCBECH
/EX. JMS XCBECH /LOOK FOR CONSOLE CHAR CAPRINT IT
/RETURN CALL PLUS ONE AC = CHAR CAPTYPED IN

```

/CALLS USED ARE -XCRTYPE-XCENR-CGET-XCBECH-XCRTYPE

```

XCBECH, 0
JMS XCRTYPE /WAIT FOR CHAR FROM KEYBOARD
JMS CGET /RESTORE THE REGISTERS
ISZ INMODE /SET INMODE IDENTIFYING THIS AS A EXPECTED CHAR
JMS XCENR /GO CHECK IF IT IS A CONTROL CHAR
JMP I XCBECH /WAS A CONTROL CHAR -CONTINUE RUNNING
JMS XCRTYPE /NOT A CONTROL CHAR CAPRINT IT
DCA INMODE /CLEAR FLAG THAT CHAR EXPECTED
TAD CACHAR /GET CHAR IN AC
JMP I XCBECH /EXIT
CACHAR, 0
INMODE, 0

```

//*****
 /CBTYPE
 /THIS ROUTINE WILL CAPRINT ON THE CONSOLE OR THE LPT WITH DEVICE CODE 64.

```

/ CBTYPE JMS XCRTYPE
/EX. JMS XCRTYPE /CAPRINT THE CHAR IN THE AC.
/ /RETURN CALL PLUS ONE AC =0000
/ /DO NOT CLEAR THE LINK IN THIS ROUTINE NEEDED BYCBOCT

```

/CALLS USED ARE -CBWANG-XCENR-XCAPNT-XCENR-XCAPNTQU-

```

XCRTYP, 0
DCA PNTRUF /STORE CHAR
TAD ITYLP /CHECK CBTTY 7777=LPT
STA CLA /DO OUT PUT ON LPT
JMP PNTRUF
TAD PNTRUF
TAS
JMP .-1
TAS
JMP CARY5
TAD PNTRUF /GET CHAR
PSTR PCLF /CAPRINT IT

```

```

866 1114 4322 JMS CRHANG /CHECK KEYBOARD IF HUNG
867 1115 4662 PCLE /CLEAR THE FLAG
868 1116 7600 CARRY, 7600 /CLEAR THE AC
869 1117 5677 JMP I XCATVP /EXIT
870 1120 2220 PNTRUF, 0
871 1121 2220 TTYLPT, 0
A72
A73
874 1122 2220 CRHANG, 0
875 1123 7220 CLA /GET CONSTANT 7600
876 1124 1316 TAD CRYS /PNTRUF IS NOW A COUNTER
877 1125 3320 DCA PNTRUF /SKIP ON PRINTER DONE
878 1126 4441 PSKE /NOT DONE YET
879 1127 7410 SKP /SAW FLAG DONE
880 1132 5722 JMP I CRHANG /FIRST COUNTER FAST ONE
881 1131 2315 TS7 CRCONT /CHECK IF FLAG SET YET
882 1132 5124 LMD =4 /MAKE 4096 COUNTS ON FAST COUNTER
883 1133 2320 TS7 PNTRUF /KEEP IT UP FOR 5 SEC
884 1134 5331 JMP =3 /GET THE RETURN ADDRESS IN CONTROL
885 1135 1740 TAD XCRNTR /SAVE IT IN HANG
886 1136 3322 DCA CRHANG /ALLOW PRINTING ON TTY
887 1137 3321 DCA TTYLPT
888 1140 4763 JMS XCRPNT
889 1141 1146 MESHANG /LPT ERROR
890 1142 4223 JMS XCRCLF
891 1143 4762 JMS XCRINQU /PRINT WAITING
892 1144 5722 JMP I CRHANG /CONTINUE TO SAVE ADDRESS
893 1145 2220 CRCONT, 0 /COUNTER FOR TIME
894 1146 1420 MESHANG,TEXT "LPT ERROR"
1147 2440
1150 2522
1151 2217
1152 2240
895
896 1162 2635
897 1163 2323
898 1164 2420
899 1165 2624
900 1166 2272
901 1167 1280
902 1170 1346
903 1171 1347
904 1172 1345
905 1173 2212
906 1174 2215
907 1175 2262
908 1176 2227
909 1177 7774

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PAGE

/*****

/THIS ROUTINE WILL CHECK LOCATION 22 THE HARD WARE CONFIG WORD.
 /TO SEE IF THE CONSOLE BIT 3 (400) IS SET IF SET THEN RETURN
 /TO CALL PLUS TWO FOR A ACTIVE CONSOLE PACKAGE AC=0

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916 /IF NOT SET THEN TO CALL PLUS ONE FOR A DEACTIVE CONSOLE PACKAGE.
917
918
919 1202 2220 CHKCLA, 0
920 1201 7220 CLA
921 1202 1222 TAD 22 /GET THE CONTENT OF LOCATION 22
922 1203 2377 AND 400 /MASK FOR BIT 3 (400)
923 1204 7650 SNA CLA /
924 1205 2220 TS7 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 /CBERR
930 /THIS ROUTINE WILL DETERMINE WHAT TO DO WHEN A CBERR IS ENCOUNTERED
931 /WILL CHECK IF CLASSIC SYSTEM, WILL CHECK CRRWIT REGISTERS.
932 / CBERR= JMS XCBERR
933 /EX. JMS XCBERR /GO TO CBERR CALL IF NOT CONSOLE
934 /RETURN IS CALL PLUS ONE AC =0000
935
936 /CALLS USED ARE -CHKCLA-XCRCLF-XCRSW-XCRINQU-XCRPNT-XCROCTA=
937
938
939 1207 2220 XCBERR, 0
940 1210 6322 IOF
941 1211 3345 DCA ACSAVE /SAVE AC
942 1212 6000 GTF /
943 1213 3347 DCA FLSAVE /SAVE THE FLAGS
944 1214 7521 MDA /
945 1215 3346 DCA MDSAVE /SAVE THE M0
946 1216 7340 CLA CLL CMA /SUBTRACT A 1 FOR TRUE LOCATION
947 1217 1227 TAD XCBERR /GET RETURN LOCATION
948 1223 3344 DCA PCSAVE /SAVE ADDR OF CBERR CALL
949 1221 6221 CDF /
950 1222 7347 CLA CLL CMA /GET REAL PC.
951 1223 1776 TAD I (CLASTK) /SAVE IT.
952 1224 3316 DCA REALPC
953 1225 6211 CDF 12
954 1226 4220 JMS CHKCLA /CHECK LOC.22 BIT 3 CONSOLE BIT
955 1227 7412 SKP /ACTIVE CONSOLE PACKAGE
956 1231 5279 JMP NOTCLAS /NOT CLASSIC SYSTEM
957 1231 4775 JMS CRGFT /GET REGISTERS.
958 1232 4774 JMS XCRSW /CHECK SWITCH REG FOR BIT THAT INDICATES
959 /AN ERROR MESSAGE
960 1233 2373 SKTRP1, 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 S74 CLA /SKIP IF BIT IS 0 PRINT ERROR MESSAGE
964 1235 5242 JMP CADDID /DO NOT PRINT
965 1236 4772 JMS XCRCLF
966 1237 4771 JMS XCRPNT
967 1240 1322 FORMES /PRINT THE ERROR MESSAGE
968 1241 4771 JMS XCRPNT
969 1242 1337 MERPE /PRINT THE PC STATEMENT
970 1243 1316 TAD REALPC /GET PC

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/ PAL10 V142A 15-APR-76 13124 PAGE 1-18
971 1244 4770 JMS XCBNCTA /CONVERT 4 DIGIT PC TO ASCII
972 1245 4771 JMS XCBPNT
973 1246 1333 MESAC /PRINT THE AC MESS
974 1247 1345 TAD ACSAVE
975 1250 4770 JMS XCBNCTA
976 1251 4771 JMS XCBPNT
977 1252 1336 MESMQ /PRINT MQ
978 1253 1346 TAD MOSAVE
979 1254 4770 JMS XCBNCTA
980 1255 4771 JMS XCBPNT
981 1256 1341 MESFL /PRINT FL
982 1257 1347 TAD FLSAVE
983 1260 4770 JMS XCBNCTA
984 1261 4772 JMS XCBPNT
985 1262 4775 CBBNIO, JMS CBGET /GET REGISTERS.
986 1263 4774 JMS CBSSW /CHECK SWITCH REGISTER
987 1264 7610 SKP CLA /SKIP IF BIT 0 SET
988 1265 5320 JMP CBRYD /LEAVE
989 1266 4767 JMS XCBIND /GO TO THE INQUIRE ROUTINE
990 1267 5300 JMP CBRYD /LEAVE
991 1270 4775 NTCLAS, JMS CBGET /GET REGISTERS.
992 1271 4774 JMS CBSSW /CHECK PSFUDN SWITCH REGISTER
993 / /CHECK THE CBSSW REGISTER
994 1272 7610 SKP CLA /SKIP IF HALT
995 1273 5607 JMP I XCBERR /NO HALT CONTINUE
996 1274 1366 TAD (7400) /CODE FOR HLT
997 1275 3744 DCA I PCSAVE /PUT IT IN CALL LOC.
998 1276 4775 JMS CBGET
999 1277 5744 JMP I PCSAVE /EXIT TO CALL AND HALT
1000 1300 4775 CAHYP, JMS CBGET /GET THE REGISTERS
1001 1321 5607 JMP I XCBERR
1002 /
1003 /
1004 1302 7400 ROUTNS, HLT /PUT INSTRUCTION TO EXECUTE HERE.
1005 1303 7200 NOP
1006 1304 3317 DCA MYAC /SAVE AC
1007 1305 6201 CNF 0
1008 1306 1020 TAD SWR
1009 1307 3765 DCA I (SWR)
1010 1310 1776 TAD I (CLASIK)
1011 1311 3315 DCA CLRTRN
1012 1312 1317 TAD MYAC
1013 1313 6202 CIF 0
1014 1314 5715 JMP I CLRTRN /RETURN TO FIELD 0.
1015 /
1016 1315 0000 CLRTRN, 0
1017 1316 0000 REALPC, 0
1018 1317 0000 MYAC, 0
1019 /
1020 1320 0410 FORMES, TEXT "DMPKRF FAILED "
1021 1321 0213
1022 1322 0206
1023 1323 4040
1024 1324 0601
1025 1325 1114

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SEQ 0040

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/ PAL12 V142A 15-APR-76 13124 PAGE 1-19
1021 1326 0504
1022 1327 4000
1023 1330 4040 MESPC, TEXT " PC:"
1024 1331 2203
1025 1332 7200
1026 1333 4040 MESAC, TEXT " AC:"
1027 1334 2103
1028 1335 7200
1029 1336 4040 MESMQ, TEXT " MQ:"
1030 1337 1521
1031 1340 7200
1032 1341 4040 MESFL, TEXT " FL:"
1033 1342 0614
1034 1343 7200
1035 1344 7777 PCSAVE, 7777
1036 1345 7777 ACSAVE, 7777
1037 1346 7777 MOSAVE, 7777
1038 1347 7777 FLSAVE, 7777
1039 /
1040 /
1041 1365 0020
1042 1366 7400
1043 1367 4635
1044 1370 1000
1045 1371 0303
1046 1372 1023
1047 1373 0020
1048 1374 0262
1049 1375 0524
1050 1376 5122
1051 1377 2400
1052 2020

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SEQ 0041

FIELD 2

0000 00000000 00000000 11111111 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 11111111 10000001 11111111

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

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

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

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

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

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1242 /
1243 /NOTE: LOCATION 0 WILL CONTAIN THE REVISION
1244 /LEVEL (IN ASCII) ON PROGRAM LOAD.
1245 /
1246 /
1247 /ALL KNOWN HALTS
1248 /
1249 1400 4761 ERHLT1 /UNDEFINED INTERRUPT
1250 1401 5576 ERHLT2 /SKIP TRAP FOR DCLR
1251 1402 6173 ERHLT3 /SKIP TRAP FOR DLAG
1252 1403 4776 ERHLT4 /SKIP TRAP FOR DLCA
1253 1404 5161 ERHLT5 /SKIP TRAP FOR DRST
1254 1405 6556 ERHLT6 /SKIP TRAP FOR DLDC
1255 1406 4136 ERHLT7 /SKIP TRAP FOR DMAN
1256 1407 5344 ERHLT7 /THE RECOVERABLE ERROR HALT
1257 1410 4417 STPHLT /PROGRAM STOP OR HALT FROM SWR4=1
1258 1411 6625 DMNHLT /INT CHANGE HALT
1259 1412 2734 NPHLT1 /HALT FOR "CHECK WRITE PROTECT"
1260 1413 2776 NPHLT2 /HALT FOR "CHECK WRITE PROTECT"
1261 1414 5073 APLHT1 /HALT FOR "CHECK WRITE PROTECT"
1262 1415 4122 ENDNHLT /END OF TEST HALT FROM SWR4=1
1263 1416 4021 MENDHLT /FROM ALIGNMENT SURTEST
1264 /
1265 /BUFFER LOCATION INFORMATION
1266 /
1267 1417 7177 WRKRUF /START OF PROGRAM DATA BUFFER
1268 1420 7576 ENDRUF /END OF PROGRAM DATA BUFFER
1269 1421 7177 HITRK /DISK ADDRESS WORD IF BUFFER
1270 1422 7220 LDRBK /DISK ADDRESS WORD IN BUFFER
1271 1423 7577 STPCHK /BUFFER+1 "BREAK STOP CHECK" "1234"
1272 /
1273 6741 /SKIP ON TRANSFER DONE OR ERROR
1274 6742 /CLEAR DISK CONTROL LOGIC
1275 6743 /LOAD ADDRESS AND GO
1276 6744 /LOAD CURRENT ADDRESS
1277 6745 /READ STATUS REGISTER
1278 6746 /LOAD COMMAND REGISTER
1279 6747 /LOAD MAINTENANCE
1280 7346 /-X CONSTANT
1281 /
1282 4406 /XSKOUT=JMS I XNDUT
1283 4407 /XSKIN=JMS I XNDIN
1284 4423 /XNADD=JMS I XRNAD
1285 4425 /XECAL=JMS I XRESTR
1286 4424 /XSEFX=JMS I XONLY
1287 4426 /XDISGO=JMS I XDISKG
1288 4427 /XWFCMK=JMS I XWFCMK
1289 4432 /XILRUF=JMS I XKLRF
1290 4431 /XILHUF=JMS I XFLRUF
1291 4434 /XWATISZ=JMS I XWTISZ
1292 4433 /XSKPAT=JMS I XSKPAT
1293 4430 /XFIGURE=JMS I XFIGURE
1294 4437 /XERROR=JMS I XERRR
1295 4440 /XERROR=JMS I XERRR
1296 4441 /XONWAT=JMS I XIDNWT

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1097 4442 /XCOMP1=JMS I XCOMP1
1098 4443 /XCOMP2=JMS I XCOMP2
1099 4444 /XRSTAT=JMS I XRSTAT
1100 4445 /XRCHD=JMS I XRCHD
1101 4446 /XRADD=JMS I XRADD
1102 4452 /XRADD=JMS I XRADD
1103 4447 /XSKSKP=JMS I XSKSKP
1104 4450 /XRCHD=JMS I XRCHD
1105 4451 /XRCHD=JMS I XRCHD
1106 4453 /XRALL=JMS I XRALL
1107 4454 /XRCHD=JMS I XRCHD
1108 4455 /XRMAN=JMS I XRMAN
1109 4456 /XRCHD=JMS I XRCHD
1110 4457 /XRCHD=JMS I XRCHD
1111 4460 /XRCHD=JMS I XRCHD
1112 4461 /XRCHD=JMS I XRCHD
1113 4466 /XRCHD=JMS I XRCHD
1114 4462 /XRCHD=JMS I XRCHD
1115 4465 /XRCHD=JMS I XRCHD
1116 4464 /XRCHD=JMS I XRCHD
1117 4530 /XRCHD=JMS I XRCHD
1118 /
1119 0000 0000 /
1120 0000 0000 /
1121 0000 0000 /REVISION "G"
1122 0001 5001 /
1123 0002 0002 /
1124 0003 0003 /
1125 /
1126 0004 5075 /XLAS, MYLAS
1127 0005 5172 /XCLAS, CLASIX
1128 0006 5553 /XNDUT, DNDUT
1129 0007 4530 /XNDIN, DNDIN
1130 /
1131 0010 /
1132 /
1133 0010 0000 /XNDUT, 0
1134 /
1135 0011 0010 /XNDUT, 0010
1136 0012 0020 /XNDUT, 0020
1137 0013 0040 /XNDUT, 0040
1138 0014 0100 /XNDUT, 0100
1139 0015 0200 /XNDUT, 0200
1140 0016 0400 /XNDUT, 0400
1141 0017 1000 /XNDUT, 1000
1142 /
1143 0020 /
1144 /
1145 0020 0000 /SWITCH REGISTER,
1146 0021 4000 /CONTROL WORD 1
1147 0022 0000 /CONTROL WORD 2
1148 /
1149 0023 6321 /XPNAD, RNAD
1150 0024 6215 /XONLY, ONLY
1151 0025 6200 /XPESTR, PESTR

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1152	0026	5600	XDISK, DISK
1153	0027	6441	XHCHK, HCHK
1154	0030	5656	XFGURE, FGURE
1155	0031	5447	XFLRUF, FLRUF
1156	0032	5435	XKLRUF, KLRUF
1157	0033	5134	XSKWAT, SKWAT
1158	0034	4200	XWTSZ, WTSZ
1159	0035	0222	XHSFLD, PRSFLD
1160	0036	6151	XPRINT, PRINT
1161	0037	6400	XNERR, NERR
1162	0047	5200	XFRRO, FRRO
1163	0041	4727	XTONWT, TONWT
1164	0042	4557	XCOMP1, COMP1
1165	0043	3622	XCOMP2, COMP2
1166	0044	5154	XROST, ROST
1167	0045	5412	XROCM, ROCM
1168	0046	4140	XROAD, ROAD
1169	0047	1120	XSOCP, SOCP
1170	0050	6500	XLOCM, LOCM
1171	0051	4765	XLOCA, LOCA
1172	0052	4164	XLOAD, LOAD
1173	0053	5571	XCLOR, CLOR
1174	0054	6200	XWOCR, WOCR
1175	0055	4131	XLDWN, LDWN
1176	0056	5400	XORAF, ORAF
1177	0057	6111	XPRN, PRN
1178	0060	6265	XFRCT, FRCT
1179	0061	6736	XTOCT, TOCT
1180	0062	6253	XORLP, ORLP
1181	0063	7220	XLOTRK, LOTRK
1182	0064	7177	XHTRK, HTRK
1183	0065	4500	CYL450, 4500
1184	0066	4520	TRK212, 4520
1185	0067	7177	RGNAUF, WRKUF
1186	0070	0000	DRVNAV, 0
1187	0071	0000	DRVNT, 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	0078	0006	K0006, 0006
1195	0079	0007	K0007, 0007
1196	0080	1234	K1234, 1234
1197	0081	2000	K2000, 2000
1198	0082	3000	K3000, 3000
1199	0083	4000	K4000, 4000
1200	0084	5000	K5000, 5000
1201	0085	6000	K6000, 6000
1202	0086	7000	K7000, 7000
1203	0087	7760	K7760, 7760
1204	0088	7700	K7700, 7700
1205	0089	0077	K0077, 0077
1206	0090	2525	K2525, 2525
1207	0091	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	K0062, 6201
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	0128	7132	XTICK, XTICK
1225	0131	0000	REG0, 0
1226	0132	0000	REG1, 0
1227	0133	0000	SRCT1, 0
1228	0134	0000	TCNTR1, 0
1229	0135	0000	TCNTR2, 0
1230	0136	0000	TCNTR3, 0
1231	0137	0000	TCNTR4, 0
1232	0138	0000	TCNTR5, 0
1233	0141	0000	TCNTR6, 0
1234			/
1235	0142	0000	CDREG1, 0
1236	0143	0000	CDREG2, 0
1237	0144	0000	CDREG3, 0
1238	0145	0000	CDREG4, 0
1239	0146	0000	STREG, 0
1240	0147	0000	DRREG, 0
1241	0150	0000	DRREG, 0
1242	0151	0000	DRREG, 0
1243	0152	0000	DRREG, 0
1244	0153	0000	DRREG, 0
1245	0154	0000	DRREG, 0
1246	0155	0000	DRREG, 0
1247	0156	0000	DRREG, 0
1248	0157	0000	DRREG, 0
1249	0160	0000	DRREG, 0
1250	0161	0000	DRREG, 0
1251	0162	0000	DRREG, 0
1252	0163	0000	DRREG, 0
1253	0164	0000	DRREG, 0
1254	0165	0000	DRREG, 0
1255	0166	0000	DRREG, 0
1256	0167	0000	DRREG, 0
1257	0170	0000	DRREG, 0
1258	0171	0000	DRREG, 0
1259	0172	0000	DRREG, 0
1260	0173	0000	DRREG, 0
1261	0174	0000	DRREG, 0

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1202 0175 7777 KCNT, =1
1203 /
1204 0200 /
1205 /
1206 0200 5206 RGN, JMP ,+6 /TO NORMAL TEST
1207 0201 5777' JMP MANUAL /TO MANUAL TEST
1208 0202 5776' JMP CHANGE /TO CHANGE IOT DEVICE CODES
1209 0203 5775' JMP HANPRO /CHECK MANUAL WRITE PROTECT
1210 0204 5774' JMP APTPRO /CHECK PROGRAM WRITE PROTECT
1211 0205 5573 JMP I RESTART /RESTART AFTER PROGRAM STOP!
1212 0206 6224 RIF
1213 0207 3156 DCA HOMEMA
1214 0210 1156 TAD HOMEMA
1215 0211 1121 TAD KCDF /MAKE HOMEDF
1216 0212 3222 DCA PRSFLD
1217 0213 1362 TAD KRMF /GET RMF FOR INT. RETURN
1218 0214 6201 CDF /SWITCH FIELD B
1219 0215 3473 DCA I K0001
1220 0216 1364 TAD K5403 /JMP I 3 FOR LOC. 2
1221 0217 3474 DCA I K0002
1222 0220 1363 TAD INTRD /GET ADDRESS RETURN
1223 0221 3475 DCA I K0003
1224 0222 7402 PRSFLD, /MAKE DF=IF
1225 0223 4773 HLT /TEST FOR APT SYSTEM
1226 0224 4462 CRLF
1227 0225 4772 JMS I (SELDSK /SETUP DRIVES ON SYSTEM.
1228 0226 1070 TAD DRVHAY
1229 0227 3071 DCA DRVENT /COUNTER TO AMOUNT OF DRIVES.
1230 0230 4405 CLASIC /CHECK FOR CONSOLE PKG
1231 0231 4431 CARWIT /GET SWITCH REGISTER
1232 0232 7200 NOP
1233 0233 1022 TAD 22
1234 0234 0216 AND K0400
1235 0235 7640 SZA CLA
1236 0236 6207 6007 /CLEAR FLAGS
1237 /
1238 0237 3131 DCA REG0
1239 /
1240 /STATUS AND SELECT TEST
1241 /
1242 /VERIFY THAT THE DISK DRIVE IN "DRIVNO" IS
1243 /READY TO SEEK, READ, OR WRITE. STATUS REGISTER
1244 /SHOULD GO TO 4000.
1245 /
1246 0240 7332 TST0, CLA CLL CML RAR /EXPECTED STATUS
1247 0241 3143 DCA GOREG2 /SETUP COMPARE REGISTER
1248 0242 1015 TAD K0200 /ENABLE SET DONE BIT
1249 0243 1072 TAD DRIVNO /GET CURRENT DRIVE NUMBER
1250 0244 4450 LDCMD /LOAD COMMAND REGISTER
1251 0245 4444 ROSTAT /READ STATUS
1252 0246 4442 ACCMPI /CHECK RESULTS
1253 0247 7610 SKP CLA /O.K. SO FAR
1254 0250 5256 JMP T0E /ERROR STATUS
1255 0251 3143 DCA GOREG2 /SETUP COMPARE REGISTER
1256 0252 4453 CLRALL /CLEAR STATUS

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1317 0253 4444 ROSTAT /READ STATUS
1318 0254 7650 SNA CLA /SHOULD BE 0000
1319 0255 4437 NERRDR /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 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 INT"
1340 0274 4437 NERRDR /O.K. 4096 LOOPS
1341 0275 4440 T1E, ERROR /ERROR, DSKP FAILED
1342 0276 0265 TST1 /SCOPE LOOP POINTER
1343 0277 0206 0206 /TEXT POINTER
1344 /
1345 /INTERUPT 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 I9Z REG0 /SET ONE TIME TEST FLAG.
1353 0301 1015 TAD K0200 /ENABLE SET DONE BIT
1354 0302 1016 TAD K0400 /ENABLE DISK INT.
1355 0303 1072 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 NERRDR /O.K. 4096 LOOPS
1371 0323 4440 T2E, ERROR /ERROR, DISK INT.

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1372 0324 0301 TST2 /SCOPE LOOP POINTER
1373 0325 0007 /TEXT POINTER
1374 /
1375 /FORCE TIMING ERROR
1376 /
1377 /VERIFY A "TIMING ERROR" DOES OCCUR IN STATUS REGISTER
1378 /IF A FLAG 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 HOMEBA
1383 0330 1072 TAD DRIVNO /GET CURRENT DRIVE
1384 0331 4457 LDCMD /LOAD COMMAND REGISTER
1385 0332 1120 TAD K0006
1386 0333 3357 DCA T3T /SETUP TEXT POINTER
1387 0334 4452 LDAND /FLAG, LOAD DISK ADDRESS
1388 0335 4433 SKNWAY /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 7337 CLA CLL CML RAR
1393 0342 1013 TAD K0040
1394 0343 3143 DCA GDREG2 /SETUP EXPECTED STATUS
1395 0344 4444 ROSTAT /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 ROSTAT /READ STATUS
1402 0353 4442 ACCMP1 /CHECK RESULTS
1403 0354 4437 NERROR /ALL IS O.K.
1404 0355 4442 T3E, ERROR /ERROR, TIMING SKIP OR STATUS
1405 0356 0326 TST3 /SCOPE LOOP POINTER
1406 0357 2026 T3T, 0006 /TEXT POINTER
1407 0360 5761 JMP J .+1
1408 0361 0400 TST4
1409 /
1410 0362 6244 RRMF, RMF
1411 0363 4743 INTRQ, INTAND
1412 0364 5403 K5403, 5403
1413 /
1414 0372 7160
1415 0371 7161
1416 0372 4260
1417 0373 7225
1418 0374 5000
1419 0375 2706
1420 0376 6600
1421 0377 4600
1422 PAGE
1423 /
1424 /RESTORE TEST
1425 /

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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 J .+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 3150 DCA CHREG /SETUP EXTENDED BIT
1447 0413 1066 TAD TRK212 /GET LOWER DISK ADDRESS
1448 0414 4424 SEEK /SEEK ONLY 312
1449 0415 7422 TST /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 2411 TST5 /SCOPE LOOP POINTER
1454 0422 2026 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 7371 TST6, CLA CLL IAC /SETUP EXTENDED BIT
1463 0424 3150 DCA CHREG /SETUP EXTENDED BIT
1464 0425 1066 TAD TRK212 /GET LOWER DISK ADDRESS
1465 0426 4424 SEEK /SEEK ONLY 312
1466 0427 2437 T6T /TEXT POINTER
1467 0430 5235 JMP T6E /ERROR, SKIP OR STATUS
1468 0431 4425 RECAL /"RECALIBRATE"
1469 0432 0437 T6T /TEXT POINTER
1470 0433 5235 JMP T6E /ERROR, SKIP OR STATUS
1471 0434 4437 NERROR /O.K. TO NEXT TEST
1472 0435 4440 T6E, ERROR /ERROR, STATUS
1473 0436 2423 TST6 /SCOPE LOOP POINTER
1474 0437 5300 TAT, 5300 /TEXT POINTER
1475 /
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 /
1483 0441 7340 TST7, DCA CMREG /CLEAR EXTENDED BIT
1484 0442 4424 CLA CLL CMA
1485 0443 0453 SEEK /SEEK ONLY
1486 0444 5251 TTT /TEXT POINTER
1487 0445 4425 JMP T7E /ERROR, SEEK ONLY
1488 0446 0493 RECAL /"RECALIBRATE"
1489 0447 5251 TTT /TEXT POINTER
1490 0450 4437 JMP T7E /ERROR, SKIP OR STATUS
1491 0451 4440 NERROR /O.K. TO NEXT TEST
1492 0452 0440 T7E, ERROR /ERROR, STATUS
1493 0453 5300 TTT, 5300 /SCOPE LOOP POINTER
1494 /TEXT POINTER
1495 /
1496 /FIND AND SELECT ALL ADDRESSES
1497 /
1498 /VERIFY A SEEK ONLY AND FIND ALL ADDRESSES
1499 /INCREMENTAL SEEK TEST. SEEK 0, 1, 2, 3, ETC.
1500 /CHECK TIMING AND NO ERRORS IN STATUS.
1501 /
1502 0454 3134 TSTR, DCA TCNTR1
1503 0455 3135 DCA TCNTR2
1504 0456 1134 TAR, TAD TCNTR1
1505 0457 3150 DCA CMREG /SETUP EXTENDED BIT
1506 0460 1135 TAD TCNTR2 /LOWER DISK ADDRESS BITS
1507 0461 4424 SEEK /SEQUENTIAL SEEK ONLY
1508 0462 0501 TRT /TEXT POINTER
1509 0463 5277 JMP TAE /ERROR, SKIP OR STATUS
1510 0464 2135 ISZ TCNTR2 /UPDATE POINTER
1511 0465 7610 SKP CLA
1512 0466 2134 ISZ TCNTR1 /SET EXTENDED BIT
1513 0467 1134 TAD TCNTR1
1514 0470 7650 SNA CLA /IS EXTENDED BIT SET YET
1515 0471 5256 JMP TAR /NO, CONTINUE
1516 0472 1135 TAD TCNTR2 /YES
1517 0473 1170 TAD ENOTRK
1518 0474 7640 SZA CLA /WAS IT LAST TRACK
1519 0475 5256 JMP TAR /NO, CONTINUE
1520 0476 4437 NERROR /O.K. TO NEXT TEST
1521 0477 4440 TAR, ERROR /ERROR, STATUS
1522 0501 0454 TSTR /SCOPE LOOP POINTER
1523 0501 5300 TBT, 5300 /TEXT POINTER
1524 /
1525 /FIND AND SELECT ALL ADDRESSES
1526 /
1527 /VERIFY A SEEK ONLY AND FIND ALL ADDRESSES
1528 /310, 311, 310, 307, ETC. CHECK FOR
1529 /NO ERRORS IN STATUS REGISTER.
1530 /
1531 0502 1066 TST9, TAD TRK212
1532 0503 1117 TAD K0017
1533 0504 3134 DCA TCNTR1 /SETUP LOWER DISK ADDRESS POINT
1534 0505 7301 CLA CLL IAC
1535 0506 3135 DCA TCNTR2 /SETUP EXTENDED POINTER
1536 0507 1135 T9R, TAD TCNTR2

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1536 /
1537 0510 3150 DCA CMREG /SETUP EXTENDED BIT
1538 0511 1134 TAD TCNTR1
1539 0512 4424 SEEK /INCREMENTAL SEEK ONLY
1540 0513 0534 T9T /TEXT POINTER
1541 0514 5337 JMP T9F /ERROR, SKIP OR STATUS
1542 0515 7340 CLA CLL CMA
1543 0516 1134 TAD TCNTR1
1544 0517 3134 DCA TCNTR1 /DECREMENT
1545 0520 7301 CLA CLL IAC
1546 0521 1134 TAD TCNTR1
1547 0522 7640 SZA CLA /FIRST TIME 0 YET
1548 0523 5307 JMP T9R /NO, CONTINUE
1549 0524 1135 TAD TCNTR2
1550 0525 7650 SNA CLA /PAST EXTENDED BIT
1551 0526 5331 JMP T9OK /YES, TEST O.K.
1552 0527 3135 DCA TCNTR2 /CLEAR EXTENDED BIT
1553 0530 5307 JMP T9R /CONTINUE
1554 0531 4437 T9OK, NERROR /O.K. TO NEXT TEST
1555 0532 4440 T9E, ERROR /ERROR, SEEK ONLY
1556 0533 0502 TST9 /SCOPE LOOP POINTER
1557 0534 5300 T9T, 5300 /TEXT POINTER
1558 /
1559 /VERIFY RESTORE CLEARS ADDRESS BITS.
1560 /
1561 /VERIFY RECALIBRATE FROM ALL
1562 /CYLINDERS. CHECK ALL CYLINDERS
1563 /BETWEEN 00000-14500.
1564 /
1565 0535 1077 TAD K0005
1566 0536 7041 CIA
1567 0537 3777 DCA CNT /INITIALIZES APT TIMING FOR A LONGER VALUE
1568 0540 3134 TST10, DCA TCNTR1
1569 0541 3135 DCA TCNTR2
1570 0542 1134 TAD TCNTR1
1571 0543 3150 DCA CMREG /GET EXTENDED BIT
1572 0544 1135 TAD TCNTR2 /SETUP EXTENDED BIT
1573 0545 4424 SEEK /GET CYLINDER
1574 0546 0573 T10T /SEEK ONLY
1575 0547 5371 JMP T10F /TEXT POINTER
1576 0550 4425 RECAL /ERROR IN SEEK ONLY
1577 0551 0573 T10T /"RECALIBRATE"
1578 0552 5371 JMP T10F /TEXT POINTER
1579 0553 7300 CLA CLL /ERROR, SKIP OR STATUS
1580 0554 1135 TAD TCNTR2 /GET LAST CYLINDER
1581 0555 1213 TAD K0040 /UPDATE
1582 0556 3135 DCA TCNTR2
1583 0557 7430 SZL
1584 0560 2134 ISZ TCNTR1 /TIME TO SET EXTENDED?
1585 0561 1134 TAD TCNTR1 /YES
1586 0562 7650 SNA CLA /GET EXTENDED POINTER
1587 0563 5342 JMP T10R /SET?
1588 0564 1135 TAD TCNTR2 /NO DO THIS CYLINDER
1589 0565 1170 TAD ENOTRK /GET LAST CYLINDER
1590 0566 7640 SZA CLA /GET LAST POINTER
1591 0567 5342 JMP T10R /NON-EXISTENT CYLINDER?
1592 /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 PAGE
1600 2600 /
1601 /SINGLE DRIVE VIBRATION TEST!!
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 7004 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 TCNTR4 /SETUP COUNTER
1621 0616 1136 T11R3, TAD TCNTR3 /GET EXTENDED BIT
1622 0617 3150 DCA CHREG /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 CHREG /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 TCNTR4 /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 T000
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 DOREG2 /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 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
1665 0664 1015 TAD K0200 /SHIFT TO UNIT BITS
1666 0665 4450 LDCMD /ENABLE SET DONE
1667 0666 4444 ROSTAT /LOAD COMMAND
1668 0667 4442 ACCMP1 /READ STATUS
1669 0670 7610 SKP CLA /CHECK RESULTS
1670 0671 5277 JMP T12E /O.K.
1671 0672 4453 CLRALL /ERROR, STATUS
1672 0673 2135 T12A, ISZ TCNTR2 /CLEAR STATUS
1673 0674 2134 ISZ TCNTR1 /UPDATE DRIVE NO.
1674 0675 5254 JMP T12R /WAS IT LAST DRIVE
1675 0676 4437 NERROR /NO, MORE TO TEST
1676 0677 4440 T12E, ERROR /O.K. 4096 LOOPS
1677 0700 0645 TST12 /ERROR, STATUS
1678 0721 5200 5200 /SCOPE LOOP POINTER
1679 /TEXT POINTER
1680 /SELECT ERROR TEST
1681 /
1682 /VERIFY A DRIVE STATUS ERROR ON ALL DRIVES
1683 /NOT ON THE CONTROL. ACTUALLY A SELECT ERROR.
1684 /
1685 0702 7301 TST13, CLA CLL IAC
1686 0703 4453 CLRALL /CLEAR CONTROL
1687 0704 3135 DCA TCNTR2 /TO START WITH DRIVE 0.
1688 0705 1777 TAD M4
1689 0706 3134 DCA TCNTR1 /COUNTER FOR NO. OF DRIVES.
1690 0707 1135 TAD TCNTR2 /GET DRIVE POINTER
1691 0710 1776 TAD DSKON /POINTER TO DISK BUFFER.
1692 0711 3136 DCA TCNTR3 /SAVE POINTER TO DISK BUFFER.
1693 0712 1536 TAD I TCNTR3
1694 0713 7640 SZA CLA /DISK ON THE SYSTEM
1695 0714 5347 JMP T13A /NO UPDATE AND TRY NEXT DRIVE.
1696 0715 1074 TAD K0002
1697 0716 1157 TAD STCON /EXPECTED STATUS
1698 0717 3143 DCA DOREG2 /SETUP COMPARE REGISTER
1699 0720 1135 TAD TCNTR2 /GET DRIVE NO.
1700 0721 7104 CLL RAL /PUT IN UNIT BITS

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1700 0722 1215 TAD K0200 /ENABLE SET DONE
1701 0723 1104 TAD K3000 /FUNCTION SEEK ONLY
1702 0724 4450 LDCMD /LOAD COMMAND
1703 0725 4452 LOADD /LOAD AND GO
1704 0726 4444 ROSTAT /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 GOREG2 /SETUP COMPARE
1711 0735 4444 ROSTAT /READ STATUS
1712 0736 4442 ACCMP1 /CHECK 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 GOREG2 /SETUP COMPARE
1718 0744 4444 ROSTAT /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
1724 0752 4437 NERROR /TRY NEXT DRIVE
1725 0753 4440 T13E, ERROR /O.K. 4096 LOOPS
1726 0754 0702 TST13 /ERROR, STATUS
1727 0755 5300 /SCOPE LOOP POINTER
1728 / /TEXT POINTER
1729 0756 5757 JMP I .+1 /TO NEXT TEST
1730 0757 1005 TST14P, TST14=3
1731 /
1732 0760 2213 NMES1, TEXT "RK0E 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
1736 1000 PAGE
1737 / /SURROUTINE TO ISSUE DSKP DISK SKIP TOT
1738 /
1739 1000 0000 SSKP, 0
1740 1001 6741 TOT1, DSKP /DISK SKIP TOT
1741 1002 7410 SKP /NO FLAGI
1742 1003 2200 ISZ SSKP /UPDATE NO FLAG POINTER.

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1743 1004 5600 JMP I SSKP /RETURN.
1744 /
1745 /
1746 /SELECT ERROR TEST
1747 /
1748 /VERIFY THAT DISK CAPACITY EXCEEDED DOES OCCUR
1749 /
1750 1005 2131 ISZ REG0 /SETUP FOR ONE PAS
1751 1006 7346 NL775 /-3 CONSTANT
1752 1007 3777 DCA CNT
1753 1010 1066 TST14, TAD TRK212
1754 1011 1012 TAD K0200
1755 1012 3134 DCA TCNTR1
1756 1013 7301 T14R, CLA CLL IAC /ADDRESS POINTER
1757 1014 4453 CLRALL /ENABLE CLEAR CONTROL BIT
1758 1015 7330 CLA CLL CML RAR /CLEAR CONTROL
1759 1016 1074 TAD K0002 /EXPECTED STATUS
1760 1017 3143 DCA GOREG2 /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 LOADD /LOAD AND GO
1767 1026 4433 SKPWAT /WAIT FOR SKIP
1768 1027 5267 JMP T14KE /ERROR, NO SKIP
1769 1030 4444 ROSTAT /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 GOREG2
1782 1045 4444 ROSTAT /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 GOREG2 /SETUP COMPARE REGISTER
1789 1054 4444 ROSTAT /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 1080 1017          TAD K1000          /FUNCTION READ ALL
1818 1081 3150          DCA CMREG          /SETUP COMMAND REGISTER
1819 1082 4426          DISKGO          /DISK READ ALL
1820 1083 1110          T15T          /TEXT POINTER
1821 1084 5306          JMP T15E          /ERROR, SKIP OR STATUS
1822 1085 4437          NERROR          /O.K. TO NEXT TEST
1823 1086 4440          T15E, ERROR          /ERROR, WRITE ALL
1824 1087 1073          TST15          /SCOPE LOOP POINTER
1825 1088 5306          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 5306          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 5306          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 /

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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          /SETUP SECTOR COUNTER
1862 1134 3134          DCA TCNTR1
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          PAGE
1899 1200 /
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 K7748
1911      1203 3134      OCA TCNTR1
1912      1204 1114      T188, TAD K5252      /SECTOR COUNTER
1913      1205 4431      FILBUF      /FILL OUTROUND 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
1918      1212 3463      DCA I XL0TRK      /MASK OF SECTORS
1919      1213 1072      TAD DRIVNO      /SETUP ADDRESS WORD IN BUFFER
1920      1214 3464      DCA I XHITRK      /GET DRIVE NUMBER
1921      1215 1463      TAD I XL0TRK      /SETUP ADDRESS WORD IN BUFFER
1922      1216 4426      DISKGO      /GET ADDRESS
1923      1217 1241      T18T      /DISK WRITE DATA
1924      1220 5237      JMP T18E      /TEXT POINTER
1925      1221 4432      KILBUF      /ERROR, STATUS OR SKIP
1926      1222 3150      DCA CMREG      /CLEAR DATA BUFFER
1927      1223 1134      TAD TCNTR1      /SETUP COMMAND
1928      1224 2120      AND K0037
1929      1225 4426      DISKGO      /MASK OFF SECTORS
1930      1226 1241      T18T      /DISK READ DATA
1931      1227 5237      JMP T18E      /TEXT POINTER
1932      1230 1114      TAD K5252      /ERROR, STATUS OR SKIP
1933      1231 4430      FIGURE
1934      1232 7610      SKP CLA      /WORD BY WORD COMPARE OF DATA
1935      1233 5237      JMP T18E      /THIS SECTOR O.K.
1936      1234 2134      ISZ TCNTR1      /ERROR, DATA
1937      1235 5204      JMP T188      /UPDATE SECTOR COUNTER
1938      1236 4437      NERROR      /TRY NEXT SECTOR
1939      1237 4440      T18E, ERROR      /O.K. TO NEXT TEST
1940      1240 1202      TST18      /ERROR, DATA BREAK
1941      1241 5373      T18T, 5373      /SCOPE LOOP 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 XL0TRK      /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
1972      1266 4437      T190K, NERROR      /WORD BY WORD COMPARE DATA
1973      1267 4440      T19E, ERROR      /O.K. TO NEXT TEST
1974      1270 1242      TST19      /ERROR, DATA BREAK
1975      1271 5373      T19T, 5373      /SCOPE LOOP 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 XL0TRK      /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
2006      1316 4437      T200K, NERROR      /WORD BY WORD COMPARE DATA
2007      1317 4440      T20E, ERROR      /O.K. TO NEXT TEST
2008      1320 1272      TST20      /ERROR, DATA BREAK
2009      1321 5373      T20T, 5373      /SCOPE LOOP 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.

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2017 /
2018 1322 1113 TST21, TAD K2525
2019 1323 4431 FILBUF /FILL BUFFER WITH DATA
2020 1324 1472 TAD DRIVNO /MAKE DISK ADDRESS WORD
2021 1325 3464 DCA I XHTRK /MAKE DISK ADDRESS WORD
2022 1326 3463 DCA I XLOTRK /FUNCTION WRITE ALL
2023 1327 1115 TAD K5000 /HALF BIT
2024 1330 1014 TAD K0100 /SETUP COMMAND
2025 1331 3150 DCA CMREG /DISK WRITE ALL
2026 1332 4426 DISKRD /TEXT POINTER
2027 1333 1352 T21T /ERROR, SKIP OR STATUS
2028 1334 5354 JMP T21F /CLEAR STATUS
2029 1335 4453 CLRALL /ZERO BUFFER
2030 1336 4432 KILBUF /FUNCTION READ ALL
2031 1337 1017 TAD K1000 /HALF BIT
2032 1340 1014 TAD K0100 /SETUP COMMAND
2033 1341 3150 DCA CMREG /DISK READ ALL
2034 1342 4426 DISKRD /TEXT POINTER
2035 1343 1352 T21T /ERROR, SKIP OR STATUS
2036 1344 5354 JMP T21F
2037 1345 1113 TAD K2525
2038 1346 4427 HAFCHK /WORD BY WORD COMPARE DATA
2039 1347 4437 T21OK, NEWRRR /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 1420 TST22
2046 /
2047 /
2048 /
2049 /
2050 1355 2222 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 2000 CONST1, 0
2061 /
2062 1376 7162
2063 1377 7161
2064 PAGE
2065 /
2066 /
2067 /
2068 /
2069 /
2070 /

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2071 /
2072 /
2073 1400 1122 TST22, TAD K7740
2074 1401 3134 DCA TONTR1 /SETUP SECTOR COUNTER
2075 1402 1113 TAD K2525
2076 1403 4431 FILBUF /FILL BUFFER WITH DATA
2077 1404 1134 T22R1, TAD TONTR1
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 XHTRK /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 DISKRD /DISK WRITE ALL
2086 1415 1440 T22T /TEXT POINTER
2087 1416 5242 JMP T22E /ERROR, STATUS OR SKIP
2088 1417 2134 ISZ TONTR1 /UPDATE SECTOR COUNTER
2089 1420 5204 JMP T22R1 /MORE SECTORS TO GO
2090 /
2091 /
2092 /
2093 /
2094 1421 1122 TAD K7740
2095 1422 3134 DCA TONTR1 /COUNTER FOR 37 SECTORS
2096 1423 4432 KILBUF /CLEAR DATA BUFFER
2097 1424 1017 TAD K1000 /READ ALL FUNCTION
2098 1425 3150 DCA CMREG /SETUP COMMAND
2099 1426 1134 TAD TONTR1
2100 1427 2122 AND K0037
2101 1430 4426 DISKRD /DISK READ ALL
2102 1431 1440 T22T /TEXT POINTER
2103 1432 5242 JMP T22E /ERROR, STATUS OR SKIP
2104 1433 1113 TAD K2525
2105 1434 4432 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 TONTR1 /UPDATE SECTOR COUNTER
2109 1440 5223 JMP T22R2 /MORE SECTORS TO CHECK
2110 1441 4437 NEWRRR /O.K. TO NEXT TEST
2111 1442 4440 T22E, ERROR /ERROR, STATUS
2112 1443 1422 TST22 /SCOPE LOOP POINTER
2113 1444 5373 T22T, 5373 /TEXT POINTER
2114 /
2115 /
2116 /
2117 /
2118 /
2119 /
2120 /
2121 /
2122 /
2123 1445 1122 TST23, TAD K7740
2124 1446 3134 DCA TONTR1 /SETUP SECTOR COUNTER
2125 1447 1113 TAD K2525

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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 /
2142 /VERIFY THAT THE DATA WRITTEN ABOVE
2143 /ON CYLINDER 0 WAS O.K. CHECK WITH READ DATA.
2144
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 T23F, ERROR /ERROR, WRITE ALL
2161 1507 1445 TST23 /SCOPE LOOP POINTER
2162 1510 5373 T23T, 5373 /TEXT POINTER
2163
2164 /
2165 /VERIFY ALL SECTORS CAN BE ACCESSED
2166 /
2167 /VERIFY A WRITE ALL TO ALL OF CYLINDER 1450
2168 /AND USE DATA PATTERN 2525+5252.
2169 /THE FIRST TWO WORDS OF THE SECTOR SHOULD
2170 /EQUAL THE DISK ADDRESS. CHECK THE DATA
2171 /WITH READ ALL.
2172
2172 1511 1122 TST24, TAD K7740
2173 1512 3134 DCA TCNTR1 /SETUP SECTOR COUNTER
2174 1513 1113 T248, TAD K2525
2175 1514 4431 FILBUF /FILL OUTROUND BUFFER
2176 1515 7301 CLA CLL IAC
2177 1516 1272 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 /
2212 JMP I ,+1 /TO NEXT TEST
2213 TST25
2214
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 /
2224 PAGE
2225 /
2226 /VERIFY ALL SECTORS CAN BE ACCESSED
2227 /
2228 /VERIFY A WRITE DATA TO ALL OF CYLINDER 1450
2229 /AND USE DATA PATTERN 5252+2525.
2230 /THE FIRST TWO WORDS OF THE SECTOR SHOULD
2231 /EQUAL THE DISK ADDRESS. CHECK THE DATA
2232 /WITH READ DATA.
2233
2233 1600 1122 TST25, 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 XMITRK /SETUP ADDRESS WORD IN BUFFER
2240 1607 7301 CLA CLL IAC /EXTENDED BIT
2241 1610 1105 TAD K0000 /FUNCTION WRITE DATA
2242 1611 3150 DCA CMREG /SETUP COMMAND
2243 1612 1134 TAD TCNTR1 /SECTOR COUNTER
2244 1613 0120 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 0120 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 0134 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 T25T, T25E /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 1648 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 XMITRK /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 5310 JMP T26E /ERROR, STATUS OR SKIP
2297 1667 0134 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 5310 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 0134 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 T26T, T26E /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 K5252
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 XMITRK /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 T277 /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 /
2356 /VERIFY THAT THE DATA WRITTEN ABOVE
2357 /ON CYLINDER 1450 WAS O.K. CHECK WITH READ DATA.
2358
2359 1743 1122 TAD K7740
2360 1744 3134 DCA TCNTR1 /COUNTER FOR 37 SECTORS
2361 1745 4432 T27R2, KILBUF /CLEAR DATA BUFFER
2362 1746 7301 CLA CLL IAC /FUNCTION READ DATA
2363 1747 3150 DCA CMREG /SETUP COMMAND
2364 1750 1134 TAD TCNTR1
2365 1751 0120 AND K0037
2366 1752 1065 TAD CYL450
2367 1753 4426 DISKGO /DISK READ DATA
2368 1754 1767 T277 /TEXT POINTER
2369 1755 5365 JMP T27E /ERROR, STATUS OR SKIP
2370 1756 1113 TAD K2525
2371 1757 4430 FIGURE /WORD BY WORD COMPARE OF DATA
2372 1760 7610 SKP CLA /DATA O.K.
2373 1761 5365 JMP T27E /ERROR, DATA
2374 1762 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2375 1763 5305 JMP T27R2 /MORE SECTORS TO CHECK
2376 1764 4437 NERROR /O.K. TO NEXT TEST
2377 1765 4440 T27E, ERROR /ERROR, WRITE ALL
2378 1766 1717 TST27 /SCOPE LOOP POINTER
2379 1767 5373 T27T, 5373 /TEXT POINTER
2380
2381 /SECTOR TIMING TEST; VERIFY CONSECUTIVE SECTORS.
2382 /VERIFY THAT WRITE AND READ ALL ARE ACTUALLY DOING CONSECUTIVE
2383 /SECTORS. WHEN DOING CONSECUTIVE SECTORS IN WRITE OR READ
2384 /ALL MODE, SECTOR TRANSFERS SHOULD OCCUR EVERY 2.5 MILLI-
2385 /SECONDS. THE PROGRAM WILL REPORT A STATUS ERROR OF
2386 /AND DONE FLAG IF THIS DOES NOT OCCUR.
2387
2388 1770 1156 TAD MEMEMA
2389 1771 1072 TAD DRIVNO
2390 1772 3136 DCA TCNTR3 /SAVE FIELD+DRIVE
2391 1773 4525 JMS I XLOAD
2392 1774 7700 T27R2
2393 1775 1122 TAD K7740
2394 1776 3134 DCA TCNTR1 /SETUP SECTOR COUNTER
2395 1777 1115 TAD K5000 /FUNCTION WRITE ALL
2396 1778 3150 DCA CMREG /SETUP COMMAND
2397 1779 7340 CLA CLL CMA
2398 1780 1120 TAD K0037 /SECTOR TO GO
2399 1781 4426 DISKGO /DISK WRITE ALL
2400 1782 2057 T2AT /TEXT POINTER
2401 1783 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 2008 1134 T28R, TAD TCNTR1
2404 2009 0073 AND K0001
2405 2010 7112 CLL RTR
2406 2011 1017 TAD K1000 /MAKE READ ALL OR WRITE ALL
2407 2012 1136 TAD TCNTR3 /GET FIELD+DRIVE
2408 2013 6746 T28IOA, DLDC /LOAD COMMAND REGISTER
2409 2014 1067 TAD RGNRUF /GET BEGINNING OF BUFFER POINTER
2410 2015 6744 T28IOB, DLCA /LOAD CURRENT ADDRESS
2411 2016 1134 TAD TCNTR1
2412 2017 0120 AND K0037 /MASK SECTOR BITS
2413 2018 6743 T28IOC, DLAG /LOAD AND GO
2414 2019 1174 TAD KTIME /TIME COUNTER
2415 2020 3135 TAD TCNTR2 /READ STATUS REGISTER
2416 2021 6745 T28IOD, DRST
2417 2022 1105 TAD K4000
2418 2023 7450 SNA /HAS STATUS 4000
2419 2024 5252 JMP T28OK /YES, GOT TRANSFER DONE
2420 2025 2135 ISZ TCNTR2 /UPDATE TIME COUNTER
2421 2026 5225 JMP T28IOD /WAIT FOR GOOD STATUS
2422 2027 1105 TAD K4000 /SUBTRACT, RESET STATUS
2423 2028 3146 DCA STREG /SAVE FOR ERROR PRINTER
2424 2029 1134 TAD TCNTR1
2425 2030 0073 AND K0001
2426 2031 7112 CLL RTR
2427 2032 1017 TAD K1000 /MAKE READ ALL OR WRITE ALL
2428 2033 3150 DCA CMREG /SAVE FOR ERROR PRINTER
2429 2034 1067 TAD BGNBUF /GET START OF BUFFER
2430 2035 3152 DCA CAREG /SAVE FOR PRINTER
2431 2036 1134 TAD TCNTR1
2432 2037 0120 AND K0037 /MAKE SECTOR ADDRESS
2433 2038 3151 DCA DAREG /SAVE FOR ERROR PRINTER
2434 2039 4447 DISKSKP /ERROR, HAVE TO WAIT FOR FLAG
2435 2040 5247 JMP -1 /HANG IF NO SKIP
2436 2041 5255 JMP T28E /ERROR, SECTOR RESPONSE NOT FOUND
2437 2042 2134 T28OK, ISZ TCNTR1 /UPDATE SECTOR COUNTER
2438 2043 5210 JMP T28R /MORE TO TEST
2439 2044 4437 NERROR /O.K. TO NEXT TEST
2440 2045 4440 T28E, ERROR /ERROR, WRITE OR READ ALL
2441 2046 1773 TST2A /SCOPE LOOP POINTER
2442 2047 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, APPROX. 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 T775
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 1123 TAD K0037
2458 2066 4426 DISKGO /DISK READ DATA
2459 2067 2137 T30T /TEXT POINTER
2460 2070 5335 JMP T30E /ERROR, SKIP OR STATUS
2461 2071 1166 TAD K5300
2462 2072 5337 DCA T29T /MODIFY TEXT POINTER
2463 2073 3143 DCA GOREG2 /EXPECTED STATUS
2464 2074 1134 T29R, TAD TCNTR1
2465 2075 2073 AND K2001
2466 2076 7112 CLL RTR /MAKE READ OR WRITE
2467 2077 1136 TAD TCNTR1 /GET FIELD+DRIVE
2468 2078 6746 T2910A, DLDC /LOAD COMMAND REGISTER
2469 2101 1067 TAD RGNRUF
2470 2102 6744 T2910B, DLCA /LOAD CURRENT ADDRESS
2471 2103 1134 TAD TCNTR1
2472 2104 2120 AND K20037
2473 2105 6743 T2910C, DLAC /MASK SECTOR BITS
2474 2106 1174 TAD KTIME /LOAD AND GO
2475 2107 3135 DCA TCNTR2 /TIME COUNTER
2476 2110 6745 T2910D, DWST /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 2073 AND K2001
2482 2116 7112 CLL RTR /MAKE READ OR WRITE
2483 2117 3150 DCA CMREG /SAVE FOR ERROR PRINTER
2484 2120 1067 TAD RGNRUF /GET START OF BUFFER
2485 2121 3152 DCA CAREG /SAVE FOR ERROR PRINTER
2486 2122 1134 TAD TCNTR1
2487 2123 2120 AND K0037 /MAKE SECTOR ADDRESS
2488 2124 3151 DCA DAREG /SAVE FOR ERROR PRINTER
2489 2125 5335 JMP T29E /ERROR, SECTOR RESPONSE NOT FOUND
2490 2126 2135 T29R, ISZ TCNTR2 /UPDATE TIME COUNTER
2491 2127 5310 JMP T2910D /WAIT FOR GOOD STATUS
2492 2130 4407 DISKSKP /ERROR, HAVE TO WAIT FOR FLAG
2493 2131 5337 JMP L=1 /HANG IF NO SKIP
2494 2132 2134 T290K, 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 T29F, ERROR /ERROR, STATUS
2498 2136 2762 TST29 /SCOPE LOOP POINTER
2499 2137 5302 T29T, S302 /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 1112 TST30, TAD K7760 /SETUP SECTOR COUNTER
2508 2141 3134 DCA TCNTR1
2509 2142 7301 T30R, CLA CLL IAC
2510 2143 4453 CLRALL /CLEAR CONTROL

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2511 2144 4432 KILRUF /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 2117 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 1217 TAD K1000 /FUNCTION READ ALL
2520 2155 3152 DCA CMREG /SETUP COMMAND
2521 2156 1134 TAD TCNTR1
2522 2157 2117 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 RKN ENABE FLOP
2530 2167 3142 DCA GOREG1 /STORE IN COMPARE REGISTER
2531 2170 3143 DCA GOREG2 /STORE IN COMPARE REGISTER
2532 2171 5772 JMP I L=1
2533 2172 2200 T30D
2534 2176 2211 /
2535 2177 2207 /
2536 2200 4454 PAGE /READ CRC REGISTER
2537 2201 4443 T30D, RDCRC /CHECK RESULTS
2538 2202 7612 ACCMP2 /O.K.
2539 2203 5207 SKP CLA /ERROR, CRC
2540 2204 2134 JMP T30E /UPDATE SECTOR COUNTER
2541 2205 5777* ISZ TCNTR1 /MORE SECTORS TO TEST
2542 2206 4437 JMP T30D /O.K. TO NEXT TEST
2543 2207 4440 T30F, 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 CORR. ON A READ ALL THE
2552 /CRC READ FROM DISK IS LEFT IN THE CRC BUFFER,
2553 /THE CRC SHOULD BE 11A047 FOR DATA 2525+5252.
2554 /
2555 2212 1112 TST31, TAD K7760 /SETUP SECTOR COUNTER
2556 2213 3134 DCA TCNTR1
2557 2214 7301 T31R, CLA CLL IAC
2558 2215 4453 CLRALL /CLEAR CONTROL
2559 2216 1113 TAD K2525
2560 2217 4431 FILRUF /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 2117 AND K0017 /MASK SECTOR BITS

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2565 2224 1110 TAD K7760
2566 2225 4426 DISKGO
2567 2226 2261 T31T
2568 2227 5257 JMP T31E
2569 2230 1017 TAD K1000
2570 2231 3150 DCA CMREG
2571 2232 1134 TAD TCNTR1
2572 2233 0117 AND K0017
2573 2234 1110 TAD K7760
2574 2235 4426 DISKGO
2575 2236 2261 T31T
2576 2237 5257 JMP T31E
2577 2240 1167 TAD K6304
2578 2241 3261 DCA T31T
2579 2242 7301 CLA CLL IAC
2580 2243 4453 CLRALL
2581 2244 1160 TAD CRWR01
2582 2245 3142 DCA GOREG1
2583 2246 1161 TAD CRWR02
2584 2247 3143 DCA GOREG2
2585 2250 4454 RCRPC
2586 2251 4443 ACCMP2
2587 2252 7610 SKP CLA
2588 2253 5257 JMP T31E
2589 2254 2134 ISZ TCNTR1
2590 2255 5214 JMP T31R
2591 2256 4437 NERROR
2592 2257 4440 T31E, ERRORR
2593 2260 2212 TST31
2594 2261 4324 T31T, A324
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
2610 2264 1114 TAD K5252
2611 2265 4431 FILBUF
2612 2266 7301 CLA CLL IAC
2613 2267 1072 TAD DRIVND
2614 2270 3464 DCA I XHITRK
2615 2271 1134 T3PR1, TAD TCNTR1
2616 2272 0120 AND K0037
2617 2273 1065 TAD CYL450
2618 2274 3463 DCA I XLOTRK
2619 2275 7301 CLA CLL IAC

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2620 2276 1115 TAD K5000
2621 2277 3150 DCA CMREG
2622 2300 1463 TAD I XLOTRK
2623 2301 4426 DISKGO
2624 2302 2370 T3PT
2625 2303 5372 JMP T32E
2626 2304 0134 ISZ TCNTR1
2627 2305 5271 JMP T32R1
2628
2629 /WRITE ALL TO ALL OF CYLINDER 0
2630 /
2631 2306 1122 TAD K7740
2632 2307 3134 DCA TCNTR1
2633 2310 1113 TAD K5252
2634 2311 4431 FILBUF
2635 2312 1134 T3PR2, TAD TCNTR1
2636 2313 0120 AND K0037
2637 2314 3463 DCA I XLOTRK
2638 2315 1072 TAD DRIVND
2639 2316 3464 DCA I XHITRK
2640 2317 1115 TAD K5000
2641 2320 3150 DCA CMREG
2642 2321 1463 TAD I XLOTRK
2643 2322 4426 DISKGO
2644 2323 2374 T3PT
2645 2324 5372 JMP T32E
2646 2325 2134 ISZ TCNTR1
2647 2326 5312 JMP T32R2
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 2332 3134 DCA TCNTR1
2654 2331 4432 T3PR3, KILBUF
2655 2332 7301 CLA CLL IAC
2656 2333 1017 TAD K1000
2657 2334 3150 DCA CMREG
2658 2335 1134 TAD TCNTR1
2659 2336 0120 AND K0037
2660 2337 1065 TAD CYL450
2661 2340 4426 DISKGO
2662 2341 2374 T3PT
2663 2342 5372 JMP T32E
2664 2343 1114 TAD K5252
2665 2344 4430 FIGURE
2666 2345 7610 SKP CLA
2667 2346 5372 JMP T32E
2668 2347 2134 ISZ TCNTR1
2669 2350 5331 JMP T32R3
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

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2675 2352 3134 DCA TCNTR1 /COUNTER FOR 37 SECTORS
2676 2353 4432 T32R4, KILBUF /CLEAR DATA BUFFER
2677 2354 1017 TAD K1000 /READ ALL FUNCTION
2678 2355 3150 DCA CMREG /SETUP COMMAND
2679 2356 1134 TAD TCNTR1
2680 2357 0120 AND K0037
2681 2360 4426 DISKGO /DISK READ ALL
2682 2361 2374 T32T /TEXT POINTER
2683 2362 5372 JMP T32E /ERROR, STATUS OR SKIP
2684 2363 1113 TAD K2525
2685 2364 4430 FIGURE /WORD BY WORD COMPARE OF DATA
2686 2365 7610 SKP CLA /DATA O.K.
2687 2366 5372 JMP T32E /ERROR, DATA
2688 2367 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2689 2370 5353 JMP T32R4 /MORE SECTORS TO CHECK
2690 2371 4437 NERROR /O.K. TO NEXT TEST
2691 2372 4440 T32E, ERROR /ERROR, WRITE ALL
2692 2373 2262 T32T, K4000 /SCOPE LOOP POINTER
2693 2374 5373 T32T, 5373 /TEXT POINTER
2694
2695 2375 5776 JMP I .+1 /TO NEXT TEST
2696 2376 2400 T32T3
2697
2698 2377 2142 /
2699 2400 PAGE
2700 /
2701 /VERIFY HEAD MOTION AND CAPABILITY
2702 /OF SELECTING TWO TRACKS INDIVIDUALLY.
2703 /
2704 /VERIFY A WRITE DATA TO ALL OF CYLINDER 0
2705 /THEN CYLINDER 1450. USE DATA PATTERN 2525+5252 ON
2706 /CYLINDER 1450 AND 5252+2525 ON CYLINDER 0.
2707 /CHECK FOR NO ERRORS IN STATUS.
2708 /MAKE FIRST TWO WORDS OF EVERY SECTOR
2709 /EQUAL TO ADDRESS OF SECTOR.
2710 /
2711 /FIRST WRITE DATA TO CYLINDER 0.
2712 /
2713 2400 1122 T32T3, TAD K7740
2714 2401 3134 DCA TCNTR1 /SETUP SECTOR COUNTER
2715 2402 1114 TAD K5252
2716 2403 4431 FILBUF /FILL BUFFER WITH DATA
2717 2404 7300 T33R1, CLA CLL
2718 2405 1134 TAD TCNTR1
2719 2406 0120 AND K0037 /MASK OFF SECTOR BITS
2720 2407 3463 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
2721 2408 1072 TAD DRIVNO /GET DRIVE NUMBER
2722 2409 3464 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
2723 2410 1105 TAD K4000 /FUNCTION WRITE DATA
2724 2411 3150 DCA CMREG /SETUP COMMAND
2725 2412 1463 TAD I XLOTRK /SECTOR TO LOAD
2726 2413 4426 DISKGO /DISK WRITE DATA
2727 2414 2511 T32T /TEXT POINTER
2728 2415 5307 JMP T33E /ERROR, STATUS OR SKIP
2729 2416 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER

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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 K5252
2736 2425 4431 FILBUF /FILL BUFFER WITH DATA
2737 2426 7301 CLA CLL IAC
2738 2427 1072 TAD DRIVNO /GET DRIVE NUMBER
2739 2428 3464 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
2740 2429 1134 T33R2, AND TCNTR1
2741 2430 0120 AND K0037 /MASK OFF SECTOR BITS
2742 2431 1065 TAD CYL450 /ADD IN CYLINDER
2743 2432 3463 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
2744 2433 7301 CLA CLL IAC /EXTENDED TRACK BIT
2745 2434 1105 TAD K4000 /FUNCTION WRITE DATA
2746 2435 3150 DCA CMREG /SETUP COMMAND
2747 2436 1463 TAD I XLOTRK /SECTOR TO LOAD
2748 2437 4426 DISKGO /DISK WRITE DATA
2749 2438 2511 T32T /TEXT POINTER
2750 2439 5307 JMP T33E /ERROR, STATUS OR SKIP
2751 2440 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2752 2441 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 /COUNTER FOR 37 SECTORS
2759 2448 4432 T33R3, KILBUF /CLEAR DATA BUFFER
2760 2449 3150 DCA CMREG /SETUP COMMAND
2761 2450 1134 TAD TCNTR1
2762 2451 0120 AND K0037
2763 2452 4426 DISKGO /DISK READ DATA
2764 2453 2511 T32T /TEXT POINTER
2765 2454 5307 JMP T33E /ERROR, STATUS OR SKIP
2766 2455 1114 TAD K5252
2767 2456 4430 FIGURE /WORD BY WORD COMPARE OF DATA
2768 2457 7610 SKP CLA /DATA O.K.
2769 2458 5307 JMP T33E /ERROR, DATA
2770 2459 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2771 2460 5250 JMP T33R3 /MORE SECTORS TO CHECK
2772 /
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 /SECTOR COUNTER
2778 2467 4432 T33R4, KILBUF /CLEAR DATA BUFFER
2779 2468 7301 CLA CLL IAC
2780 2469 3150 DCA CMREG /SETUP COMMAND
2781 2470 1134 TAD TCNTR1
2782 2471 0120 AND K0037
2783 2472 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 T337, 5373 /TEXT POINTER
2797 /
2798 /FORCE CYLINDER ADDRESS ERROR
2799 /
2800 /VERIFY A CYLINDER ADDRESS ERROR IN
2801 /STATUS REGISTER. CAN BE CAUSED BY ISSUING
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 GOREG2 /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 DRG FOR ENARLE 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 MOOF.
2842 /
2843 2551 7301 TST35, CLA CLL IAC
2844 2552 4453 CLRALL /CLEAR CONTROL
2845 2553 4432 KLRBUF /CLEAR BUFFER AREA
2846 2554 1067 TAD BGNRUF
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 DRG TO ENARLE 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 FLAG1
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 GOREG2 /EXPECTED STATUS REGISTER
2867 2601 1067 TAD BGNRUF
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 ERROR1
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 T3500 /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 FILRUF /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 XMITRK /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 3152 DCA CMREG /SETUP COMMAND
2902 2635 1267 TAD RGNRUF /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 1267 TAD RGNRUF /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 1125 TAD K4000 /ADD IN FUDGE FACTOR
2917 2654 7440 SZL /STATUS O.K.???
2918 2655 5273 JMP T36E /NO, STATUS ERROR
2919 2656 2463 ISZ I XLOTRK /DON'T SET EXTENDED TRACK
2920 2657 5262 JMP *-3 /YES, SET IT
2921 2660 2150 ISZ CMREG /SETUP BUFFER ALSO
2922 2661 2464 ISZ I XMITRK /GET TRACK WORD
2923 2662 1464 TAD I XMITRK /GET EXTENDED BIT TO LINK
2924 2663 7110 CLA CLL RAR /WAS IT SET
2925 2664 7620 SNL CLA /NO, CONTINUE
2926 2665 5237 JMP T36R /GET LOWER TRACK WORD
2927 2666 1463 TAD I XLOTRK /ADD IN FUDGE FACTOR
2928 2667 1170 TAD ENDTRK /DONE WITH DISK
2929 2670 7640 SZL CLA /NO, MORE TO GO
2930 2671 5237 JMP T36R /DONE
2931 2672 5300 JMP T36N /RESET STATUS
2932 2673 1125 TAD K4000 /SAVE FOR ERROR PRINTER
2933 2674 3146 DCA STREG /GET ADDRESS
2934 2675 1463 TAD I XLOTRK /FOR ERROR PRINTER
2935 2676 3151 DCA DAREG /REPORT ERROR
2936 2677 7410 SKP /O.K. TO NEXT TEST
2937 2700 4437 T36N, NERROR /ERROR, STATUS
2938 2701 4445 ERROR /SCOPE LOOP POINTER
2939 2702 2622 TST36 /TEXT POINTER
2940 2703 5300 S300
2941 2704 5705 T36T, 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 HANPRO, CLASIC /CHECK FOR CLASSIC.

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2949 2707 4431 C8SWIT /ROUTINE TO EXECUTE.
2950 2710 7000 NOP
2951 2711 4404 LAB /GET THE SWITCHES
2952 2712 7104 CLA 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 FILRUF /FILL OUTBOUND BUFFER
2960 2722 1072 TAD DRIVNO
2961 2723 3464 DCA I XMITRK /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 MPHLY1, HLT /HALT AND WAIT FOR OPERATOR
2971 /
2972 /IF ON CLASSIC CONSOLE PACKAGE
2973 /MIT CONTROL E. IF NOT THEN
2974 /PRESS KEY CONTINUE.
2975 2735 4432 MPR1, KILBUF /CLEAR OUTBOUND BUFFER
2976 2736 1072 TAD DRIVNO
2977 2737 3464 DCA I XMITRK /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 7000 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 4402 ACCMP1 /CHECK RESULTS
2990 2754 7612 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

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3004 2772 2735 MPR1
3005 2773 0000 TMPROT, 0000 /TEXT POINTER
3006 2774 4405 CLASIC
3007 2775 4436 CRERR
3008 2776 7402 HPHLT2, HLT /SUCCESSFUL WRITE PROTECT
3009 /TO REPEAT TEST: IF ON
3010 /CLASSIC CONSOLE PACKAGE
3011 /MIT CONTROL E, IF NOT THEN
3012 /PRESS KEY CONTINUE.
3013 2777 5306 JMP MANPRO /REPEAT
3014 3000
3015 /
3016 /BIG ADDRESSING CHECK1
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 T3T37, DCA TCNTR1
3032 3003 1017 TAD K1000 /FUNCTION READ ALL
3033 3004 1156 TAD HOMEPA /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 3008 7410 SKP
3038 3009 3102 T37T /TEXT POINTER
3039 3010 3172 DCA SAVPCT /SAVE FOR CRC ERROR
3040 3011 1067 TAD RGNRUF /GET START OF BUFFER
3041 3012 3152 DCA CAREG /SAVE FOR ERROR POINTER
3042 3013 4530 T37R, TICK /APT TIMING
3043 3014 7340 CLA CLL CMA
3044 3015 3171 DCA SOFERR /SETUP CRC ERROR POINTER
3045 3016 4432 KILBUF /CLEAR DATA BUFFER
3046 3017 1134 TAD TCNTR1 /LOWER DISK ADDRESS
3047 3018 3151 DCA DAREG /SAVE FOR PRINTER
3048 3019 1067 TAD BGNRUF /GET START OF BUFFER
3049 3020 6744 IOT4A2, DLCA /LOAD CURRENT ADDRESS
3050 3021 1150 TAD CMREG /GET COMMAND
3051 3022 6746 IOT6A2, DLDC /LOAD COMMAND REGISTER
3052 3023 1134 TAD TCNTR1 /GET DISK ADDRESS
3053 3024 6743 IOT3A2, DLAG /LOAD DISK ADDRESS AND GO
3054 3025 6741 IOT1A2, DSKP /DISK SKIP IOT
3055 3026 5231 JMP .-1 /WAIT FOR DISK SKIP
3056 3027 6745 IOT5A2, DRST /READ STATUS
3057 3028 3146 DCA STREG /SAVE FOR ERROR POINTER
3058 3029 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 3038 5254 JMP T37A /NO STATUS ERRORS
3062 3039 7330 CLA CLL CHL RAR /EXPECTED STATUS
3063 3040 3143 DCA GOREG2 /SETUP COMPARE REGISTER
3064 3041 1146 TAD STREG /GET STATUS READ
3065 3042 0011 AND K0010 /MASK FOR CRC
3066 3043 7640 SZA CLA /WAS IT CRC ERROR
3067 3044 5252 JMP .+4 /YES CRC ERROR
3068 3045 1166 TAD K5300 /GET TEXT POINTER
3069 3046 3302 DCA T37T /SAVE IT
3070 3047 5300 JMP T37E /STATUS ERROR NOT CRC
3071 3048 3171 DCA SOFERR /SET CRC ERROR POINTER
3072 3049 5256 JMP .+3 /DON'T CLEAR CONTROL
3073 3050 7301 T37A, CLA CLL IAC /ENABLE CLEAR CONTROL
3074 3051 6742 IOT2A2, DCLR /CLEAR CONTROL
3075 3052 1165 TAD K5373
3076 3053 3302 DCA T37T /SETUP TEXT POINTER
3077 3054 1113 TAD K2525 /GET EXPECTED DATA
3078 3055 4430 FIGURE /CHECK DATA READ
3079 3056 7610 SKP CLA /THIS ONE O.K.
3080 3057 5300 JMP T37E /ERROR, DATA
3081 3058 2134 ISZ TCNTR1 /UPDATE LOWER DISK ADDRESS
3082 3059 7610 SKP CLA
3083 3060 2150 ISZ CMREG /SET EXTENDED BIT
3084 3061 1150 TAD CMREG
3085 3062 0073 AND K0001
3086 3063 7650 SNA CLA /IS EXTENDED SET
3087 3064 5215 JMP T37R /NO, CONTINUE
3088 3065 1134 TAD TCNTR1
3089 3066 1170 TAD ENDRK
3090 3067 7640 SZA CLA /ADD IN FUDGE FACTOR
3091 3068 5215 JMP T37R /DONE WITH DISK
3092 3069 4437 NERROR /NO, MORE TO GO
3093 3100 4440 T37E, ERROR /O.K. TO NEXT TEST
3094 3101 3002 T3T37 /ERROR, STATUS
3095 3102 5300 T37T, 5300 /SCOPE LOOP POINTER
3096 /
3097 /
3098 /BIG ADDRESSING CHECK1
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 /
3105 /READ ALL SECTORS ON THE DISK AND CHECK
3106 /THE STATUS. IF STATUS ERROR OCCURS THEN CHECK THE DATA.
3107 /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3108 /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR
3109 /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3110 /
3111 3103 4525 JMS I XLOAD
3112 3104 7770 7770
3113 3105 7340 T3T38, CLA CLL CMA
3114 3106 3171 DCA SOFERR /SETUP CRC ERROR POINTER

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/ PAL10 V1424 15-APR-76 13124 PAGE 1-60
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 HOMEHA /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 T380K /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 /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 T380K, NERROR /O.K. TO NEXT TEST
3154 3157 4440 T38DE, ERROR /ERROR, READ DATA
3155 3160 3105 TST3A /SCOPE LOOP POINTER
3156 3161 5300 T38T, S300 /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 OCCURS 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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/ PAL10 V1424 15-APR-76 13124 PAGE 1-61
3169 /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3170 /
3171 3162 4525 JMB I XLOAD
3172 3163 7776 7776
3173 3164 7340 T3739, CLA CLL CMA
3174 3165 3171 DCA S0FERR /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 HOMEHA /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 T390K /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 T390K, NERROR /O.K. TO NEXT TEST
3214 3235 4440 T39DE, ERROR /ERROR, READ DATA
3215 3236 3164 TST3A /SCOPE LOOP POINTER
3216 3237 5300 T39T, S300 /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 T40S, DCA TCNTR4 /SAVE IT
3229 3246 1137 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 XHITRK /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 PAGE
3322 3400 1111 /
3323 3401 3140 TST42, TAD K7700
3324 3402 4423 DCA TCNTR5 /PASS COUNTER
3325 3403 3134 T42R, RANADD /RANDOM DISK ADDRESS
3326 3404 7004 DCA TCNTR1 /SAVE
3327 3405 3135 RAL /LINK IS EXTENDED BIT
3328 3406 3135 DCA TCNTR2 /SAVE
3329 3407 1113 T42S, TAD K2525
3330 3408 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 XMITRK /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 /WORD BY WORD COMPARE OF DATA
3356 3441 4430 FIGURE /DATA O.K.
3357 3442 7610 SKP CLA /DATA ERROR
3358 3443 5247 JMP T42E /PASS COUNTER
3359 3444 2140 ISZ TCNTR5 /LOOP
3360 3445 5202 JMP T42R /O.K. TO NEXT TEST
3361 3446 4437 NERROR /ERROR
3362 3447 4440 T42F, ERROR /SCOPE LOOP POINTER
3363 3450 3400 TST42 /TEXT POINTER
3364 3451 5373 T42T, 5373 /
3365 /
3366 /SINGLE DRIVE VARIATION TEST
3367 /
3368 /TRY TO CAUSE CYLINDER ADDRESS ERRORS BY
3369 /DOING A FEW RANDOM SEES 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 K7700
3377 3460 3137 DCA TCNTR4 /SETUP COUNTER FOR SEES
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 SEFK /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 OCCURS 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 LDCUP /LOAD CURRENT ADDRESS
3425 3531 1150 TAD CMREG /LAST COMMAND ISSUED
3426 3532 4450 LDCMD /LOAD COMMAND
3427 3533 1134 TAD TCNTR1 /LOWER ADDRESS
3428 3534 4452 LADD /LOAD AND GO
3429 3535 4447 DSXSKP /DISK SKIP IOT
3430 3536 5335 JMP .-1 /HANG IF NO SKIP
3431 3537 4444 ROSTAT /READ STATUS
3432 3540 1105 TAD K4000 /SHOULD ONLY BE DONE
3433 3541 7640 TIMSTP, 82A 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 T44OK /ALL O.K.
3447 3557 1113 T44E, TAD K2525
3448 3558 4430 FIGURE /WORD BY WORD COMPARE OF DATA
3449 3551 5364 JMP ,+3 /ERROR, JUST STATUS
3450 3552 1165 TAD K5373 /TEXT POINTER
3451 3553 7410 SKP /ERROR
3452 3554 1166 TAD K5300 /STATUS ERROR POINTER
3453 3555 3372 DCA T44T /SETUP
3454 3556 7610 SKP CLA
3455 3557 4437 T44OK, NERROR /O.K. TO NEXT TEST
3456 3558 4440 ERROR /ERROR, READ DATA
3457 3551 3517 TST44 /SCOPE LOOP POINTER
3458 3552 5300 T44T, 5300 /TEXT POINTER
3459 /
3460 3573 5774 JMP I ,+1
3461 3574 3616 TST45=4 /NEXT TEST
3462 3600
3463 PAGE
3464 /
3465 /ROUTINE TO COMPARE CRREG1 AND CRREG2 TO
3466 /GDREG1 AND GDREG2.
3467 /
3468 COMP2, 0
3469 CLA CLL
3470 TAD GDREG1
3471 AND K0017
3472 CIA
3473 TAD CRREG1
3474 SZA CLA
3475 JMP CRERR /NOT THE SAME
3476 TAD CRREG2
3477 CIA
3478 TAD GDREG2
3479 SZA CLA
3480 CRERR, ISZ COMP2 /ERROR, NOT THE SAME
3481 JMP I COMP2
3482 /
3483 /
3484 /VERIFY THAT WRITING ON A TRACK DOES NOT AFFECT
3485 /AN ADJACENT TRACK. THE TEST SEQUENCE IS AS FOLLOWS:
3486 /WRITE TRACKS 00000-00100-00040 THEN READ AND CHECK
3487 /TRACKS 00040-00000-00100, WRITE TRACKS 00020-00120-00060
3488 /THEN READ AND CHECK TRACKS 00060-00020-00120, ETC.
3489 /THE CENTER TRACK IS SET TO A DATA PATTERN OF
3490 /2525+5252, THE LOWER AND UPPER TRACKS ARE
3491 /SET TO A DATA PATTERN OF 5252+2525, THE FIRST TWO
3492 /WORDS OF EVERY SECTOR ARE SET TO THE ABSOLUTE
3493 /DISK ADDRESS.
3494 /
3495 CLL CLA CMA RTL
3496 DCA KCNT /ESTABLISH PROPER COUNT
3497 JMS I XLOAD
3498 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 T453C, 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 TCNTR4 /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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/ PAL10 V142A 15-APR-76 13124 PAGE 1-68
3553 3710 5320 JMP T45A2 /READ AND CHECK CENTER TRACK
3554 3711 1137 T45P3, 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 T45P4, TAD TCNTR3 /GET DISK ADDRESS
3565 3724 7104 CLL RAL /PUT EXTENDED BIT IN LINK
3566 3725 0110 AND K7740
3567 3726 3145 DCA CRRREG2 /SAVE RESULTS
3568 3727 7630 SZL CLA /SET EXTENDED BIT
3569 3730 7001 IAC /YES
3570 3731 3150 DCA CMREG /SETUP COMMAND FOR READ DATA
3571 3732 1141 TAD TCNTR6 /GET SECTOR POINTER
3572 3733 0117 AND K0017 /MASK
3573 3734 1145 TAD CRRREG2 /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 CRRREG1 /GET FIRST TIME POINTER
3578 3741 7650 SNA CLA /FIRST TIME???
3579 3742 1113 TAD K2525 /NO
3580 3743 1113 TAD K2525
3581 3744 4030 FIGURE /CHECK DATA READ
3582 3745 7610 SKP CLA /DATA ALL O.K.
3583 3746 5365 JMP T45F /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 CRRREG1 /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 T45F, ERROR /ERROR, TRACKS AFFECTED
3599 3766 3622 T45T, YST45 /SCOPE LOOP POINTER
3600 3767 0000 /MODIFIED TEXT POINTER
3601 /
3602 3770 5771 JMP I ,+1 /TO END OF TEST
3603 3771 4062 ENDTST
3604 /
3605 3772 7156 K7156, 7156
3606 /
3607 4000 PAGE

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/ PAL10 V142A 15-APR-76 13124 PAGE 1-69
3608 /
3609 /ROUTINE TO WAIT FOR 500 MS.
3610 /
3611 4000 0000 WTISZ, 0
3612 4001 7320 CLA CLL
3613 4002 1122 TAD K7740 /GET TIME CONSTANT
3614 4003 3340 DCA R0A0
3615 4004 3331 DCA L0M0
3616 4005 2331 ISZ L0M0
3617 4006 5205 JMP ,=1
3618 4007 2340 ISZ R0A0
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 C0SWIT /ROUTINE TO EXECUTE.
3631 4014 7000 NOP
3632 4015 4404 LAB /GET FIRST ADDRESS
3633 4016 3134 DCA TCNTR1 /SAVE IT
3634 4017 4405 CLASIC /CHECK FOR CLASSIC ACTIVE
3635 4020 4436 C0ERR /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 C0SWIT /ROUTINE TO EXECUTE.
3642 4024 7000 NOP
3643 4025 4404 LAB /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 LOADD /GO SEEK ONLY
3652 4036 4447 DRKSKP /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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3663 4051 0110 AND K7760 /MASK OFF CYLINDER AND SURFACE
3664 4052 4452 LOADD /LOAD AND GO SEEK
3665 4053 4447 DSKSKP /WAIT FOR DONE
3666 4054 5253 JMP ,=-1
3667 4055 4453 CLRALL /CLEAR STATUS
3668 4056 4444 RDSTAT /READ STATUS
3669 4057 7640 SZA CLA /DRIVE DONE?
3670 4060 5255 JMP ,=3 /NO, WAIT
3671 4061 5225 JMP RESEK+3 /CHECK FOR NEW ADDRESS
3672
3673 /
3674 /IF ALL DRIVES HAVE BEEN TESTED INDIVIDUALLY
3675 /THEN RUN OVERLAP SEEKS AND OVERLAP SEEKS, WRITES,
3676 /AND READS ON ALL DRIVES SELECTED. ALSO CHECK FOR HALT AT PASS
3677 /COMPLETION. AFTER OVERLAP TESTS START AT FIRST
3678 /DISK DRIVE ON SYSTEM.
3679
3679 4062 4777 ENDST, JMS I (GETDRV /GET NEXT DRIVE.
3680 4063 2071 ISZ DRVCNT /UPDATE NO. OF DRIVES COUNTER.
3681 4064 5323 JMP NEXDSK /TEST NEXT DRIVE.
3682 4065 1370 TAD DRVHAV
3683 4066 3071 DCA DRVCNT /SETUP NO. OF DRIVES COUNTER.
3684 4067 4763 TSTSEK, JMS I XLAP /PERFORM OVERLAP SEEKS
3685 4070 4764 JMS I XOVRRD /OVERLAP SEEKS+WRITES+READS
3686 4071 3776 DCA DCNT? /START OVER AT 0.
3687 4072 4777 JMS I (GETDRV /SELECT FIRST DRIVE.
3688 4073 4405 SAMDSK, CLASIC /CHECK FOR CLASSIC ACTIVE
3689 4074 4424 CAPASS /PASS COMPLETE
3690 4075 7610 SKP CLA
3691 4076 5302 JMP ,+4
3692 4077 1022 TAD 22
3693 4100 0105 AND K4000 /SFF IF ON APT
3694 4101 7650 SNA CLA /APT??
3695 4102 5307 JMP ,+5 /NO
3696 4103 3775 DCA I (CLKCNT /CLEAR APT TIMING COUNTER
3697 4104 7340 CLL CLA CMA
3698 4105 3175 DCA KCNT
3699 4106 5323 JMP NEXDSK /LOOP PROGRAM
3700 4107 4462 CRLF
3701 4110 4457 PRNTER /PRINT PASS COMPLETE
3702 4111 0760 NMES1
3703 4112 4457 PRNTER
3704 4113 7315 TEXEND
3705 4114 4424 LAB
3706 4115 0076 AND K0000
3707 4116 7650 SNA CLA /SWITCH 9 SFT?
3708 4117 5323 JMP ,+4
3709 4120 4405 CLASIC
3710 4121 4437 COINQU
3711 4122 7402 ENDHLT, HLT /YES, STOP PROGRAM
3712 4123 7301 NEXDSK, CLA CLL IAC
3713 4124 4453 CLRALL /DCLR
3714 4125 3131 DCA REG0
3715 4126 3132 DCA REG1
3716 4127 5730 JMP I ,+1 /LOOP ON PROGRAM
3717 4130 0240 TST0

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3718
3719 /
3720 /SUBROUTINE TO ISSUE "DMAN" MAINTENANCE IOT
3721 4131 0000 LDMN, 0
3722 4132 6747 IOT7, DMAN /"DMAN" MAINTENANCE IOT
3723 4133 5731 JMP I LDMN /EXIT
3724 4134 4405 CLASIC
3725 4135 4436 COERR
3726 4136 7402 ERHLT7, HLT /SKIP TRAP ERROR
3727 4137 5334 JMP ,=3
3728
3729 /
3730 /SUBROUTINE TO SHIFT, THEN READ DISK ADDRESS
3731 /INTO DATA BUFFER, 12 SHIFTS
3732
3732 4140 0000 ROAD, 0
3733 4141 7300 CLA CLL
3734 4142 1126 TAD M12
3735 4143 3133 DCA SRCNT1
3736 4144 7330 CLA CLL CHL RAR /SET MAIN(1) ENARLE BIT
3737 4145 4455 LDMAN /LOAD MAINTENANCE
3738 4146 7010 RAR
3739 4147 4455 LDMAN /LOAD MAINTENANCE
3740 4150 7300 CLA CLL
3741 4151 1015 TAD K0200 /SHIFT TRACK ADDRESS BIT
3742 4152 4455 LDMAN /LOAD MAINTENANCE IOT
3743 4153 2133 ISZ SRCNT1
3744 4154 5352 JMP ,=2 /SHIFT 12 BITS
3745 4155 7300 CLA CLL
3746 4156 1012 TAD K0020
3747 4157 4455 LDMAN /READ DATA BUFFER
3748 4160 3151 DCA DAREG /SAVE RESULTS
3749 4161 1151 TAD DAREG
3750 4162 5740 JMP I ROAD /EXIT
3751
3752 4163 4200 XLAP, OVRLAP
3753 4164 4400 XOVRRD, OVRRD
3754
3755 4165 0411 NMES3, TEXT "DISK"
3756 4166 2313
3757 4167 0000
3758
3756 4175 7162 /
3757 4176 4371
3758 4177 4345
3759 4200
3760
3761 PAGE
3762 /
3763 /ROUTINE TO DO OVERLAP SEEKS ON EXISTING DRIVES
3764 /AFTER ALL HAVE RUN THE COMPLETE DIAGNOSTIC
3765
3765 4200 0000 OVRLAP, 0
3766 4201 1105 TAD K4000
3767 4202 3140 DCA TCNTR5 /PASS COUNTER
3768 4203 1070 TAD DRVHAV
3769 4204 3137 DCA TCNTR4 /SET COUNTER FOR NO. OF DRIVES.

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3772 4205 3371 DCA DCNT2 /START WITH DRIVE 0
3771 4206 4777 JMS I (GETDRV /GET NEXT DRIVE.
3772 4207 1272 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 OVR22 /DO ALL EXISTING DISKS
3779 4216 3371 DCA DCNT2 /CLEAR FOR 0
3780 4217 1272 TAD DRVHAV /NO. OF DRIVES.
3781 4220 3137 DCA TCNTR4 /SETUP COUNTER
3782 4221 4777 OVR23, JMS I (GETDRV /GET NEXT DRIVES.
3783 4222 1272 TAD DRIVNO /GET SELECTED DRIVE.
3784 4223 7110 CLL RAR
3785 4224 4407 DSKIN /CHECK FOR DRIVE DONE
3786 4225 5232 JMP NOTDON /DRIVE NOT DONE
3787 4226 5233 JMP OVR0K /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 OVR23 /NO. NO REST
3791 4232 5217 JMP OVR23-2 /YES, RESET
3792 4233 7340 OVR0K, CLA CLL CMA
3793 4234 3137 DCA TCNTR4
3794 4235 2142 ISZ TCNTR5 /UPDATE PASS COUNTER, DONE ?
3795 4236 5227 JMP OVR2+1 /NO, SEND OUT
3796 4237 3371 DCA DCNT2 /SET FOR 0
3797 4240 1272 TAD DRVHAV /NO. OF DRIVES ON SYSTEM.
3798 4241 3137 DCA TCNTR4
3799 4242 4777 ALLBAK, JMS I (GETDRV /GET NEXT DRIVE.
3800 4243 1272 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 BEKS
3810 4255 4201 OVR2LAP+1 /SCOPE LOOP POINTER
3811 4256 5300 S300 /TEXT POINTER
3812 4257 5600 JMP I OVR2LAP /TO NEXT TEST
3813
3814 /ROUTINE TO GET DRIVES FROM OPERATOR.
3815
3816 4260 0000 SEL0SK, 0
3817 4261 4462 CRLF
3818 4262 4457 PRNTER /PRINT MESSAGE "RK8-E DRIVE"
3819 4263 2760 NMES1 /MESSAGE POINTER
3820 4264 4462 CRLF
3821 4265 4457 PRNTER /PRINT MESSAGE "TEST"
3822 4266 6560 NMES2 /MESSAGE POINTER
3823 4267 3370 DCA DCNT1
3824 4270 3070 DCA DRVHAV /COUNTER FOR NO. OF DRIVES.

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3825 4271 1776 TAD M0
3826 4272 3371 DCA DCNT2 /NO. OF POSSIBLE DRIVES.
3827 4273 4462 CRLF
3828 4274 4457 PRNTER
3829 4275 4165 NMES3
3830 4276 1370 TAD DCNT1
3831 4277 1374 TAD DSKON /COMPUTE WAY TO DISK BUFFER.
3832 4300 3372 DCA DCNT3 /SAVE POINTER.
3833 4301 1370 TAD DCNT1 /GET DRIVE NO.
3834 4302 1364 TAD K0260
3835 4303 4436 TYPE /TYPE DRIVE NO.
3836 4304 1366 TAD K0277
3837 4305 4436 TYPE /TYPE ?.
3838 4306 6031 KSF /SKIP ON KEY.
3839 4307 5306 JMP , -1
3840 4310 6036 KRR
3841 4311 0367 AND K0177
3842 4312 1215 TAD K0200
3843 4313 3373 DCA DCNT4 /SAVE INPUT.
3844 4314 1373 TAD DCNT4
3845 4315 4436 TYPE /ECHO INPUT.
3846 4316 1373 TAD DCNT4
3847 4317 7041 CIA
3848 4320 1365 TAD K0331
3849 4321 7100 CLL
3850 4322 7650 SNA CLA /Y OR N.
3851 4323 7360 CLA CLL CMA CML /Y.
3852 4324 3772 DCA I DCNT3 /SAVE ON FLAG.
3853 4325 7630 SZL CLA /HAS DRIVE SELECTED.
3854 4326 2070 ISZ DRVHAV /YES.
3855 4327 1775 TAD K0240 /SPACE
3856 4330 4436 TYPE
3857 4331 2370 ISZ DCNT1
3858 4332 2371 ISZ DCNT2
3859 4333 5274 JMP NXTOSK
3860 4334 1070 TAD DRVHAV
3861 4335 7650 SNA CLA /ANY SELECTED.
3862 4336 5261 JMP SEL0SK+1 /TRIED TO FOOL ME.
3863 4337 1070 TAD DRVHAV
3864 4340 7041 CIA
3865 4341 3070 DCA DRVHAV /SET COUNTER FOR NO. OF DRIVES.
3866 4342 3371 DCA DCNT2 /START WITH DRIVE 0.
3867 4343 4345 JMS GETDRV /GET FIRST DRIVE.
3868 4344 5660 JMP I SEL0SK /EXIT.
3869
3870 /ROUTINE TO SELECT DRIVES ON SYSTEM.
3871
3872 4345 0000 GETORV, 0
3873 4346 1371 TAD DCNT2
3874 4347 0075 AND K0003
3875 4350 1374 TAD DSKON /WAY TO BUFFER.
3876 4351 3370 DCA DCNT1 /SAVE POINTER FOR WAY TO BUFFER.
3877 4352 1371 TAD DCNT2
3878 4353 0075 AND K0003
3879 4354 7104 CLL RAL

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3080 4355 3072 DCA DRIVNO /SETUP DRIVE NO.
3081 4356 2371 ISZ DCNT2 /UPDATE TO NEXT DRIVE.
3082 4357 7000 NOP
3083 4360 1770 TAD I DCNT1 /GET BUFFER FLAG.
3084 4361 7640 SZA CLA /DISK ON SYSTEM?
3085 4362 5745 JMP I GETDRV /YES, USE DRIVNO.
3086 4363 5346 JMP GETDRV+1 /SELECT NEXT.
3087
3088 4364 0260 K0260, 0260
3089 4365 0331 K0331, 0331
3090 4366 0277 K0277, 0277
3091 4367 0177 K0177, 0177
3092 4370 0000 DCNT1, 0
3093 4371 0000 DCNT2, 0
3094 4372 0000 DCNT3, 0
3095 4373 0000 DCNT4, 0
3096 4374 1561 DSKON, DISK0
3097
3098 4375 6064
3099 4376 6110
3900 4377 4345
PAGE
/
/ROUTINE TO PERFORM RANDOM OVERLAP SEEKS, WRITES AND,
/READS ON ALL EXISTING DRIVES AFTER THEY HAVE RUN THE
/COMPLETE DIAGNOSTIC.
/
OVRRED, 0
3906 4400 0200 CLA CLL CML RAR
3907 4401 7330 DCA TCNTR5 /PASS COUNTER
3908 4402 3140 OVRD01, TAD DRVHAV
3909 4403 1070 DCA TCNTR4 /SET COUNTER FOR NO. OF DRIVES.
3910 4404 3137 DCA DCNT2 /START WITH DRIVE 0
3911 4405 3777 OVRD02, JMS I (GETDRV /SELECT DRIVE NO.
3912 4406 4776 TAD DRIVNO /DRIVE NO. SELECTED.
3913 4407 1072 CLL RAR
3914 4410 7110 RANADD /SELECT A RANDOM ADDRESS
3915 4411 4423 DSKOUT /SEND DISK OUT
3916 4412 4406 CLRALL /CLEAR STATUS
3917 4413 4453 ISZ TCNTR4 /UPDATE DISK COUNTER
3918 4414 2137 JMP OVRD02 /DO ALL EXISTING DISKS
3919 4415 5206 DCA DCNT2 /CLEAR FOR 0
3920 4416 3777 TAD DRVHAV
3921 4417 1070 DCA TCNTR4 /SET COUNTER FOR NO. OF DRIVES.
3922 4420 3137 OVRD03, JMS I (GETDRV /SELECT DRIVE.
3923 4421 4776 TAD DRIVNO /GET DRIVE SELECTED
3924 4422 1072 CLL RAR
3925 4423 7110 DSKIN /CHECK THIS DRIVE
3926 4424 4407 JMP CHKNEX /CHECK FOR NEXT DRIVE
3927 4425 5232 JMP OVRD0K /DONE AND NO ERRORS
3928 4426 5235 POLERR, TAD K5300
3929 4427 1166 DCA TCNTR4 /SETUP TEXT POINTER
3930 4430 3324 JMP OVRDR /ERRORS
3931 4431 5322 CHKNEX, ISZ TCNTR4 /UPDATE NO. COUNTER.
3932 4432 2137 JMP OVRD03 /NO, DO REST
3933 4433 5221

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3934 4434 5217 JMP OVRD03-2 /YES, RESET
3935 4435 1072 OVRD0K, 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 DSKAND /GET DISK ADDRESS
3940 4442 3135 DCA TCNTR2 /SAVE IT
3941 4443 1326 TAD DSKADD /GET POINTER
3942 4444 1076 TAD K0004 /ADD IN FUDDG FACTOR
3943 4445 3326 DCA DSKAND /MAKE ADDRESS
3944 4446 1114 TAD K5252 /GET DATA PATTERN TO USE
3945 4447 4431 FILBUF /FILL DATA BUFFER
3946 4450 1726 TAD I DSKAND /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 XLDTRK /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 7150 DCA CMREG /SETUP COMMAND POINTER
3954 4460 1463 TAD I XLDTRK /GET ADDRESS
3955 4461 4426 DSKGO /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 DSKAND /GET EXTENDED BIT
3960 4466 3150 DCA CMREG /SETUP COMMAND REGISTER
3961 4467 1135 TAD TCNTR2 /GET DISK ADDRESS
3962 4470 4426 DSKGO /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 LDCHD /FIRST SELECT DRIVE
4001 4533 1150 TAD CMREG
4002 4534 1015 TAD K0200 /ENABLE SET DONE BIT
4003 4535 4450 LDCHD /LOAD COMMAND
4004 4536 7332 CLA CLL CML RTR /MAYBE EXPECTED STATUS
4005 4537 3143 DCA GOREG2 /SETUP COMPARE REGISTER
4006 4540 4444 ROSTAT /READ STATUS
4007 4541 4447 DSKSWP /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 GOREG2 /SETUP COMPARE REGISTER
4011 4545 4444 ROSTAT /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 GOREG2
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 GOREG2
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 PAGE
4035 4577 4371
4036 4600
4037 /
4038 /MANUAL FUNCTION TEST
4039 /LOAD ADDRESS 0201 OR "MANUAL".
4040 /SET SWITCHES TO FUNCTION
4041 /PRESS START
4042 /MACHINE SHOULD HALT
4043 /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 /IN CASE 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 /MASK
4057 4604 0326 AND K7707 /SAVE FUNCTION
4058 4605 3134 DCA TCNTR1
4059 4606 7340 CLA CLL CMA /SETUP FOR ONE PASS
4060 4607 3131 DCA REG0 /USE CURRENT FIELD
4061 4610 6224 RIF
4062 4611 1134 TAD TCNTR1 /ACTUAL FUNCTION
4063 4612 3134 DCA TCNTR1
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 CRERR /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 CRERR /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 CRERR /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 THANT /TEXT POINTER
4114 4664 5322 JMP THANE /ERROR, SKIP OR STATUS
4115 4665 5321 JMP THANOK /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 THANT /TEXT POINTER
4129 4703 5322 JMP THANE /ERROR
4130 4704 1137 TAD TCNTR4 /GET READ FLAG
4131 4705 7640 SZA CLA /WAS IT A READ
4132 4706 5321 JMP THANOK /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 TAD .+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 THANOK /O.K. NO ERRORS
4140 4716 5322 JMP THANE /DATA ERROR
4141 4717 1136 TAD TCNTR3 /WAS A READ
4142 4720 4430 FIGURE /WORD BY WORD COMPARE OF DATA
4143 4721 4437 THANOK, NERROR /NO ERRORS
4144 4722 4443 THANE, ERROR /ERROR IN FUNCTION SELECTED
4145 4723 4643 THANS /SCOPE LOOP POINTER
4146 4724 5373 THANT, 5373 /TEXT POINTER
4147 /
4148 4725 5243 JMP THANS / LOOP
4149 /
4150 4726 7707 K7707, 7707
4151 /
4152 /SUBROUTINE TO WAIT FOR INTERRUPTS

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4153 /IF INTERRUPT OCCURS 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 CRERR
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 ADRFG /SAVE IN ADDRESS
4191 4767 1153 TAD ADRFG
4192 4770 3152 DCA CRFG /SETUP INITIAL CURRENT ADDRESS
4193 4771 1153 TAD ADRFG
4194 4772 6740 IDT4, DLCA /LOAD CURRENT ADDRESS IDT
4195 4773 5765 JMP I LDCA
4196 4774 4405 CLASIC
4197 4775 4436 CRERR
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 AUTPRD, CLASIC /CHECK FOR CLASSIC.

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4208 5001 4431 CASWIT /ROUTINE TO EXECUTE.
4209 5002 7200 NOP
4210 5003 4424 LAS /GET THE SWITCHES
4211 5004 7124 CLL RAL
4212 5005 9100 AND K0006 /MASK DRIVE NUMBER
4213 5006 3272 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 FILRIF /FILL OUTROUND BUFFER
4219 5014 1272 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 5072 TAPROT /TEXT POINTER
4226 5023 5266 JMP APERR /ERROR, STATUS
4227 5024 1103 TAD K2000 /FUNCTION WRITE PROTECT
4228 5025 1272 TAD DRIVNO /CURRENT DRIVE
4229 5026 4450 LDCMO /LOAD COMMAND REGISTER
4230 5027 4452 LDCMO /LOAD AND GO
4231 5030 4444 ROSTAT /READ STATUS REGISTER
4232 5031 7444 SZA CLA /SHOULD BE 0000 ???
4233 5032 5245 JMP APA1 /ERROR, STATUS
4234 5033 4432 FILRIF /CLEAR OUTROUND BUFFER
4235 5034 1272 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 5072 TAPROT /TEXT POINTER
4241 5042 7200 NOP
4242 5043 7326 CLA CLL CML RYL
4243 5044 1012 TAD K0000 /MAKE EXPECTED STATUS
4244 5045 3143 DCA GOREG2 /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 ACCMPI /CHECK RESULTS
4249 5052 7610 SXP 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 1217 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., NO ONE MORE TIME
4261 5066 4442 APERR, ERROR /ERROR, WRITE PROTECT
4262 5067 5244 APR1

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4263 5071 2000 TAPROT, 0000 /TEXT POINTER
4264 5071 4475 CLASSIC
4265 5072 4436 CERRR
4266 5073 7422 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 2000 MYLAS, 0
4275 5076 4405 CLASSIC /CHECK IF CLASSIC
4276 5077 4425 CACKSW /GET SWITCHES
4277 5100 7604 7604 /NOT CLASSIC, GET SWITCHES
4278 5101 5675 JMP I MYLAS
4279 /
4280 /THIS ROUTINE WILL BE A SKP INSTRUCTION WITHOUT
4281 /CLASSIC, OTHERWISE IT WILL EXECUTE NEXT INSTRUCTION
4282 /IN FIELD 0 AND THEN SKIP THE INSTRUCTION AFTER THAT ONE.
4283 /
4284 5122 2000 CLASSIK, 0
4285 5123 3332 DCA SAVAC /SAVE CURRENT AC
4286 5124 1722 TAD I CLASSIK
4287 5125 3333 DCA ROUTMP /SAVE THE CLASSIC ROUTINE
4288 5126 2322 ISZ CLASSIK
4289 5127 1722 TAD OP2
4290 5110 0377 AND 0400
4291 5111 7640 SZA CLA
4292 5112 5315 JMP +3
4293 5113 1332 TAD SAVAC /NO RETURN TO PROGRAM
4294 5114 5702 JMP I CLASSIK
4295 5115 2322 ISZ CLASSIK
4296 5116 6211 CPE 10 /CHANGE TO FIELD 1
4297 5117 1920 TAD SWR
4298 5120 3776 DCA I (SWR) /MOVE POINTERS TO FIELD 1
4299 5121 1921 TAD OP1
4300 5122 3775 DCA I (OP1)
4301 5123 1922 TAD OP2
4302 5124 3774 DCA I (OP2)
4303 5125 1333 TAD ROUTMP
4304 5126 3773 DCA I (ROUTMP) /SAVE ROUTINE IN FIELD 1
4305 5127 1332 TAD SAVAC
4306 5130 6212 CIF 10
4307 5131 5773 JMP I (ROUTMP) /GO TO FIELD 1
4308 /
4309 5132 2000 SAVAC, 0
4310 5133 2000 ROUTMP, 0
4311 /
4312 /ROUTINE TO WAIT FOR DISK SKIPS
4313 /
4314 5134 2000 SKWAT, 0
4315 5135 7300 CLA CLL
4316 5136 4530 TICK
4317 5137 1122 TAD K7740 /TIMING FOR APT

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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 SKWAY
4329 5153 5734 JMP I SKWAY /EXIT
4330
4331 /
4332 /SUBROUTINE TO READ STATUS REGISTER
4333
4334 5154 0000 RDST, R
4335 5155 6745 IOTS, ORST /READ STATUS IOT
4336 5156 5363 JMP ,+5
4337 5157 4405 CLASIK
4338 5160 4436 CAERR /SKIP TRAP ERROR
4339 5161 7402 FRMLTS, MLT
4340 5162 5357 JMP ,+3
4341 5163 3146 DCA STREG /SAVE RESULTS
4342 5164 1146 YAD STREG
4343 5165 5754 JMP I RDST /EXIT
4344 5174 0022
4345 5175 0021
4346 5176 0020
4347 5177 0000
4348
4349 PAGE
4350 /
4351 /SUBROUTINE FOR "ERRORS," SCOPE LOOPS, AND
4352 /ERROR TYPEOUTPUTS.
4353
4354 5200 0000 ERRO, R
4355 5201 4527 JMS I KAERRO /REPORT ERROR TO APT
4356 5202 1600 TAD I ERRO /GET RESTART ADDRESS
4357 5203 3173 DCA RSTRY /STORE
4358 5204 4404 LAS /GET SWITCH R
4359 5205 7700 SMA CLA /IS IT SCOPE LOOP
4360 5206 5217 JMP ERRA1 /NO, CONTINUE
4361 5207 4404 LAS /GET SWR2
4362 5210 7006 RTL
4363 5211 7710 SPA CLA /INHIRT BELL????
4364 5212 5215 JMP ,+3 /YES
4365 5213 1356 TAD K0207
4366 5214 4436 TYPE
4367 5215 1600 TAD I ERRO
4368 5216 5757 JMP I ESCOPE /CHECK FOR BELL
4369 5217 1600 TAD I ERRO
4370 5220 3360 DCA RETRNP /STORE FOR RETURN
4371 5221 2200 ISZ ERRO
4372 5222 7301 CLA CLL IAC
4373 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 MEDTAD /MAKE ERROR HEADER TAD
4378 5232 3233 DCA ,+1
4379 5233 7402 MLT /MODIFIED HEADER TAD
4380 5234 3236 DCA ,+2
4381 5235 4457 PRNTER /MODIFIED HEADER POINTER
4382 5236 7402 MLT
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 NTGN /NOT GO: REGISTER
4393
4394
4395 5251 3200 DCA ERRO
4396 5252 4457 PRNTER /PRINT GO:
4397 5253 5752 TEXGN
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 GOREG1 /GET DATA
4402 5260 4461 TWOCT /PRINT TWO OCTAL
4403 5261 1143 TAD GOREG2
4404 5262 4460 OCTEL /PRINT FOUR OCTAL
4405 5263 7610 SKP CLA
4406 5264 3200 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 DCA ERRO
4420 5302 1363 TAD XTEXT
4421 5303 3366 DCA PCNTR2
4422 5304 1364 TAD XREG
4423 5305 3010 DCA AUTD10
4424 5306 1116 TAD K7771
4425 5307 3365 DCA PCNTR1 /COUNTER FOR # OF HEADS
4426 5310 1200 STRAUT, TAD ERRO /GET TEXT POINTER

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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
4432 5316 2366          ISZ PCNTR2
4433 5317 2366          ISZ PCNTR2
4434 5320 3322          DCA .+2
4435 5321 4457          PRNTR
4436 5322 7402          HLT
4437 5323 1410          TAD I AUTO10
4438 5324 4460          OCTFL
4439 5325 2365          AGAIN, ISZ PCNTR1
4440 5326 5312          JMP STRAUT
4441 5327 4474          LAR
4442 5328 7276          RTL
4443 5331 2216          AND K0400
4444 5332 7657          SMA CLA
4445 5333 5342          JMP CHKERR
4446 5334 7632          SZL CLA
4447 5335 5340          JMP .+3
4448 5336 1361          TAD INHIRT
4449 5337 5757          JMP I ESCOPE
4450 5340 1360          TAD RETRN2
4451 5341 5757          JMP I ESCOPE
4452 5342 4405          CHKERR, CLASTC
4453 5343 4436          CRRR
4454 5344 7402          FRMLT9, HLT
4455 5345 4762          JMS I XGTREG
4456 5346 5760          JMP I RETRN2
4457 5347 5264          JMP NTRD
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          INHIRT, 0
4469 5362 5527          YGTREG, GTREG
4470 5363 5756          YTEXT, TEXT
4471 5364 0145          YREG, CRRG2
4472 5365 0000          PCNTR1, 0
4473 5366 0000          PCNTR2, 0
4474 5367 1370          WENTAD, TAD HEDLST
4475 5370 6671          WFLST, 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          ERTXA
4483
4484
4485 5400
4486
4487
4488
4489 5400 0200          RDRF, 0
4490 5401 7330          CLA CLL CML RAR
4491 5402 4455          LDMAN
4492 5403 1012          TAD K0020
4493 5404 4455          LDMAN
4494 5405 3147          DCA DRREG
4495 5406 1147          TAD DRREG
4496 5407 3154          DCA DTREG
4497 5410 1154          TAD DTREG
4498 5411 5600          JMP I RDRF
4499
4500
4501
4502
4503 5412 0200          RDCM, 0
4504 5413 7330          CLA CLL
4505 5414 1126          TAD M12
4506 5415 3133          DCA SRCNT1
4507 5416 7330          CLA CLL CML RAR
4508 5417 4455          LDMAN
4509 5420 7210          RAR
4510 5421 4455          LDMAN
4511 5422 7300          CLA CLL
4512 5423 1216          TAD K0400
4513 5424 4455          LDMAN
4514 5425 2133          ISZ SRCNT1
4515 5426 5224          JMP .+2
4516 5427 7300          CLA CLL
4517 5430 1012          TAD K0020
4518 5431 4455          LDMAN
4519 5432 3150          DCA CMREG
4520 5433 1150          TAD CMREG
4521 5434 5612          JMP I RDCM
4522
4523
4524
4525 5435 0200          /ROUTINE TO ZERO WORK BUFFER
4526 5436 7340          KLRUF, 0
4527 5437 1267          CLA CLL CMA
4528 5440 3010          TAD RGNRUF
4529 5441 1123          DCA AUTO10
4530 5442 3162          TAD K7400
4531 5443 3010          DCA I AUTO10
4532 5444 2162          ISZ DATCNT
4533 5445 5243          JMP .+2
4534 5446 5635          JMP I KLRUF
4535
4536

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4537 /THE COMPLEMENT DATA THATS IN THE AC.
4538 /
4539 FLBUF, 0
4540 DCA SAVDAT /SAVE DATA WORD
4541 CLA CLL CMA
4542 TAD RGNBUF /START OF BUFFER=1
4543 DCA AUTO10 /SETUP AUTO INDEX
4544 TAD K7600
4545 DCA DATCNT /SETUP COUNTER
4546 TAD SAVDAT /GET FIRST WORD
4547 DCA I AUTO10 /STORE IN BUFFER
4548 TAD SAVDAT /GET SECOND WORD
4549 CMA /COMPLEMENT IT
4550 DCA I AUTO10 /STORE IN BUFFER
4551 ISZ DATCNT /UPDATE COUNTER
4552 JMP LPDAT /MORE WORDS TO GO
4553 TAD K1230
4554 DCA I AUTO10 /MAKE WORD IN BUFFER=1
4555 JMP I FLBUF /BUFFER FULL
4556 /
4557 /ROUTINE TO CHECK FOR WAIT AND RECALIBRATE
4558 /
4559 SCOPE, DCA TOTST /SAVE SCOPE LOOP POINTER
4560 LAS /GET SWITCH 7
4561 AND K0020 /MASK
4562 SZA CLA /WAIT LOOP?
4563 WATISZ /YES
4564 LAS /GET SWITCH 6
4565 AND K0040 /MASK
4566 SNA CLA /IS IT CLEAR DISK
4567 JMP NOCLR /NO, DON'T
4568 CLA CLL IAC /ENABLE CLEAR CONTROL
4569 CLRALL /CLEAR CONTROL
4570 TAD CMREG /GET LAST COMMAND
4571 AND K7577 /MASK OUT SET DONE
4572 LOCMD /LOAD COMMAND
4573 CLA CLL CML RYL /ENABLE RECALIBRATE
4574 CLRALL /RECALIBRATE
4575 SKPWAY /WAIT FOR FIRST DONE
4576 NOP
4577 TAD CMREG /LAST COMMAND
4578 TAD K0200
4579 LOCMD /LOAD COMMAND
4580 SKPWAY /WAIT FOR SECOND DONE
4581 NOP
4582 TAD CMREG
4583 AND K7577 /MASK SET DONE
4584 DCA CMREG
4585 NOCLR, CLA CLL IAC /ENABLE CLEAR CONTROL
4586 CLRALL /CLEAR CONTROL
4587 JMP I TOTST /GO TO TEST
4588 /
4589 K7577, 7577
4590 TOTST, 0
4591 /

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```

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 GTREG, 0
4598 LAS /GET SWITCH A
4599 AND K0010 /MASK
4600 SNA CLA /WAS IT GET ALL REGISTERS
4601 JMP I GTREG /NO, GO BACK
4602 ISZ GTREG /YES, UPDATE POINTER
4603 ROSTAT /READ STATUS
4604 ROBUF /READ LOWER BUFFER
4605 CLA CLL
4606 LOCUR /SET CA TO 0 FOR BREAK
4607 CLA CLL CML RYL /ENABLE SHIFT TO LOWER BUFFER
4608 LOMAN /BREAK IF LAST BREAK WAS A READ
4609 RDCRC /READ CRC
4610 RDADD /READ TRACK
4611 RDCMD /READ COMMAND
4612 CRLF
4613 CLA CLL IAC /ENABLE CLEAR CONTROL
4614 CLRALL /CLEAR CONTROL
4615 TAD K7600
4616 JMP I GTREG /EXIT
4617 /
4618 /ROUTINE TO SEND DRIVES ON AN OVERLAP SEEK
4619 /
4620 DOUT, 0
4621 DCA GTREG /SAVE ADDRESS
4622 RAL
4623 TAD DRIVNO /GET CURRENT DRIVE
4624 LOCMD /LOAD COMMAND REGISTER
4625 TAD CMREG /GET LAST COMMAND ISSUED
4626 TAD K3000 /ADD IN SEEK ONLY FUNCTION
4627 TAD HOMEMA /ADD IN CURRENT FIELD
4628 LOCMD /LOAD COMMAND REGISTER
4629 TAD GTREG /GET SAVED ADDRESS
4630 LDADD /LOAD AND GO
4631 DSXSKP /WAIT FOR FIRST DONE FLAG
4632 JMP -1 /HANG IF NO SKIP
4633 JMP I DOUT /DISK IS OUT
4634 /
4635 /SUBROUTINE TO ISSUE "DCLR" CLEAR IOT
4636 /
4637 CLDR, 0
4638 IOT2, DCLR /DCLR "CLEAR IOT"
4639 JMP I CLDR /EXIT
4640 CLASTC
4641 CBERR
4642 FRHLT2, HLT /SKIP TRIP ERROR
4643 JMP -3
4644 /
4645 PAGE
4646 /

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4647 /ROUTINE TO READ OR WRITE ON DISK
4648 /RETURN+1 SKIP OR STATUS ERROR
4649 /RETURN+2 O.K.
4650 /
4651 DISK, 0
4652 DCA SAVTRK /SAVE TRACK ADDRESS
4653 CLA CLL CMA /SET CRC ERROR FLAG
4654 DCA SOFERR /GET TEXT POINTER
4655 TAD I DISK /SAVE IT
4656 DCA SAVPCT /UPDATE POINTER
4657 ISZ DISK /GET COMMAND
4658 TAD CMREG /MASK OFF
4659 AND K7501 /CURRENT FIELD
4660 TAD HMMEMA /CURRENT DRIVE
4661 TAD DRIVNO /LOAD COMMAND
4662 LDCHD /GET BEGINNING OF BUFFER
4663 TAD RGNRIUF /LOAD CURRENT ADDRESS
4664 LDCHD /GET TRACK+SECTOR
4665 TAD SAVTRK /LOAD AND GO
4666 LDADD /WAIT FOR DISK SKIP
4667 SKPWAT /ERROR, NO SKIP
4668 JMP SKPERR /EXPECTED STATUS
4669 CLA CLL CML RAR /SETUP COMPARE REGISTER
4670 DCA GOREG2 /READ STATUS
4671 ROSTAT
4672 TAD K4000
4673 SZA CLA /WAS STATUS 4000
4674 JMP STAFERR /ERROR, STATUS
4675 TAD K5373 /TEXT POINTER
4676 ISZ DISK /UPDATE FOR GOOD RETURN
4677 DCA I SAVPCT /STORE IN TEXT POINTER
4678 JMP I DISK /EXIT
4679 SKPERR, TAD K0306 /SKIP TEXT POINTER
4680 JMP RETRN /EXIT
4681 STAFERR, TAD STREG /GET STATUS JUST READ
4682 AND K0010 /MASK OUT CRC ERRORS
4683 SNA CLA /WERE THERE ANY
4684 JMP HRDERR /NO, OTHERS
4685 CLA CLL /
4686 TAD CMREG /GET LAST COMMAND
4687 AND K7000 /MASK FUNCTION
4688 TAD K6000 /ADD IN FUNGE FACTOR
4689 SZA CLA /WAS IT A READ ALL OR READ
4690 JMP HRDERR /NO, MUST BE A WRITE
4691 DCA SOFERR /SET CRC ERROR FLAG
4692 JMP RETRN-2 /GO CHECK DATA OR RETURN
4693 HRDERR, TAD K5300
4694 JMP RETRN /EXIT
4695 /
4696 SAVTRK, 0
4697 K7501, 7501
4698 /
4699 /ROUTINE TO COMPARE WORDS IN BUFFER TO
4700 /KNOWN DATA PATTERN IN THE AC.
4701 /

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4702 FIGURE, 0
4703 DCA GOREG2 /SAVE FOR ERROR PRINTER
4704 TAD RGNRIUF /GET START OF BUFFER
4705 DCA ADREG /SAVE FOR ERROR PRINTER
4706 TAD CMREG /GET DISK NO. AND EXT. BIT
4707 AND K0007 /MASK THEM
4708 CIA /
4709 TAD I ADREG /GET FIRST TRACK WORD
4710 SNA CLA /WAS IT O.K. ?
4711 JMP +4 /YES, CHECK NEXT TRACK WORD
4712 TAD CMREG /GET DISK NO. AND EXT. BIT
4713 AND K0007 /MASK THEM
4714 JMP DTERR /DATA ERROR
4715 ISZ ADREG /UPDATE ADDRESS
4716 TAD I ADREG /GET SECOND WORD
4717 CIA /
4718 TAD DAREG /COMPARE TO ADDRESS
4719 SNA CLA /WAS SECOND TRACK WORD O.K.
4720 JMP +3 /YES, NOW CHECK DATA
4721 TAD DAREG /GET GOOD INFO
4722 JMP DTERR /DATA ERROR
4723 CLA CLL CML RTL
4724 TAD K7400 /SETUP COUNTER
4725 DCA DATCNT /UPDATE ADDRESS
4726 ISZ ADREG /GET DATA WORD
4727 TAD I ADREG /
4728 CIA /
4729 TAD GOREG2 /COMPARE TO GOOD ONE
4730 SZA CLA /WAS WORD O.K.?
4731 JMP DTERR+1 /NO, DATA ERROR
4732 TAD GOREG2 /GET GOOD DATA
4733 CMA /
4734 DCA GOREG2 /IT IS A COMPLEMENT DATA PATTERN
4735 ISZ DATCNT /UPDATE BUFFER COUNTER
4736 JMP LPFIG /MORE TO CHECK
4737 ISZ ADREG /UPDATE ADDRESS
4738 TAD K1234 /
4739 CIA /
4740 TAD I ADREG /GET WORD IN BUFFER+1
4741 SNA CLA /WAS IT O.K.
4742 JMP +3 /YES ALL DATA O.K.
4743 TAD K1234 /
4744 JMP DTERR /WORD LOST IN BUFFER+1
4745 CLA CLL CML RAR /EXPECTED STATUS
4746 DCA GOREG2 /SETUP COMPARE REGISTER
4747 TAD SOFERR /GET CRC ERROR FLAG
4748 SZA CLA /WAS IT SET
4749 JMP I FIGURE /NO THE BUFFER IS O.K.
4750 CLA CLL CMA /SETUP CRC FLAG
4751 DCA SOFERR /RESET FLAG
4752 TAD K5300 /TEXT MESS
4753 DCA I SAVPCT /SETUP TEXT POINTER
4754 CLA CLL CML RAR /EXPECTED STATUS
4755 DCA GOREG2 /SETUP COMPARE
4756 TAD I ADREG /GET BAD WORD

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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 /
      5751 7200 TEXTPC, TEXT "PC:"
4762 5752 0704 TEXTGD, TEXT "GD:"
      5753 7200
4763 5754 0322 TEXTCR, TEXT "CR:"
      5755 7200
4764 5756 2324 TEXTST, TEXT "ST:"
      5757 7200
4765 5760 0402 TEXTDB, TEXT "DB:"
      5761 7200
4766 5762 0415 TEXTCH, TEXT "CH:"
      5763 7200
4767 5764 0401 TEXTDA, TEXT "DA:"
      5765 7200
4768 5766 0301 TEXTCA, TEXT "CA:"
      5767 7200
4769 5770 0104 TEXTAD, TEXT "AD:"
      5771 7200
4770 5772 0424 TEXTDT, TEXT "DT:"
      5773 7200
4771
4772 /
      PAGE
4773 /
4774 /SUBROUTINE TO SHIFT CRC REGISTER TO DATA
4775 /BUFFER THEN READ IT.
4776 /
4777 6000 0200 ROCR, 0
4778 6001 7300 CLA CLL
4779 6002 1126 TAD M12
4780 6003 3133 DCA SRCNT1 /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 SRCNT1
4788 6013 5211 JMP -2 /12 BIT SHIFT
4789 6014 7300 CLA CLL
4790 6015 1712 TAD K0020 /ENABLE READ BUFFER
4791 6016 4455 LDMAN
4792 6017 3145 DCA CRRG2 /SAVE IT
4793 6020 1126 TAD M12
4794 6021 3133 DCA SRCNT1 /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 SRCNT1
4800 6027 5225 JMP -2 /12 BIT SHIFT
4801

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4802
4803 6030 7300 CLA CLL
4804 6031 1712 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 ROCR /EXIT
4809
4810 /SUBROUTINE TO PRINT TWO OCTAL
4811 /
4812 6036 0200 TOCT, 0
4813 6037 3133 DCA SRCNT1 /SAVE AC
4814 6040 1133 TAD SRCNT1
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 SRCNT1
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 0200 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 0200 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 OCA 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 OCA FROCT
4874 6116 1665 TAD I FROCT
4875 6117 0111 AND K7700
4876 6120 7450 SNA
4877 6121 5345 JMP EXIT
4878 6122 7500 SNA
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 SNA
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 CLASIC
4908 6153 4435 CBTYP
4909 6154 7410 SKP
4910 6155 5751 JMP I PRINT
4911 6156 6046 TLS

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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 OCA DAREG /SAVE OUTBOUND DATA
4922 6166 1151 TAD DAREG
4923 6167 6743 IOY3, DLAG /LOAD DISK ADDRESS REGISTER
4924 6170 5764 JMP I LOAD /EXIT
4925 6171 4405 CLASIC
4926 6172 4436 C0ERR
4927 6173 7402 ERHLT3, HLT /SKIP TRAP ERROR.
4928 6174 5371 JMP .-3
4929
4930 6177 4364 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 OCA SAVPC /SAVE FOR ERROR
4939 6204 2200 ISZ RESTOR /UPDATE PC
4940 6205 1200 TAD RESTOR /GET PC
4941 6206 3215 OCA ONLY /SAVE FOR END OF SEEK ROUTINE
4942 6207 1072 TAD DRIVNO /CURRENT DRIVE
4943 6210 1156 TAD HOMEMA /CURRENT FIELD
4944 6211 4450 LOCMD /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 /
4950 6216 3317 OCA SAVTO /SAVE LOWER TRACK BITS
4951 6217 1615 TAD I ONLY /GET TEXT POINTER
4952 6220 3316 OCA 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 LOCMD /LOAD COMMAND
4960 6230 1317 TAD SAVTO /GET POSITION
4961 6231 4452 LOADD /LOAD AND GO
4962 6232 4433 CHECK, SKPMAT /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 OCA DOREG2 /SETUP COMPARE REGISTER

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4966 6236 1122 TAD K7740
4967 6237 3321 DCA RNAD
4968 6240 4444 ROSTAT /SETUP SKIP TIMER
4969 6241 1125 TAD /READ STATUS
4970 6242 7650 SNA CLA
4971 6243 5252 JMP J+7
4972 6244 1106 TAD K4000 /HAS DRIVE DONE?
4973 6245 3143 DCA GOREG2 /YES
4974 6246 1146 TAD K4000 /NO, DRIVE MUST BE BUSY!
4975 6247 1103 TAD STREG2 /EXPECTED STATUS
4976 6250 7640 SZ4 CLA /GET STATUS READ
4977 6251 5311 JMP SEKER2 /ADD IN FUDGE FACTOR
4978 6252 1015 TAD K0200 /HAS DRIVE BUSY
4979 6253 1150 TAD CMREG /NO, ERROR
4980 6254 4450 LDCMD /ENABLE SET SECOND DONE FLAG
4981 6255 7332 CLA CLL CML RTR /ORIGINAL COMMAND
4982 6256 3143 DCA GOREG2 /LOAD COMMAND
4983 6257 4530 CMKSKP, TICK /EXPECTED STATUS
4984 6260 4444 ROSTAT /APT TIMING
4985 6261 4447 DSKSKP /READ STATUS
4986 6262 7410 SKP /FLAG SET?
4987 6263 5274 JMP GOTSKP /NO
4988 6264 1106 TAD K4000 /YES GOT IT!
4989 6265 7640 SZ4 CLA
4990 6266 5311 JMP SEKER2 /DRIVE BUSY?
4991 6267 2365 ISZ RNWRD4 /NO, ERROR
4992 6270 5257 JMP CMKSKP
4993 6271 2321 ISZ RNAD
4994 6272 5257 JMP CMKSKP
4995 6273 5314 JMP SEKFR1 /ERROR, NO SKIP!
4996 6274 7330 GOTSKP, CLA CLL CML RAR
4997 6275 3143 DCA GOREG2 /SETUP EXPECTED STATUS
4998 6276 4444 ROSTAT /READ STATUS
4999 6277 1105 TAD K4000
5000 6300 7640 SZ4 CLA /HAS 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 GOREG2 /SETUP COMPARE REGISTER
5006 6306 4444 ROSTAT /READ STATUS
5007 6307 7650 SNA CLA /HAS STATUS 0000?
5008 6310 2215 ISZ ONLY /UPDATE PC
5009 6311 1166 SEKER2, TAD K5300
5010 6312 3716 GORAK, 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 GORAK /EXIT
5014
5015 6316 0000 SAVPC, 0
5016 6317 0000 SAVTD, 0
5017 6320 7577 A7577, 7577
5018
5019 /ROUTINE TO GET A RANDOM DISK ADDRESS
5020 /

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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 ENOTRK /HAVE TO CHECK BOUNDARIES
5036 6340 7200 CLA
5037 6341 1364 TAD RNWRD2
5038 6342 3365 GOTADD, DCA RNWRD4 /GET SAME
5039 6343 1362 TAD DSKSAV /SAVE WORD
5040 6344 1361 TAD SAVPOT /GET POINTER
5041 6345 3361 DCA SAVPOT /ADD IN DRIVE NUMBER
5042 6346 1365 TAD RNWRD4 /MAKE ADDRESS
5043 6347 3761 DCA I SAVPOT /GET WORD
5044 6350 1361 TAD SAVPOT /STORE IT
5045 6351 1076 TAD K0004
5046 6352 3361 DCA SAVPOT /ADD IN FUDGE FACTOR
5047 6353 7004 RAL /MAKE ADDRESS
5048 6354 3761 DCA I SAVPOT /GET THE LINK
5049 6355 1761 TAD I SAVPOT /SAVE EXTENDED BIT
5050 6356 7110 CLL RAR /GET IT
5051 6357 1365 TAD RNWRD4 /SHIFT
5052 6360 5721 JMP I RNAD /GET WORD
5053 / /EXIT
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 NFRPD, 0
5074 6401 2200 ISZ NERRO
5075 6402 7300 CLA CLL

```

```

5076 6403 4530      TICK
5077 6404 1620      TAD I  NERRO
5078 6405 3173      DCA  RFRSTRT
5079 6406 4405      CLASIC
5080 6407 4442      CCKCPA
5081 6410 7720      NOP
5082 6411 4424      LAS
5083 6412 0215      AND  K0200
5084 6413 7650      SNA CLA
5085 6414 5223      JMP  +4
5086 6415 4425      CLASIC
5087 6416 4437      CRINQH
5088 6417 7412      STPHLT, HLT
5089 6420 4424      LAS
5090 6421 7724      RAL
5091 6422 7720      SNA CLA
5092 6423 5226      JMP  +3
5093 6424 1620      TAD I  NERRO
5094 6425 5642      JMP I  NSCNPF
5095 6426 1131      TAD  RFG0
5096 6427 7640      SZA CLA
5097 6430 5233      JMP  NEXTST
5098 6431 2132      ISZ  REG1
5099 6432 5573      JMP I  RFRSTRT
5100 6433 7321      NEXTST, CLA CLL IAC
5101 6434 4453      CLPALL
5102 6435 2220      ISZ  NERRO
5103 6436 2220      ISZ  NERRO
5104 6437 5620      JMP I  NERRO
5105
5106 6440 5470      / NSCOPE, SCOPE
5107
5108      / ROUTINE TO DO HALF BLOCK DATA CHECKS
5109
5110      / HFCMK, 0
5111 6442 3143      DCA  GOREG2
5112 6443 1267      TAD  RGNRUF
5113 6444 3153      DCA  ADREG
5114 6445 1150      TAD  CMREG
5115 6446 0101      AND  K0007
5116 6447 7241      CIA
5117 6450 1553      TAD I  ADREG
5118 6451 7650      SNA CLA
5119 6452 5256      JMP  +4
5120 6453 1150      TAD  CMREG
5121 6454 0101      AND  K0007
5122 6455 5337      JMP  HFERR
5123 6456 2153      ISZ  ADREG
5124 6457 1553      TAD I  ADREG
5125 6460 7041      CIA
5126 6461 1151      TAD  DAREG
5127 6462 7650      SNA CLA
5128 6463 5266      JMP  +3
5129 6464 1151      TAD  DAREG
5130 6465 5337      JMP  HFERR

```

```

/GET RSTART ADDRESS
/STORE

/GET SWITCH 4
/MASK
/PROGRAM HALT

/STOP HALT FROM SWR4=1
/GET SWITCH 1

/IS IT SCOPE LOOP
/NO
/GET RETURN POINTER
/CHECK FOR WAIT AND RETURN

/1 OR 4096 PASSES
/1 PASS PER TEST
/UPDATE UPCOUNTER
/RACK TO SAME TEST
/ENABLE CLEAR CONTROL
/CLEAR CONTROL
/UPDATE PC STORE
/UPDATE PC STORE
/TO NEXT SEQUENTIAL TEST

```

```

/SETUP FOR ERROR PRINTER
/GET START OF BUFFER
/FOR ERROR PRINTER

/COMPARE TO BUFFER WORD
/SAME?
/YFS

/NO
/UPDATE ADDRESS

/COMPARE TO DISK ADDRESS
/SAME???
/YFS

/NO

```

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5131 6466 2153      ISZ  ADREG
5132 6467 7326      CLA CLL CML RTL
5133 6470 1124      TAD  K7600
5134 6471 3162      DCA  DATCNT
5135 6472 1553      HFR1, TAD I  ADREG
5136 6473 7241      CIA
5137 6474 1143      TAD  GOREG2
5138 6475 7640      SZA CLA
5139 6476 5340      JMP  HFERR+1
5140 6477 2153      ISZ  ADREG
5141 6500 1143      TAD  GOREG2
5142 6501 7040      CMA
5143 6502 3143      DCA  GOREG2
5144 6503 2162      ISZ  DATCNT
5145 6504 5272      JMP  HFR1
5146 6505 1124      TAD  K7600
5147 6506 3162      DCA  DATCNT
5148 6507 3143      DCA  GOREG2
5149 6510 1553      HFR2, TAD I  ADREG
5150 6511 7640      SZA CLA
5151 6512 5337      JMP  HFERR
5152 6513 2153      ISZ  ADREG
5153 6514 2162      ISZ  DATCNT
5154 6515 5310      JMP  HFR2
5155 6516 1553      TAD I  ADREG
5156 6517 7241      CIA
5157 6520 1102      TAD  K1234
5158 6521 7650      SNA CLA
5159 6522 5325      JMP  +3
5160 6523 1122      TAD  K1234
5161 6524 5337      JMP  HFERR
5162 6525 7330      CLA CLL CML RAR
5163 6526 3143      DCA  GOREG2
5164 6527 1171      TAD  S0FERR
5165 6530 7640      SZA CLA
5166 6531 5641      JMP I  HFCMK
5167 6532 7340      CLA CLL CMA
5168 6533 3171      DCA  S0FERR
5169 6534 1166      TAD  K5300
5170 6535 3572      DCA I  SAVPCT
5171 6536 7330      CLA CLL CML RAR
5172 6537 3143      HFEPR, DCA  GOREG2
5173 6540 1553      TAD I  ADREG
5174 6541 3154      DCA  DTREG
5175 6542 2241      ISZ  HFCMK
5176 6543 5641      JMP I  HFCMK
5177
5178      / SUBROUTINE TO LOAD COMMAND REGISTER
5179
5180      / LOCM, 0
5181 6544 0220      DCA  CMREG
5182 6545 3150      CLASIC
5183 6547 4440      CCKCPA
5184 6550 7020      NOP
5185 6551 1150      TAD  CMREG

```

```

/UPDATE ADDRESS

/SETUP COUNTER FOR FIRST HALF

/COMPARE TO GOOD VALUE
/WERE THEY THE SAME
/ERROR, DATA BREAK
/UPDATE ADDRESS POINTER

/NEXT WORD IS COMPLEMENT

/MORE TO TEST IN FIRST HALF

/SETUP COUNTER
/REST OF BUFFER SHOULD BE 0000

/WAS IT 0
/ERROR

/MORE TO CHECK
/GET WORD IN BUFFER+1

/WAS IT O.K.?
/YFS

/ERROR, BUFFER+1
/EXPECTED STATUS
/SETUP COMPARE REGISTER
/GET CRC ERROR FLAG
/WAS IT SET
/NO ERRORS

/RESET CRC ERROR FLAG
/TEXT
/SET UP POINTER
/EXPECTED STATUS
/SETUP COMPARE
/GET RAD WORD
/SAVE FOR PRINTER

/SAVE OUTBOUND DATA

```

```

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      CRERR       /ROUTINE TO EXECUTE.
5190 6556 7402      ERHLT6,     HLT      /SKIP TRAP ERROR.
5191 6557 5354      JMP          .-3
5192
5193 6560 2405      /
NMFS2, 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 7220

5194
5195 6600          / PAGE
5196
5197          /
5198          /ROUTINE TO CHANGE PROGRAM DEVICE CODES
5199
5200 6600 4405      /CHANG, CLASIC
CRSWIT
6601 4431
NOP
6602 7200
LAS
6603 4404
AND K0770
6604 3631      DCA I KWFCHK      /SAVE DESIRED CODE
6605 1235      TAD CNTR1
6606 3632      DCA I KNERR0
6607 1236      TAD CHNPOT
6608 3233      DCA ENGSAV
6609 1633      /CHANGR, TAD I ENGSAV
6610 3200      /GET ADDRESS POINTER
6611 1400      DCA 0
6612 0234      TAD I 0
6613 1631      AND K7007
6614 3400      TAD I KWFCHK
6615 2233      DCA I 0
6616 2632      TSZ ENGSAV
6617 5212      TSZ I KNERR0
6618 5212      JMP CHANGR
6619 4405      CLASIC
6620 4436      CRERR
6621 7402      CHNHLT, HLT
6622 5630      JMP I RSTRT
6623
6624
6625
6626
6627 0770      K0770, 0770
6628
6629 0200      / RSTRT, RGN
6630 6441      KWFCHK, HFCMK
6631 6400      KNERR0, NERR0
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5231	6633	0700	CNGSAV, 0
5232	6634	7707	K7007, 7707
5233	6635	7746	CCNTR1, 7746
5234	6636	6637	CHNPOT, CHNPOT+1
5235	6637	1701	10T1
5236	6640	5572	10T2
5237	6641	6167	10T3
5238	6642	4772	10T4
5239	6643	5155	10T5
5240	6644	6552	10T6
5241	6645	4132	10T7
5242	6646	2650	10T141
5243	6647	2647	10T341
5244	6650	2643	10T441
5245	6651	2652	10T541
5246	6652	2645	10T641
5247	6653	3231	10T142
5248	6654	3255	10T242
5249	6655	3230	10T342
5250	6656	3224	10T442
5251	6657	3233	10T542
5252	6660	3226	10T642
5253	6661	2215	T2810A
5254	6662	2017	T2810B
5255	6663	2222	T2810C
5256	6664	2225	T2810D
5257	6665	2100	T2910A
5258	6666	2102	T2910B
5259	6667	2105	T2910C
5260	6670	2110	T2910D
5261			/
5262	6671	2324	FRTX1, TEXT "STATUS REGISTER ERROR"
	6672	0124	
	6673	2523	
	6674	4722	
	6675	0507	
	6676	1123	
	6677	2405	
	6700	2240	
	6701	0522	
	6702	2217	
	6703	2200	
5263	6704	0317	FRTX2, TEXT "COMMAND REGISTER ERROR"
	6705	1515	
	6706	0116	
	6707	2400	
	6710	2205	
	6711	0711	
	6712	2324	
	6713	0522	
	6714	4005	
	6715	2222	
	6716	1722	
	6717	0000	
5264	6720	0411	FRTX3, TEXT "DISK ADDRESS REGISTER ERROR"


```

        6721 2313
        6722 4001
        6723 0404
        6724 2205
        6725 2323
        6726 4022
        6727 0507
        6730 1123
        6731 2405
        6732 2242
        6733 2522
        6734 2217
        6735 2200
5265 6736 0411 FRTX4, TEXT "DISK DATA ERROR"
        6737 2313
        6740 4004
        6741 0124
        6742 0140
        6743 2522
        6744 2217
        6745 2200
5266 6746 0322 FRTX5, TEXT "CRC REGISTER ERROR"
        6747 0340
        6750 2205
        6751 0711
        6752 2324
        6753 2522
        6754 4005
        6755 2222
        6756 1722
        6757 0000
5267 6760 0401 FRTX6, TEXT "DATA REGISTER ERROR"
        6761 2401
        6762 4022
        6763 0507
        6764 1123
        6765 2405
        6766 2240
        6767 2522
        6770 2217
        6771 2200
5268 6772 0411 FRTX7, TEXT "DISK SKIP ERROR"
        6773 2313
        6774 4023
        6775 1311
        6776 2040
        6777 2522
        7000 2217
        7001 2200
5269 7002 0411 FRTX8, TEXT "DISK INTERRUPT ERROR"
        7003 2313
        7004 4011
        7005 1624
        7006 2522
        7007 2225

```

```

        7010 2024
        7011 4005
        7012 2222
        7013 1722
        7014 0000
5270 /
5271 7015 4022 /TXEND, TEXT " PASS COMPLETE"
        7016 0123
        7017 2340
        7020 0317
        7021 1520
        7022 1405
        7023 2405
        7024 0000
5272 /
5273 /
5274 /
5275 /
5276 /THIS ROUTINE WILL TEST FOR THE AVAILABILITY OF THE
5277 /APT BA TEST SYSTEM AND NOP ANY CONSOLE PACKAGE WHICH
5278 /MIGHT HAVE BEEN SET UP.
5279 /
5280 /
5281 7025 0000 APTA, 0
5282 7026 1022 TAD P2
5283 7027 0105 AND K4000 /TEST FOR APT SYSTEM
5284 7030 7650 SNA CLA /ON APT ?
5285 7031 5625 JMP I APTA /NO
5286 7032 1022 TAD 22
5287 7033 0300 AND K7377 /NOP CONSOLE PACKAGE
5288 7034 3022 DCA 22
5289 7035 1107 TAD K7000 /NOP SWITCH REGISTER ROUTINE
5290 7036 3701 DCA I XMYLAS /NOP SWITCHES
5291 7037 3362 DCA CLKCNT
5292 7040 3072 DCA DRIVNO /START WITH DRIVE 0.
5293 7041 1022 TAD 22
5294 7042 0075 AND K0003 /# OF DRIVES
5295 7043 3303 DCA AERRO /SET COUNTER FOR NO. OF DRIVES.
5296 7044 1303 TAD AERRO
5297 7045 7040 CMA
5298 7046 3071 DCA DRVCNT /SETUP COUNTER.
5299 7047 1071 TAD DRVCNT
5300 7050 3330 DCA K7ICK
5301 7051 1022 APTAR, TAD 22
5302 7052 0014 AND K0100
5303 7053 7650 SNA CLA /SINGLE DRIVE TEST?
5304 7054 5264 JMP .+10 /NO!!!!
5305 7055 7240 CLA CMA
5306 7056 3071 DCA DRVCNT /COUNT OF 1.
5307 7057 1303 TAD AERRO
5308 7060 7104 CLL RAL
5309 7061 3072 DCA DRIVNO /TEST ONLY THIS DRIVE.
5310 7062 1303 TAD AERRO /TEST THIS DRIVE
5311 7063 7410 SKP
5312 7064 1362 TAD CLKCNT

```

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5313 7065 1677 TAD I XDSKON
5314 7066 1327 DCA PCSAV
5315 7067 7240 CLA CMA
5316 7070 1727 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 1071 DCA DRVHAY
5322 7076 5702 JMP I TSTOP /TALLY FOR AMOUNT OF DRIVES.
5323 / /RETURN WITH CONSOLE PACKAGE
5324 / /NOP AND SWITCH REGISTER NOP.
5325 7077 4374 XDSKON, DSKON
5326 7100 7377 K7377, 7377
5327 7101 5100 YMYLAR, MYLAR+3
5328 7102 0233 TSTOP, TSTOP-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 PERDOR /GET ERROR PC
5341 7113 1327 DCA PCSAV /STORE FOR FUTURE USE
5342 7114 6002 IOF /DISABLE INTERRUPT SYSTEM
5343 7115 6224 WIF /SET UP FOR DATA FIELD IN ERROR
5344 7116 1121 TAD KCDF /ESTABLISHES DATA FIELD
5345 7117 1321 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 UVFROM
5349 7123 5726 JMP I K6520 /REPORT ERROR
5350 7124 5703 JMP I AERRO /RETURN TO THE NORMAL REPORTING
5351 /
5352 7125 5200 PERDOR, ERRO /POINTER TO PC IN ERROR
5353 7126 6520 K6520, 6520 /POINTER TO UV FROM 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 /NO TIMING GENERATED
5364 7134 5730 JMP I KTICK /SEE IF TIMING NEEDS TO BE DONE
5365 7135 2362 ISZ CLKCNT /NO. RETURN TO MAIN FLOW
5366 7136 5730 JMP I KTICK /INIT FIRST CLOCK
5367 7137 1361 TAD COUNT

```

```

5368 7140 1362 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 IOF /START SETUP FOR UV FROM
5372 7144 1121 TAD KCDF /WILL ESTABLISH CURRENT DATA FIELD
5373 7145 1347 DCA -2
5374 7146 6002 IOF
5375 7147 7402 HLT /CHANGED TO CURRENT DATA FIELD
5376 7150 6272 CIF 70 /LOCATION OF UVFROM
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 1362 DCA CLKCNT /INITIALIZE CLOCK COUNTER
5381 7155 1360 TAD CNT
5382 7156 1175 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 FROM
5389 /
5390 7177 7177 /
5391 /
5392 7177 WRKPUF=.
5393 /
5394 7177 HJTPKF=.
5395 7200 IOTPKF.+1
5396 /
5397 7576 ENDHUF.+377
5398 /
5399 7577 STRCHK.+400
5400 /
5401 $$$

```

[illegible]

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
ACCHP1	4442	C8SET8	0535	DCNT1	4370
ACCHP2	4443	C8SWIT	4431	DCNT2	4371
ACL	7701	C8SW8T	0745	DCNT3	4372
ACREG	0155	C8TMP1	1021	DCNT4	4373
ACSAVE	1345	C8TYVI	4426	DIN	4530
ADREG	0153	C8TYPE	4435	DISK0	1561
AERRO	7103	CAF	6007	DISK1	1562
AGAIN	5325	CAREG	0152	DISK2	1563
ALLBAK	4242	CCNTR1	6635	DISK3	1564
APA1	5045	CHANG	6600	DISK4	1565
APERR	5066	CHANGR	6612	DISK5	1566
APHLT1	5073	CHECK	6232	DISK6	1567
APR1	5024	CHKCLA	1200	DISK7	1570
APT8	7025	CHKERR	5342	DISK8	5600
APT8R	7051	CHKNEF	4432	DISKGO	4426
AUT010	0010	CHKSKP	6257	DLAC	6743
AUTPRO	5000	CNNHLT	6625	DLCA	6744
RGN	0200	CNNPOT	6636	DLDC	6746
BGNBUF	0267	CKCOUT	0232	DMAN	6747
RYRETR	0506	CLASIC	4405	DOCNT	0247
C8BY1	0230	CLASTK	5102	DONEA	0426
C8BY2	1300	CLDR	5571	DOPACK	0212
C8BY3	1061	CLKCNT	7162	DOSBT	0251
C8BY4	0515	CLRALL	4453	DOHT	5553
C8BY5	1116	CLRTN	1315	DRIVNO	0072
C8CHAP	1075	CMREG	0150	DRST	4745
C8CKP	1022	CNGSAV	6633	DRVCT	0071
C8CKPA	4440	CNT	7160	DRVHAV	0070
C8CKSW	4425	CNTPLC	0551	DSK0A	6366
CCNTR	4427	CNTRLD	0600	DSK0B	6372
CCONT	1145	CNTRLE	0545	DSK1A	6367
CCRLF	4433	CNTRLL	0537	DSK1B	6373
CCD01	0310	CNTRLD	0500	DSK2A	6370
CCD010	1262	CNTRLR	0511	DSK2B	6374
CCD011	0607	CNTRLS	0521	DSK3A	6371
CCD02	1033	CNTVAL	0252	DSK3B	6375
CC003	0350	COMP1	4557	DSKAD0	4526
CC004	1006	COMP2	3600	DSKIN	4407
CC007	0527	CONSOL	0000	DSKON	4374
CCFCMO	4434	CONST1	1366	DSKOUT	4406
CBERR	4436	COUNT	7101	DSKP	6741
CBGET	0624	CRERR	3614	DSKPOT	4527
CRHANG	1122	CRLF	4462	DSKSAV	6362
CRINQU	4437	CRREG1	0144	DSKSKP	4447
CR0CTA	4432	CRREG2	0145	DTERR	5743
CRPAS6	4424	CRWRD1	0160	DTREG	0154
CRPAUS	4441	CRWRD2	0161	ENDBUF	7576
CRPRNT	4430	CYL450	0065	ENDHLT	4122
CRDPS	0666	DAREG	0151	ENDIT	0742
CRRETD	0614	DATCNT	0162	ENDTRK	0170
CRRETR	0536	DAREG	0147	ENDTST	4062

ERHLT1	4761
ERHLT2	5576
ERHLT3	6173
ERHLT4	4776
ERHLT5	5161
ERHLT6	4556
ERHLT7	4136
ERHLT9	5344
ERR1	0736
ERRA1	5217
ERRMES	1320
ERR0	5200
ERROR	4440
ERTX1	6671
ERTX2	6704
ERTX3	6720
ERTX4	6736
ERTX5	6746
ERTX6	6760
ERTX7	6772
ERTX8	7002
ESCOPE	5357
EXIT	6145
EXITA	4440
F10P1	0021
F10P2	0022
F1SWR	0020
FIGURE	5654
FIGURE	4430
FILRUF	4431
FILCNT	1040
FILLER	1037
FLRUF	5447
FLSAVE	1347
FRCT	6065
GDRG1	0142
GDRG2	0143
GETCH1	0703
GETDAT	0456
GETDRV	4345
GORAK	6312
GOTTA	0443
GOTADD	6342
GOTQA	0454
GOTSKP	6274
GTF	0004
GTRG	5527
HAFCHK	4427
HEDHLT	4021
HEDLST	5370
HEDTAD	5367
HFCMK	6441

HFERR	6537	K0240	6064	LDCMO	4450
HFUR1	6472	K0260	4364	LDCUR	4451
HFUR2	6510	K0277	4366	LDMAN	4455
HITRK	7177	K0306	0164	LDNN	4131
HOMEMA	0156	K0331	4365	LOADCT	1355
HRRERR	5652	K0400	0016	LOTRK	7200
ICNTR1	4763	K0770	6627	LPAAT	5456
ICNTR2	4764	K1000	0017	LPIG	5706
INDEXA	0455	K1234	0102	M12	0126
INMIBT	5361	K2000	0103	M4	6110
INMODE	1076	K2525	0113	MANPRO	2706
INTADD	4743	K3000	0104	MANUAL	4600
INTRQ	0363	K3740	6150	MESA	0747
IONWAT	4441	K4000	0105	MESAC	1333
IONWT	4727	K4100	6147	MESFL	1341
IO1	1001	K5000	0115	MESHAN	1146
IO11A1	2650	K5252	0114	MESMO	1336
IO11A2	3031	K5300	0166	MESPAS	0253
IO12	5572	K5373	0165	MESPC	1330
IO12A2	3055	K5403	0364	MPERR	2771
IO13	6167	K6000	0106	MPHLT1	2734
IO13A1	2647	K6304	0167	MPHLT2	2776
IO13A2	3030	K6500	7163	MPIR1	2735
IO14	4772	K6520	7126	MOA	7501
IO14A1	2643	K7000	0107	MOL	7421
IO14A2	3024	K7007	6634	MOSAVE	1346
IO15	5155	K7156	3772	MYAC	1317
IO15A1	2652	K7377	7100	MYLAS	5075
IO15A2	3033	K7400	0123	NOIN	4553
IO16	6552	K7501	5655	NERR0	6400
IO16A1	2645	K7577	5525	NERROR	4437
IO16A2	3026	K7600	0124	NEXOSK	4123
IO17	4132	K7700	0111	NEXTST	6433
K0001	0073	K7707	4726	NL7775	7346
K0002	0074	K7740	0122	NMES1	0760
K0003	0075	K7760	0110	NMF52	6560
K0004	0076	K7771	0116	NMF53	4165
K0005	0077	KAERR0	0127	NOCLR	5522
K0006	0100	KCDF	0121	NOSET	0242
K0007	0101	KCNT	0175	NOTDON	4230
K0010	0011	KMFCHK	6631	NOTEX	5350
K0017	0117	KILBUF	4432	NSCOPE	6440
K0020	0012	KLBUFF	5435	NTCLAS	1270
K0037	0120	KNERRO	6632	NTCRC	5301
K0040	0013	KRMF	2362	NTGD	5264
K0077	0112	KTICK	7130	NTSEK	4666
K0100	0014	KTIME	0174	NXTOSK	4274
K0177	4367	LAS	4404	OCTEL	4460
K0200	0015	LDAD	6164	ONLY	6215
K0207	5356	LDADD	4452	OP1	0021
K0212	6063	LDCA	4765	OP2	0022
K0215	6062	LDCM	6544	QVRDER	4522

QVRNOK	4435
QVRERR	4254
QVRLAP	4200
QVRCK	4233
QVRR1	4203
QVRR2	4206
QVRR3	4221
QVRRD1	4403
QVRRD2	4406
QVRRD3	4421
QVRRD4	4400
PASCNT	0250
PCLF	6662
PCNTR1	5365
PCNTR2	5366
PCSAV	7127
PCSAVE	1344
PERROR	7125
PNTBUF	1120
POLERR	4427
PRINT	6151
PRN	6111
PRNTER	4437
PRSFLO	0222
PSIE	6665
PSKE	6663
PSKF	6661
PSYB	6664
PTSTOR	0336
RANADD	4423
ROAD	4140
ROADD	4446
RDRF	5400
RDRUF	4456
RDCM	5412
RDCNO	4445
RDCR	6000
RDCRC	4454
RDSY	5154
RDSYAT	4444
REALPC	1316
RECAL	4425
REDRAK	4510
REDNA	0415
REG0	0131
REG1	0132
RESEK	4022
RESTOR	6200
RESTRY	0173
RETRN	5632
RETRN2	5360
RNAD	6321

RNWRD1	6363	T148E	1063	T2910A	2100	T40R	3242
RNWRD2	6364	T15E	1106	T2910B	2102	T40S	3246
RNWRD4	6365	T15T	1110	T2910C	2105	T40T	3249
ROUTINS	1302	T16E	1126	T2910D	2110	T41E	3357
ROUTHP	5133	T16T	1130	T290K	2132	T41R	3272
RSTRY	6630	T17E	1171	T20R	2074	T41S	3306
SAMDSK	4073	T17S	1135	T20T	2137	T41T	3361
SAVAC	5132	T17T	1173	T20W	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
SAVPOT	6361	T19E	1267	T30R	2142	T43E	3512
SAVTO	6317	T190K	1266	T30T	2211	T43R1	3454
SAVTRK	5654	T19T	1271	T31E	2257	T43R2	3461
SRCNT1	0133	T1E	0275	T31R	2214	T43T	3514
SCOPE	5470	T20E	1317	T31T	2261	T44E	3557
SDKP	1000	T200K	1316	T32E	2372	T440K	3567
SEK	4424	T20T	1321	T32R1	2271	T44R	3526
SEKER1	6314	T21E	1350	T32R2	2312	T44T	3572
SEKER2	6311	T210K	1347	T32R3	2331	T45A1	3644
SELOSK	4260	T21T	1352	T32R4	2353	T45A2	3720
SETUP1	1233	T22E	1442	T32T	2374	T45E	3765
SETUP2	2225	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	T45R5	3626
STAERR	5636	T23R2	1470	T33T	2511	T45T	3767
STCON	0157	T23T	1510	T34E	2546	T4E	0404
STPCMK	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	T380E	3137	T9E	0532
T11R1	0602	T27R1	1723	T38E	3146	T90K	0531
T11R2	0612	T27R2	1745	T380K	3156	T9R	0507
T11R3	0616	T27T	1767	T38R	3115	T9T	0534
T11T	0641	T28E	2035	T38T	3161	TARLA	0461
T12A	0673	T2810A	2015	T390E	3235	TARL0	0471
T12E	0677	T2810R	2017	T39E	3224	TAPROT	0570
T12R	0654	T2810C	2022	T390K	3234	TCNTR1	0134
T13A	0747	T2810D	2025	T39R	3173	TCNTR2	0135
T13E	0753	T280K	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	T8T32	2262	X00LPT	1112
TEXCA	5766	T8T33	2400	X00SW	0520
TEXCM	5762	T8T34	2514	X00UT	0006
TEXCR	5754	T8T35	2551	X00KON	7077
TEXDA	5764	T8T36	2622	XERR0	0040
TEXDB	5760	T8T37	3002	XFGURE	0030
TEXDT	5772	T8T38	3105	XFLAUF	0031
TEXEND	7015	T8T39	3164	XFROCT	0060
TEXGD	5752	T8T4	0400	XGTREG	5362
TEXPC	5750	T8T40	3240	XHFCMK	0027
TEXST	5756	T8T41	3270	XHITRK	0064
THSFLD	0035	T8T42	3400	XIONWT	0041
TICK	4530	T8T43	3452	XKLBUR	0032
TIMSTP	3541	T8T44	3517	XLAP	4163
THANE	4722	T8T45	3627	XLAS	0004
THANOK	4721	T8T5	0411	XLHAD	0052
THANS	4643	T8T6	0423	XLOCA	0051
THANT	4724	T8T7	0440	XLNCM	0050
THPCNT	0746	T8T8	0454	XLDMN	0055
THPROT	2773	T8T9	0502	XLOAD	0125
TOCT	6036	T8TCH	0715	XLOTRK	0063
TOTST	5526	T8TSEK	4067	XMYLAS	7101
TOVRDT	4524	TTYLPT	1121	XNERR0	0037
TRK212	0066	TWOCT	4461	XONLY	0024
TST0	0240	TYPE	4436	XOVRRO	4164
TST0P	7102	UPAROW	0615	XPRINT	0036
TST1	0265	UPONE	6053	XPRN	0057
TST10	0540	WATISZ	4434	XRNAD	0046
TST11	0600	WATMES	0651	XRNBF	0056
TST12	0645	WRKRUF	7177	XRNCM	0045
TST13	0702	WTISZ	4000	XRNCR	0054
TST14	1010	XCACKP	1041	XRNST	0044
TST14P	0757	XCACNT	0400	XREG	5364
TST15	1073	XCACRL	1023	XRESTR	0025
TST16	1111	XCACRH	1063	XRNAD	0023
TST17	1133	XCERR	1207	XSDKP	0047
TST18	1202	XCBIHQ	0635	XSKWAT	0033
TST19	1242	XCBOCT	1000	XTABLA	0457
TST2	0301	XCAPAS	0200	XTABLO	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	XC8TYY	0277		
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	XOIN	0007		
TST31	2212	XOISKG	0026		

ERRORS DETECTED: 0

LINKS GENERATED : 136

RUN-TIME: 30 SECONDS

4K CORE USED

[illegible]

[illegible][illegible]

[illegible]

K5000	1207#	1812	1833	1845	1957	1991	2023	2082	2180	2291	2394	2512	2561	2620	SEQ 0139
K5252	2640	2850	2987	2963	2978	4106	4222	4237							
	1206#	1912	1932	1986	2004	2125	2153	2235	2260	2281	2315	2610	2664	2714	
K5370	2766	3515	3944	3965											
	1255#	1390	2401	2461	2986	3068	3150	3210	3452	3929	4245	4693	4752	5000	
	5169														
K5373	1254#	3075	3148	3208	3450	4675									
K5403	1280	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												
K7501	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	2350	
	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													
KAERR0	1223#	4353													
KCDF	1211#	1275	5344	5372											
KCNT	1262#	3495	3696	5369	5382										
KHFCMK	5204	5213	5224#												
KILBUF	1280#	1811	1876	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												
KNERR0	5206	5216	5229#												
KRMF	1277	1410#													
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											
LOAD	1172	4920#	4924												
LOADD	1102#	1367	1703	1766	2021	2052	2073	3126	3186	3428	3651	3664	4238	4630	
	4666	4961													
LDCA	1171	4189#	4195												
LOCM	1170	5180#	5187												
LOCMO	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												
LOCUR	1105#	2847	2868	3122	3182	3424	4606	4664							
LOMAN	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				
LOMN	1175	3615	3616	3721#	3723										
LOADCT	1215	2050#	2051	2057	2058										

SEQ 0140

TRK	1079	1141	5395#																	
LPDAT	4546#	4552																		
LPFTG	4726#	4736																		
M12	1219#	3734	4505	4779	4793															
M4	1655	1687	3A25	4A48	4A63#															
HANPRO	1269	2948#	3D13																	
HANUAL	1267	4053#																		
HESA	629	687#																		
HESAC	973	1022#																		
HESFL	981	1024#																		
HESHAN	889	894#																		
HESMO	977	1023#																		
HESPAS	147	176#																		
HESPC	969	1021#																		
MPERR	2967	2991	2999	3003#																
MPHLT1	1059	2970#																		
MPHLT2	1067	3000#																		
MPR1	2975#	3004																		
HQA	51#	365	798	944																
HQL	50#	540																		
HQSAVE	366	559	799	945	97A	1227#														
HYAC	1006	1012	1018#																	
MYLAS	1126	4274#	427A	4318	4325	4327														
NOIN	400#	4017#																		
NERR	1161	5075#	5074	5077	5093	510P	5103	5104	5229											
NERROR	1094#	1319	1340	1370	1403	1432	1451	1471	1490	1519	1553	1591	1637	1675						
	1724	1795	1822	1846	1890	193A	1972	2006	2039	2110	2159	2206	2266	2321						
	2375	2439	2496	2542	2591	2640	2793	2832	2878	2937	3002	3092	3153	3213						
	3241	3306	3361	3402	3455	3597	3808	3947	4143	4260										
NEXOSK	3681	3699	3712#																	
NEXTST	5297	5130#																		
NL7775	1080#	1751	3819																	
NMES1	1732#	3702																		
NMES2	3822	5193#																		
NMES3	3755#	3829																		
NOCLR	4567	4595#																		
NOSET	162	167#																		

[illegible]

16T	183A	1844	1849#	
11E7	1875	1883	1887	1891#
11T5	1863#	1889		
11T7	1874	1882	1893#	
11B8	1924	1931	1935	1939#
11B5	1912#	1937		
11B7	1913	1937	1941#	
119E	1962	1969	1973#	
1190K	1972#			
119T	1961	196A	1975#	
11E	1337	1341#		
120E	1995	2003	2007#	
1200K	2006#			
120T	1994	2002	2009#	
121E	2028	2036	2040#	
1210K	2039#			
121T	2027	2035	2042#	
122E	2087	2103	2107	2111#
122R1	2077#	2089		
122R2	2096#	2109		
122T	2086	2102	2113#	
123E	2137	2152	2156	2160#
123R1	2127#	2139		
123R2	2146#	2158		
123T	2136	2151	2162#	
124E	2189	2199	2203	2207#
124S	2174#	2205		
124T	2188	2198	2209#	
125E	2250	2259	2263	2267#
125S	2235#	2265		
125T	2204	2258	2269#	
126E	2296	2314	2318	2322#
126R1	2283#	2298		
126R2	2305#	2320		
126T	2295	2313	2324#	
127E	2351	2368	2372	2376#
127R1	2338#	2353		
127R2	2360#	2374		
127T	2350	2367	2378#	
128E	2400	2436	2440#	
12810A	2408#	2553		
12810B	2410#	2554		
12810C	2413#	2555		
12810D	2416#	2421	5256	
1280K	2419	2437#		
128R	2403#	2438		
128T	2399	2402	2442#	
129E	2460	2489	2497#	
12910A	2468#	2557		
12910B	2470#	2558		
12910C	2473#	2559		
12910D	2476#	2491	5260	
1290K	2494#			

	3115	3136	3137	3176	3196	3197	3261	3273	3286	3328	3331	3339	3349	3381	320 8146
	3382	3390	3418	3438	3439	3518	3542	3562	3587	3644	3645	3649	3640	3649	
TCNTR3	3961	4077	4111	4121	4126										
	1230#	1612	1621	1659	1660	1691	1692	2389	2407	2467	3226	3231	3263	3271	
	3282	3294	3379	3384	3392	3505	3514	3523	3552	3560	3564	4088	4095	4137	
	4141														
TCNTR4	1231#	1614	1629	3228	3229	3265	3289	3279	3292	3377	3388	3503	3508	3544	
	3350	3354	3590	3769	3777	3781	3789	3793	3798	3806	3910	3918	3922	3932	
	3977	3985	4103	4123	4130										
TCNTR5	1232#	1616	1627	3224	3239	3255	3304	3324	3359	3372	3400	3501	3595	3767	
	3794	3928	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#														
TEXDH	4765#														
TEXDT	4770#														
TEXEND	3704	5271#													
TEXGD	4397	4762#													
TEXPC	4385	4761#													
TEXST	4470	4764#													
THSFLO	1159#														
TICK	1117#	2924	3942	3120	3180	3422	4316	4983	5076						
THMSTP	3371	3433#													
THANE	4114	4129	4140	4140#											
THANDK	4115	4132	4139	4143#											
THANS	4097#	4145	4148												
THANT	4113	4128	4146#												
THPCNT	641	649	679#												
THPRDT	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	2A20									
TSTP	1306#	1321	3717	5328											
TSTDP	5322	5328#													
TST1	1333#	1342													
TST10	1567#	1593													
TST11	1597	1607#	1639												
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TST13	1684#	1726													
TST14	1730	1753#	1797	1801											
TST14P	1730#														
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TST16	1834#	1848													
TST17	1861#	1892													
TST18	1896	1910#	1940												
TST19	1952#	1974													
TST2	1353#	1372													
TST20	1986#	2008													
TST21	2018#	2041													

TST22	2045	2073#	2112												SEQ 8147
TST23	2123#	2161													
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TST25	2212	2233#	2268												
TST26	2279#	2323													
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TST28	2390#	2441													
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TST32	2608#	2692													
TST33	2696	2712#	2795												
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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#	3328													
TST42	3311	3323#	3363												
TST43	3371#	3404													
TST44	3415#	3457													
TST45	3461	3498#	3599												
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TST6	1462#	1473													
TST7	1482#	1492													
TST8	1501#	1521													
TST9	1530#	1555													
TSTCHA	636	643	652#	669											
TSTSEK	3684#														
TTVLP7	441	474	476	493	855	871#	887								
TWOCT	1112#	4402	4415												
TYPE	1113#	3815	3837	3845	3856	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								
WATISZ	1091#	4563													
WATHES	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										
XC8INO	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	

[illegible]

SDWP	1103	1169#					
XSKWAT	1092	1157#					
XTA8LA	360	404#					
XTA8LB	395	405#					
XTEXT	4420	4472#					
XTICK	1117	1234#					
XTOCT	1112	1179#					
XWT15Z	1091	1158#					
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.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#	1129	1415#			
.L0372	155	328#	1287	1416#			
.L0373	149	329#	1285	1417#			
.L0374	145	150	330#	1270	1418#		
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.L0561	462	504#					
.L0562	445	486	494	505#			
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.L0567	386	510#					
.L0570	384	511#					
.L0571	383	385	512#				
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.L0574	366	515#					
.L0575	364	516#					
.L0576	359	517#					
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.L0775	547	549	633	671	702#			
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.L1171	797	903#						
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.L1177	723	909#	1752	1898#				
.L1365	1009	1031#						
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.L1371	966	968	972	976	980	1035#		
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.L1373	960	1037#						
.L1374	958	986	992	1038#				
.L1375	957	985	991	998	1000	1039#		
.L1376	951	1010	1040#	2054	2062#			
.L1377	922	1041	2050	2063#				
.L2176	2527	2534#						
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.L2377	2541	2698#						
.L3377	3199	3203	3321#					
.L4175	3696	3757#						
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.L4576	3912	3923	3978	4034#				
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[illegible]

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.V6064	3855	3890#				
.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#				