

IDENTIFICATION  
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PRODUCT NAME: RK8E DRIVE CONTROL TEST  
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1. ABSTRACT  
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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 SWR9s1.

2. REQUIREMENTS  
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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  
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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 TIMEOUT AND THE ERROR HALT AT LOCATION "ERHLT9" WILL BE INHIBITED. THE TTY BELL WILL RING INDICATING AN ERROR IF SWR2=0.

SWR1=1

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

SWR2=1

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

SWR4=1

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

SWR5=1

INHIBIT THE RECOVERABLE ERROR HALT AFTER A RECOVERABLE ERROR TIMEOUT. AFTER AN ERROR HALT AT LOCATION "ERHLT9", RAISING THIS SWITCH AND PRESSING KEY CONTINUE WILL INHIBIT ALL FUTURE RECOVERABLE ERROR HALTS. IF SWR10 THE PROGRAM WILL PROCEED TO NEXT TEST AFTER EACH ERROR TIMEOUT. 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 TIMEOUT OF THE ACTUAL CONTENTS OF

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

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

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

5. OPERATOR AND/OR PROGRAM ACTION

5.1 STANDARD TEST PROCEDURE

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

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

C. IF IT IS DESIRED TO CHANGE THE IOT CODES WITHIN THE PROGRAM, FOLLOW THE PROCEDURE IN SECTION 5.8.

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

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

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

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

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

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

5.2 RK05 DRIVE CARTRIDGE MOUNTING PROCEDURE

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

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

B. TURN AC POWER TO DISK DRIVE ON.

- C. VERIFY THAT LIGHT LABELED "PWR" IS ON.
  - D. WAIT FOR LIGHT LABELED "LOAD" TO COME ON.
  - E. VERIFY THAT LIGHTS LABELED "RDY", "ON CYL", "FAULT", "WT", AND "RD" ARE OFF.
  - F. OPEN ACCESS DOOR.
  - G. INSERT CARTRIDGE.
  - H. CLOSE ACCESS DOOR.
  - I. SET SWITCH LABELED "RUN/LOAD" TO THE "RUN" POSITION.
  - J. WAIT FOR THE LIGHTS LABELED "RDY" AND "ON CYL" TO COME ON.
  - K. TOGGLE SWITCH LABELED "WT PROT" AND VERIFY THAT THE LIGHT LABELED "WT PROT" GOES ON AND OFF.
  - L. TOGGLE SWITCH LABELED "WT PROT" UNTIL THE LIGHT LABELED "WT PROT" GOES OFF.
  - M. VERIFY THAT LIGHTS LABELED "FAULT", "WT", "RD", AND "LOAD" ARE OFF.
- 5.3 DRIVE CONTROL TEST  
-----
- A. MAKE READY THE DISK DRIVE TO BE TESTED USING THE RK05 DRIVE CARTRIDGE MOUNTING PROCEDURE SECTION 5.2.
  - B. SET SWITCH LABELED "RUN/LOAD" TO THE "LOAD" POSITION ON ALL DRIVES NOT BEING TESTED.
  - C. VERIFY THAT AC POWER TO ALL DRIVES IS ON.
  - D. SET THE SWITCH REGISTER TO 0200 AND PRESS LOAD ADDRESS.
  - E. SET THE SWITCH REGISTER TO 0000.
  - F. PRESS CLEAR AND THEN CONTINUE.
  - G. THE TTY WILL RESPOND WITH THE FOLLOWING MESSAGE QUESTIONING THE OPERATOR ON THE DISK DRIVES TO TEST. THE RESPONSE SHOULD BE Y FOR YES OR N FOR NO:
    - RK06 DRIVE CONTROL TEST
    - TEST (Y=YES OR N=NO):
    - DISK0? DISK1? DISK2? DISK3?
  - H. 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.
    - "RK06 DRIVE CONTROL TEST PASS COMPLETE"
  - I. ALWAYS USE SWR4#1 FOR STOPPING THE TEST.

- J. IF IT IS DESIRED TO HAVE THE PROGRAM HALT OR STOP AT END OF PROGRAM PASS COMPLETION SET SWR9#1.
  - K. ANY HALTS OR TIMEOUTS OTHER THAN THE PASS COMPLETE TIMEOUT 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 RK95 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 TIMEOUTS ACCESS SECTION 6 IN THIS DOCUMENTATION. (NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS TEST.)
  - O. THE "CHECK WRITE PROTECT PROCEDURE" AS DESCRIBED ABOVE SHOULD BE RUN TWICE WITH ALL DRIVES ON THE CONTROL.
- 5.5 CHECK WRITE PROTECT (PROGRAM CONTROL)  
-----
- A. RUN THE DRIVE CONTROL TEST WITH ALL DRIVES ON THE CONTROL BEFORE RUNNING THIS "WRITE PROTECT" PORTION.



- H. MAKE READY A DRIVE TO TEST USING THE RK05 DRIVE CARTRIDGE MOUNTING PROCEDURE SECTION 5.2.
  - I. SET SWITCH LABELED "RUN/LOAD" TO THE "LOAD" POSITION ON ALL OTHER DRIVES.
  - J. VERIFY THAT AC POWER TO ALL DRIVES IS ON.
  - K. VERIFY THAT THE LIGHT LABELED "WT PROT" IS "OFF" ON THE CURRENT DRIVE UNDER TEST.
  - L. SET THE SWITCH REGISTER TO 0207 AND PRESS LOAD ADDRESS.
  - M. SET THE SWITCH REGISTER TO 0000.
  - N. SET SWR10-11 TO THE CURRENT DRIVE NUMBER UNDER TEST.
  - O. PRESS START AND THE COMPUTER SHOULD HALT AT LOCATION "APHLTI" INDICATING A SUCCESSFUL TEST.
  - P. VERIFY THAT THE "WRITE PROTECT LIGHT LABELED "WT PROT" IS ON, ON THE CURRENT DRIVE.
  - Q. IF ANY ERRORS ARE ENCOUNTERED OR IF IT IS DESIRED TO TRY THE TEST AGAIN, REPEAT STEPS A-J.
  - R. FOR POSSIBLE ERROR TYPEOUTS ACCESS SECTION 6 IN THIS DOCUMENTATION. (NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS TEST.)
  - S. 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 OCCURS THE PROGRAM WILL THEN CHECK THE DATA READ FOR DATA ERRORS. IF NO DATA ERRORS EXIST THE CRC ERROR FOUND WILL BE REPORTED AS A STATUS REGISTER ERROR. IF DATA ERRORS ARE FOUND THE DATA ERRORS WILL BE REPORTED AS DISK DATA ERRORS AND THE CRC STATUS ERROR INDICATED IN THE "ST:". (SEE SECTION 6.4 FOR ERROR HEADERS AND TYPEOUTS).

THE ABSOLUTE ADDRESS LOCATIONS OF THE DATA BUFFER

6.2 NON-RECOVERABLE ERROR HALTS  
-----

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

- ERHLT1 UNDEFINED INTERRUPT
- ERHLT2 SKIP TRAP FOR IOT "DCLR"
- ERHLT3 SKIP TRAP FOR IOT "DLAG"
- ERHLT4 SKIP TRAP FOR IOT "DLCA"
- ERHLT5 SKIP TRAP FOR IOT "DRST"
- ERHLT6 SKIP TRAP FOR IOT "DLDC"
- ERHLT7 SKIP TRAP FOR IOT "DMAN"

6.3 RECOVERABLE ERROR HALT  
-----

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

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

6.4 ERROR TYPEOUTS  
-----

WHEN A RECOVERABLE ERROR 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. DA1 FOR DISK ADDRESS ERROR, CM1 FOR COMMAND REGISTER ERROR, CR1 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 IOT FAILED TO SKIP.

DISK SKIP ERROR  
PC:0267

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

DISK DATA ERROR  
PC:1161 GD15252 ST:4010 CM:1000 DA:10001 CA:17000 AD:17010 DT:15250

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).

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.

AC12 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.

AC --

0-11

CURRENT ADDRESS

6745 DRST

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

AC --

0

TRANSFER DONE

1

READY TO SEEK, READ, OR WRITE.

2

NOT USED

3

SEEK FAIL

4

DISK FILE READY

5

CONTROL BUSY ERROR

6

TIME OUT ERROR

7

WRITE LOCK ERROR

8

CRC ERROR

9

DATA RATE ERROR

10

DRIVE STATUS ERROR

11

CYLINDER ADDRESS ERROR

6746 DLDC

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

AC --

0-2=0

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

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

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

9. PROGRAM DESCRIPTION  
-----

THE RK8E DRIVE CONTROL TEST VERIFIES BASIC FUNCTIONAL OPERATION OF THE RK8E CONTROL LOGIC WITH THE RK05 DISK DRIVE(S). THE PROGRAM IS COMPRISED OF MANY INDIVIDUAL SUBTESTS WHICH ARE AUTOMATICALLY RUN IN A 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 TESTSOVLAP, 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.  
 NOTES: 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 G, 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
---	-----	-----	-----
11.	---	APT-8 HOOKS	---
	---	-----	-----

11.1

DESCRIPTION  
 -----

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

1. TIMING INTERFACE
2. ERROR INTERFACE

EACH WILL BE 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  
-----

11.3.1. TIMING  
-----

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

11.3.2. ERRORS  
-----

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

11.4. LOADING PRECAUTIONS  
-----

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

```

1 /
2 /RKAE DRIVE CONTROL TEST
3 /
4 /MAINDEC=00-DHRKB-G=L
5 /
6 /COPYRIGHT (C) 1972, 1976 DIGITAL EQUIP. CORP.
7 /
8 /MAYNARD, MASS. 01754
9 /
10 0001 FIELD 1
11 /
12 /CONSOL SRC =V2-R0-CONSOLE PACKAGE
13 /
14 /THE PROGRAM SHOULD CHECK FOR A CONTROL CHARACTER FROM THE TERMINAL
15 /EVERY FIVE(S) 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 XDCSW WHICH CONTAINS CASTRY SO PUT THE LABEL CASTRY
27 /WHERE YOU WANT TO RESTART THE PROGRAM.
28 /
29 /
30 /SETUP1 IN XCAERR 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 PSIF= 6665
47 6004 GTF= 6004
48 7701 ACL= 7701
49 6007 CAF= 6007
50 7421 MDL= 7421
51 7501 MDA= 7501
52 /
53 0020 *20
54 /
55 0020 0000 FISWR, 0
    
```

```

56 0021 4000 F10P1, 4000
57 0022 0000 F10P2, 0
58 /
59 /IFDF CONSOLE <
60 /
61 /
62 0024 *24
63 /
64 4424 C0PASS= JMS I .
65 0024 0200 XCAPAS /C0 PASS COMPLETION ROUTINE
66 4425 C0CKSW= JMS I .
67 0025 0262 X00SW /CHECK SW REG SETTING
68 4426 CRTTYI= JMS I .
69 0026 0272 XCBTTY /FETCH CONSOL CHAR
70 4427 C0CNTR= JMS I .
71 0027 0400 X00CNT /CHECK FOR CONTROL CHAR
72 4430 C0PRNT= JMS I .
73 0030 0303 X00PNT /CA PRINT A BUFFER
74 4431 C0SWIT= JMS I .
75 0031 0656 X00PSW /SET UP PSEUDO SW. REG
76 4432 C0OCTA= JMS I .
77 0032 1000 X00OCT /CONVERT TO ASCII AND PRINT
78 4433 C0CRLF= JMS I .
79 0033 1023 X00CRL /DO A CARRIGE RETUR+LINE FEED
80 4434 C0ECHO= JMS I .
81 0034 1063 X00ECH /CHECK INPUT CHAR
82 4435 CRTYPE= JMS I .
83 0035 1077 X00TYP /CA PRINT ONE CHAR
84 4436 CRERR= JMS I .
85 0036 1207 X00ERR /CA ERROR HANDLER
86 4437 C0INQU= JMS I .
87 0037 0635 X00INQ /LOOK FOR OPERATOR INTERVENTION
88 4440 C0CKPA= JMS I .
89 0040 1041 X00CKP /CHECK IF CONTROL CHAR
90 4441 C0PAUS= JMS I .
91 0041 0337 X00PAU /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 /4000=USE FRONT PANEL SWITCH REGISTER
101 /0000=USE THE PSEUDO SWITCH REGISTER LOC.20
102 /
103 /*22 /SYSTEM CONFIGURATION
104 /4000=CONSOL PACKAGE SET ACTIVE
105 /0000=CONSOL PACKAGE SET DEACTIVE
106 /
107 /*23 /RESERVED FOR FUTURE USE
108 /
109 /
110 0200 *200
    
```

```

111 /
112 /*****
113 /CBPASS
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 CBPASS TO BE IN THE 1 TO 4 MINUTE
117 /RANGE
118 / CBPASS#JMS XCBPAS
119 /EX. OF CALL C0PASS
120 / / /HALT IF NON CONSOL PACKAGE
121 / / JMP START1 /CONTINUE RUNNING THIS PROGRAM
122
123
124 /RETURN TO LOCATION CALL PLUS ONE WITH THE AC#0 IF NON CONSOL PACKAGE AND HLT
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-XCBOCTA-XCBSW-XCBPNT-XCBING#
130
131
132 0200 0200 XCBPAS, 0
133 0201 7200 CLA
134 0202 4777* JMS CHKCLA /IS WORD 22 BIT 3 ACTIVE CONSOLE?
135 0203 5212 JMP DOPACK /IS CLASSIC
136 0204 4776* JMS CBGET /GET REGISTERS.
137 0205 4262 JMS XCBSW /DEACTIVE CONSOL CHECK SR SETTING
138 0206 0375 AND 4000 /FOR HALT ON END OF CBPASS
139 0207 7640 SZA CLA /I= HALT 0 CONTINUE
140 0210 5600 JMP I XCBPAS /GO TO HALT
141 0211 5230 JMP CBY1 /CONTINUE ON RUNNING PROGRAM
142 0212 4232 DOPACK, JMS CKCOUT /CLASS CHECK CBPASS COUNT
143 0213 5230 JMP CBY1 /CBPASS COUNT NOT DONE REEDD PROGRAM
144 0214 2250 ISZ PASCNT /CBPASS COUNT DONE SET CBPASS COUNT
145 0215 4774* JMS XCBCLRF
146 0216 4303 JMS XCBPNT /CBPNT BUFFER
147 0217 0293 MESPAS /
148 0220 1250 TAD PASCNT /GET NUMBER
149 0221 4773* JMS XCBOCTA /CONVERT IT TO ASCII
150 0222 4774* JMS XCBCLRF /DO A CARRIAGE RETURN
151 0223 4776* JMS CBGET /GET REGISTERS.
152 0224 4262 JMS XCBSW /CHECK A HALT AT END OF CBPASS
153 0225 0375 SETUP2, AND 4000 /MASK BIT
154 0226 7640 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 0000 CKCOUT, 0
159 0233 1251 TAD DOSET /CHECK IF SET UP NEEDED
160 0234 7640 SZA CLA /0=SET UP CBPASS COUNT VALUE
161 /1=CBPASS COUNT VALUE OK
162 0235 5242 JMP NOSET /CBPASS COUNT VALUE ON
163 0236 1252 TAD CNTVAL /GET COUNT VALUE FOR THIS PROG
164 0237 7040 CMA /SET TO NEGATIVE
165 0240 3247 DCA DOCNT /STORE IN HERE

```

```

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 CBPASS
170 0245 2232 ISZ CKCOUT /BUMP RETURN FOR
171 0246 5632 JMP I CKCOUT /CBPASS C8TYPE OUT
172 0247 0000 DOCNT, 0
173 0250 0000 PASCNT, 0 /
174 0251 0200 NOSET, 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 /*****
186 /CRCKSW
187
188 /THIS ROUTINE CAN BE USED INPLACE OF A READ THE SWITCHES LAS.
189 /ROUTINE THAT WILL CHECK WHERE TO READ THE
190 /CA SWITCHES FROM IE. FROM PANEL OR PSEUDO SWITCH REGISTER
191 /THE SELECTION IS DETERMINED BY THE STATE OF BIT 0 IN LOCATION 21.
192
193 /CBCKSW* JMS XCBW /READ THE CBSWIT REGISTER
194 /EX. JMS XCBW /RETURN WITH THE CONTENTS OF SWITCH REGISTER
195
196 /RETURN TO NEXT LOCATION FOLLOWING CALL WITH THE AC# TO VALUE OF CBSWIT SETTING
197
198 /CALLS USED ARE-XCCKPA-
199
200 0262 0000 XCBW, 0
201 0263 4771* JMS XCCKPA /GO CHECK THE IF ANY CONTRL
202 0264 7000 NOP
203 0265 1021 TAD 21 /GET WD FOR INDICATOR
204 0266 7710 SPA CLA /CHECK IF FROM PANEL 4000
205 0267 7614 7614 /ON LAS AND SKIP GET FROM PANEL WITH LAS
206 0270 1020 TAD 20 /PSEUDO SWITCH
207 0271 5662 JMP I XCBW /EXIT WITH STATUS BIT IN AC.
208
209 /*****
210
211 /CRTTYI
212 /THIS ROUTINE WILL LOOK FOR A INPUT FROM THE TERMINAL
213 /AND REMOVE ANY PARITY BITS, THEN MAKE IT 8 BIT ASCII.
214 / CRTTYI# JMS XCRTTY

```



```

215
216 /EX. JMS XC8TTY /READ CHAR FROM THE CONSOL DEVICE
217 / / /RETURN TO CALL PLUS ONE AC CONTAINS THE CHAR
218
219
220 /CALLS USED -NONE-BUT C8CHAR IS OFF PAGE AND IN ROUTINE CALLED XC8RECH0
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 /C8PRNT
238
239 /THIS ROUTINE WILL TYPE THE CONTENTS OF THE CA PRINT BUFFER, THE LOCATION
240 /OF THE BUFFER WILL BE IN THE ADORS FOLLOWING THE CALL. PRINTING OF THE BUFFER
241 /WILL STOP WHEN A 00 CHAR IS DETECTED. CHARACTERS ARE PACKED 2 PER WORD.
242
243 / CAPRNT= JMS XC8PNT
244
245
246 /EX. JMS XC8PNT /C8PRNT THE CONTENTS OF THE FOLLOWING BUFFER
247 / MESS77 /LOCATION OF C8PRNT BUFFER
248
249 /C8PRNT WILL USE THE LOCATION FOLLOWING THE CALL AS THE POINTER FOR THE
250 /C8PRNT 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 C8PRNT 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 TAC /MAKE CHAR A 200 AFTER ROTATE
268 0317 7012 RTR
269 0320 7012 RTR
    
```

```

270 0321 7012 RTR /PUT CHAR IN BITS 4-11 MAKE IT 8 BIT ASCII
271 0322 4764 JMS XC8TYPE /C8PRNT IT ON CONSOL
272 0323 1736 TAD I PTSTOR /GET DATA WORD
273 0324 0363 AND (0077 /MASK FOR RIGHT BYTE
274 0325 7450 SNA /CHECK IF 00 TERMINATOR
275 0326 5703 JMP I XC8PNT /EXIT
276 0327 1362 TAD (3740 /ADD FUDGE FACTOR TO DETERMINE IF 200
277 0330 7500 SMA /OR 300 IS TO BE ADD TO CHAR
278 0331 1361 TAD (100 /ADD 100
279 0332 1360 TAD (240 /ADD 200
280 0333 4764 JMS XC8TYPE /C8TYPE ONLY BITS 4-11
281 0334 2336 ISZ PTSTOR /BUMP POINTER FOR NEXT WORD
282 0335 5310 JMP C8001 /DO AGAIN
283 0336 0000 PTSTOR, 0 /STOR FOR CAPRNT BUFFER
284
285 /*****
286
287 /C8PAUS
288 /THIS ROUTINE WILL CHECK IF THE CONSOL PACKAGE IS ACTIVE, IF ACTIVE
289 /IT WILL RETURN TO CALL PLUS ONE AC= 0. AND DO THAT INSTRUCTION.
290 /IF THE CONSOL PACKAGE IS NOT ACTIVE THE CALL WILL BE REPLACED
291 /WITH A 7402 HALT AND THEN RETURN TO THE HALT.
292
293 /
294 / C8PAUS= JMS XC8PAU
295 /
296 /
297 /EX. JMS XC8PAUS /CHECK IF ON ACTIVE CONSOL IF NOT HALT HERE
298 / ANYTHING /RETURN HERE IF ON ACTIVE CONSOL
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 CONSOL BIT
308 0342 5350 JMP C8003 /GO ON CONSOL PART RETURN CALL+1
309 0343 7040 CMA /DEACTIVE CONSOL 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 HALT 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
    
```

```

325 0367 0200
326 0370 0177
327 0371 1041
328 0372 0635
329 0373 1000
330 0374 1023
331 0375 0400
332 0376 0624
333 0377 1000
334 0400
335
336
337
338 /CBCNTR
339 /THIS ROUTINE WILL CHECK FOR THE PRESENCE OF CONTROL CHARACTERS
340 /IT WILL CHECK FOR THE FOLLOWING CHAR C-R-Q-L-S
341 /
342 /
343 /FX. JMS XCBCNTR /CHECK FOR CONTROL CHARACTER
344 / JMP ANYTHING /LOC FOLLOWING CALL IS FOR CONTINUING THE PROGRAM
345 / JMP ANYTHING /LOC. IS FOR RETURN IF INMODE SET AND NOT CNTRL CHAR
346 /
347 /RETURN IS TO CALL PLUS ONE IF CONTINUE
348 /RETURN IS TO CALL PLUS TWO IF INMODE SET AND NOT CONTROL CHAR
349 /RETURN IS TO CALL PLUS TWO IF INMODE IS NOT SET AND NO
350 /CONTROL CHAR . THIS WILL PRINT THE CHARACTER AND A ?
351 /CLEAR THE AC AND RETURN CALL+2.
352
353 /CALLS USED ARE-CHKCLA-XCBTYPE-XCBCRLF-CBGET-UPAROW-XCBTYI-XCBPSW-
354 /
355 /
356 /
357 0400 0200 XCACNT, 0
358 0401 3777 DCA ACSAVE /SAVE THE AC
359 0402 4776 JMS CHKCLA /CHECK LOC. 22 BITS FOR CONSOLE BIT
360 0403 5206 JMP ANYTHING /ON ACTIVE CONSOLE
361 0404 1777 TAD ACSAVE /DEACTIVE CONSOLEGET AC FOR RETURN
362 0405 5600 JMP I XCBCNT /EXIT NOT ON ACTIVE CONSOLE
363 0406 6004 GTF
364 0407 3775 DCA FLSAVE
365 0410 7501 MQA
366 0411 3774 DCA MQSAVE /SAVE THE MQ
367 0412 3255 DCA INDEXA /SET DISPLACEMENT INTO TABLE B
368 0413 1257 TAD XTARLA /GET ADDR OF TABLE A
369 0414 3256 DCA GETDAT /CONTAINS POINTER TO CONTROL CHAR
370 0415 1656 REODD, TAD I GETDAT /GET CONTROL CHAR FROM TABLE
371 0416 7450 SNA /CHECK FOR A 0 END OF TABLE
372 0417 5226 JMP DONEA /END OF TABLE NO CONTROL CHAR
373 0420 1773 TAD CACCHAR /COMPARE CHAR TO CONTROL CHAR
374 0421 7650 SNA CLA /0 IF MATCH
375 0422 5243 JMP GOITA /MATCH
376 0423 2255 ISZ INDFXA /NO MATCH NOT END OF TABLE REODD
377 0424 2256 ISZ GETDAT /BUMP INDEX FOR EXIT WHEN CONTROL FOUND
378 0425 5215 JMP REDDA /BUMP GETDAT FOR COMPARE OF NEXT CNTRL CHAR.

```

```

379 0426 1772 DONEA, TAD INMODE /CHECK IF PROGRAM EXPECTS CHAR
380 0427 7640 SZA CLA /1=CHAR EXPECTED 0= NO CHAR EXPECTED
381 0430 5240 JMP EXITA /CHAR EXPECTED
382 0431 1773 TAD CACCHAR /GET CHAR -NOT CONTROL+NOT EXPECTED
383 0432 4771 JMS XCBTYPE /CAPRNT CHAR
384 0433 1370 TAD (277) /GET CODE FOR "?"
385 0434 4771 JMS XCBTYPE
386 0435 4767 JMS XCBCRLF
387 0436 2200 ISZ XCBCNT /BUMP RETURN
388 0437 5600 JMP I XCBCNT /EXIT CALL+2
389 0440 2200 EXITA, ISZ XCBCNT /BUMP RETURN FOR MAIN PROGRAM CHECK OF CHAR
390 0441 1773 TAD CACCHAR /PUT CHAR IN AC.
391 0442 5600 JMP I XCBCNT /EXIT
392 0443 1773 GOITA, TAD CACCHAR /GET THE CONTENTS OF CHAR
393 0444 1366 TAD (100) /ADD 100 TO FORM A GOOD ASCII CHARACTER
394 0445 3773 DCA CACCHAR /RESTORE CORRECT CHAR
395 0446 1260 TAD XTARLB /GET START OF TABLE B
396 0447 1255 TAD INDEXA /GET NOW FAR INTO TABLE
397 0450 3254 DCA GOTDA /STORE IT
398 0451 1654 TAD I GOTDA /GET THE ROUTINE STARTING ADDRESS
399 0452 3254 DCA GOTDA /STORE IT IN HERE
400 0453 5654 JMP I GOTDA /GOTO CONTROL CHAR ROUTINE
401 0454 0000 GOTDA, 0000 /ADD OF CNTRL ROUTINE TO EXECUTE
402 0455 0000 INDEXA, 0000 /DISPLACEMENT INTO CNTRL TABLE
403 0456 0000 GETDAT, 0000 /LOCATION OF ADDR OF CONTROL CHAR.
404 0457 0461 XTARLA, TARLA /ADDRS OF TABLE A
405 0460 0471 XTARLB, TARLB /ADDRS OF TABLE B
406 0461 7575 TARLA, 7575 /CNTRL C BACK TO MONITOR 203
407 0462 7564 7564 /CNTRL L SWITCH ERROR PRINTING DEVICE 214
408 0463 7557 7557 /CNTRL O START DISPLAYING CHAR. AGAIN 221
409 0464 7556 7556 /CNTRL R BACK TO BEGINNING OF PROGRAM 222
410 0465 7555 7555 /CNTRL S STOP SENDING CHAR TO DISPLAY WAIT FOR CNTRL O 223
411 0466 7573 7573 /CNTRL E CONTINUE WITH PROGRAM 205
412 0467 7574 7574 /CONTROL D CHANGE SWITCH REGISTER ON FLY
413 0470 0000
414
415 0471 0551 TARLB, CNTRLC
416 0472 0537 CNTRLL
417 0473 0500 CNTRLD
418 0474 0511 CNTRLR
419 0475 0521 CNTRLS
420 0476 0545 CNTRLE
421 0477 0600 CNTRLO
422 /
423 /CONTROL D
424 /START SENDING CHAR. TO THE DISPLAY
425 /THIS WILL RETURN CONTROL TO CALL THAT WAS SET BY
426 /THE CALL FOR CONTROL S.
427 /
428 0500 3772 CNTRLO, DCA INMODE /SET SORT FLAG FOR UNEXPECTED CHAR
429 0501 1335 TAD CASETS /CHECK IF CONTROL S TYPED IN
430 0502 7640 SZA CLA
431 0503 5306 JMP BYRET0 /CONTROL S TYPED IN
432 0504 4765 JMS CBGET /NO CONTROL S TYPED PREVIOUSLY
433 0505 5600 JMP I XCBCNTR /LEAVE VIA CNTR ENTRY ADDRESS

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```

434 0506 3335 RYRETR, DCA C8SETS /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 C8SETS /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 0
447 0517 5720 JMP I X00SW /GO TO ADDR 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 CNTRLS, TAD C8SETS /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 C8SETS /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 CNTRLS /IF NOT A CNTRL Q R C REASK
467 0535 0000 C8SETS, 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 CNTRLL, 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 PAGE
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 ADDRS IS SAFE
528 0602 7640 SZA CLA
529 0603 5207 JMP C8D011 /DO NOT CHANGE THE RETURN ADDRS
530 0604 1777 TAD XC8CNT /GET THE RETURN ADDRS AND SAVE IT
531 0605 3214 DCA C8RETD /SAVE THE RPTURN 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 /
    
```

```

543 /THIS WILL TYPE A UP ARROW AND THE CHAR IN C8CHAR.
544
545 0615 0000 UPAROW, 0
546 0616 1376 TAD (336 /C8PRINT THE "*" AND THE CHAR C8TYPED IN
547 0617 4775 JMS XC8TYPE /CODE FOR "
548 0620 1774 TAD C8CHAR /C8TYPE THE CHAR
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 M8SAVE
560 0627 7421 MQL /R8STORE M8
561 0630 1771 TAD FLSAVE
562 0631 7004 RAL /R8STORE THE LINK
563 0632 7200 CLA
564 0633 1770 TAD ACSAVE
565 0634 5624 JMP I C8GET /R8STORE THE AC
566 /GET THE REGISTERS
567
568
569
570
571
572 /CBINGU
573 /CBINGU ROUTINE WILL PRINT A WAITING
574 /AND THE PROGRAM IS EXPECTING A CONTROL CHAR INPUT
575 /IF CONTINUE FROM CONTROL CHAR RETURN IS CALL PLUS ONE
576 /IF NO CONTROL CHAR ENTERED THEN WAITING IS REPRINTED
577 /AND PROGRAM WAITS FOR A CONTROL CHAR AGAIN.
578 / CBINGU = 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
608
609
610
611
612
613
614
615
616
617
618
619 0656 0000 XC8PSW, 0
620 0657 4767 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
621 0660 7410 SKP /ACTIVE CONSOLE
622 0661 5656 JMP I XC8PSW /DEACTIVE CONSOLE PACKAGE
623
624 0662 1345 TAD C8SWST /RETURN WITHOUT ASKING PSEUDO SWITCH
625 0663 7640 SZA CLA /IS THE SOFT FLAG SET FOR SWITCH?
626 0664 5764 JMP C8RY4 /SWIF IF ONE ENTRY AT ATIME OK
627 0665 2345 ISZ C8SWST /SECOND ENTRY WITH OUT A EXIT GO TO SW QUESTION
628 0666 4766 C8R0PS, JMS XC8PNT /FIRST ENTRY SET FLAG
629 0667 0747 MESA /C8PRINT SR=
630 0670 1020 TAD 20
631 0671 4763 JMS XC8OCTA /GET CONTENTS OF SW
632 0672 1362 TAD (40 /CONVERT IT TO ASCIIT
633 0673 4775 JMS XC8TYPE /GET SPACE
634 0674 2761 ISZ INMODE
635 0675 4760 JMS XC8ECHO /SET FLAG FOR CHAR EXECTED
636 0676 4315 JMS TSTCHA /LOOK FOR INPUT
637 0677 1774 TAD C8CHAR /NOT CONTROL TEST IT IS LEGAL
638 0700 3020 DCA 20 /STORE NEW CHAR IN SW REG
639
640
641 0701 1357 TAD (=3 /GET A MINUS 3
642 0702 3346 DCA T8PCNT /STORE IN TEMP COUNT
643 0703 4760 GETCHI, JMS XC8ECHO /GET NEXT CHAR
644 0704 4315 JMS TSTCHA /CHECK IF CR+GOOD CHAR
645 0705 1020 TAD 20 /GET C8SWIT REGISTER
646 0706 7106 RTL CLL /ROTATE IT LEFT 3 PLACES
647 0707 7004 RAL
648 0710 1774 TAD CACHAR /GET CHAR+ADD IT TO PREVIOUS CONTENTS
649 0711 3020 DCA 20 /SAVE NEW CONTENTS

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649 0712 2346      TSZ      TMCNT      /BUMP COUNT
650 0713 5303      JMP      GETCH1    /JMP BACK+GET NEXT CHAR
651 0714 5342      JMP      ENDT      /END 4 CHAR CATTYPED IN
652 0715 0000      TSTCHA, 0
653 0716 7041      CIA      /CMPL 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      ENDT      /WAS CARRIAGE RETURN
657 0722 1774      TAD      CACHAR    /NOT CR, GET CHAR
658 0723 1355      TAO      (-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      TAO      (-270     /GET A -270+CHECK IF IT IS LARGER THEN 7
663 0727 7720      SNA CLA  /SKIP IF LESS THEN ?
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 0735 5715      JMP I    TSTCHA    /GET CHAR IN AC
669 0736 1352      ERR1, TAD (277     /EXIT
670 0737 4775      JMS      XCRTYPE   /CAPRNT
671 0740 4773      JMS      XCRCLF    /
672 0741 5266      JMP      CBRDPS    /
673 0742 4773      ENDT, JMS XCRCLF   /EXIT+ASK AGAIN
674 0743 3345      DCA      CR5WST    /DO A CR LF
675 0744 5656      JMP I    XCRPSW    /CLEAR THE PSW ENTRY FLAG
676 0745 0000      CR5WST, 0
677 0746 0000      TMCNT, 0
678 0747 2322      HESA, TEXT "SR="
679 0750 7540
680 0751 0000

```

```

681
682
683 0752 0277
684 0753 0297
685 0754 7510
686 0755 7520
687 0756 0215
688 0757 7775
689 0760 1063
690 0761 1076
691 0762 0040
692 0763 1000
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
706 PAGE
707 /CROCTA
708
709 /OCTAL TO ASCII CONVERSION
710 /THIS ROUTINE WILL TAKE THE OCTAL NUMBER IN THE AC AND CONVERT IT TO ASCII
711 /THE RESULT WILL BE PRINTED ON THE CONSOL TERMINAL
712 / CROCTA= JMS XCRCT
713 /
714 /EX. JMS XCRCTA /AC CONTAINS NUMER TO BE CHANGE
715 / RETURN IS TO CALL PLUS ONE AC=0
716 /
717 /CALLS USED ARE -XCRTYPE=
718
719 XCRCT, 0
720 CLL RTL
721 RTL
722 DCA CATHP1 /POSITION THE FIRST CHAR FOR PRINTING
723 TAD (=4 /SAVE CORRECT POSITIONED WORD HERE
724 DCA CACKP /STORE COUNTER IN HERE
725 CADD4, TAD CATHP1 /GET FIRST NUMBER
726 AND (0007 /MASK
727 TAD (260 /ADD THE PRINT CONSTANT
728 JMS XCRTYPE /TYPE THE NUMBER
729 TAD CATHP1 /
730 RTL
731 RAL /PUT NEXT NUMBER IN POSITION
732 DCA CATHP1 /STORE IT
733 TSZ CACKP /DONE YET WITH FOUR NUMBERS
734 JMP CADD4 /NOT YET DO MORE
735 0000 JMP I XCRCT /DONE WITH FOUR
736 0001 CATHP1, 1
737 1022 CACKP, 0
738
739
740
741 /*****
742 /COCRFL
743 /CRTYPE CR AND LF WITH FILLERS FOLLOWING EACH LF AND CR
744 /
745 / COCRFL= JMS XCOCRFL
746 /
747 /EX. JMS XCOCRFL /CAPRNT A CR AND LF WITH FILL
748 / /RETURN TO CALL PLUS ONE AC =0
749 /CALLS USED ARE -XCRTYPE=
750
751
752 1023 0000 XCOCRFL, 0
753 1024 7300 CLA CLL
754 1025 1374 TAD (215 /GET CONF FOR CR
755 1026 4277 JMS XCRTYPE

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756 1227 1237 TAD FILLER
757 1230 2040 CHA
758 1031 3240 DCA FILCNT /STORE FILLER IN WERP
759 1032 1373 TAD (212 /GFT CODE FOR LF
760 1033 4277 CDDOP, JMS XCRTYPE
761 1034 2240 ISZ FILCNT /CHECK ON FILLER CHAR
762 1035 5233 JMP CDDOP /TYPE A NON PRINTING CHAR
763 1036 5623 JMP I XCACRL /EXIT
764 1037 0004 FILLER, 0004 /FILLER SET FOR 4 CHAR
765 1040 0000 FILCNT, 0 /COUNTER FOR FILL
767
768
769
770 //*****
771 /CACKPA
772 /THIS ROUTINE WILL CHECK IF A CHARACTER WAS ENTERED FROM THE
773 /TERMINAL, IF THE FLAG IS SET AND THE CONSOLE PACKAGE IS
774 /ACTIVE A CHECK IS MADE TO DETERMINE IF IT IS A CONTROL CHAR.
775 /IF IT WAS A CONTROL CHAR THEN ITS CONTROL FUNCTION IS PERFORMED.
776 /IF NOT A CONTROL CHARACTER OR A CONTROL E-D-L-O-IT WILL DO
777 /THE CONTROL FUNCTION AND RETURN TO CALL PLUS 2.
778 /A NON CONTROL CHARACTER WILL BE PRINTED AND A "?" IT WILL RETURN TO
779 /CALL PLUS 2.
780 /IF NO FLAG IS SET OF THE CONSOLE IS NOT ACTIVE THE RETURN IS TO
781 /CALL PLUS 1.
782
783 / CACKPA= JMS XCACKP
784
785
786
787
788
789
790
791 /CALLS USED ARE -XCRTYPE-XCACNTR-CAGET-
792
793
794
795 1041 0000 XCACKP, 0
796 1042 3772 DCA ACSAVE /SAVE THE AC
797 1043 6004 GTF /SAVE THE FLAGS
798 1044 3771 DCA FLSAVE /SAVE THE FLAGS
799 1045 7501 MOA /PUT MO IN AC
800 1046 3770 DCA MOSAVE /SAVE THE MO
801 1047 6231 KSF /CHECK THE KEYBOARD FLAG
802 1050 5261 JMP CARY3 /EXIT TO CALL PLUS 1
803 1051 4767 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
804 1052 7410 SKP /ACTIVE CONSOLE PACKAGE
805 1053 5261 JMP CARY3 /EXIT TO CALL PLUS 1
806 1054 4766 JMS XCRTYPE /GET THE CHAR
807 1055 4765 JMS CAGET /GET THE FLAGS
808 1056 4764 JMS XCACNTR /CHECK IF CONTROL CHAR.
809 1057 7000 NOP /RETURN IF A CONTINUE CHAR.
810 1060 2241 ISZ XCCKCP /RUMP RETURN FOR CALL PLUS 2
811 1061 4765 CARY3, JMS CAGET /GET REGISTERS
    
```

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811 1062 5641 JMP I XCCKCP /SAY GOOD BY
812
813 //*****
814
815 /CARECHO
816 /THIS ROUTINE WILL LOOK FOR A CHAR FROM THE KEYBOARD, STORE IT IN LOCATION CHAR
817 /CHECK IF IT WAS A CONTROL CHARACTER -SET INMODE -PRINT CHARACTER
818
819 / CARECHO = JMS XCBECH
820 /EX. JMS XCBECHO /LOOK FOR CONSOLE CHAR CAPRNT IT
821 /RETURN CALL PLUS ONE AC = CHAR CAPTYPED IN
822
823 /CALLS USED ARE -XCRTYPE-XCACNTR-CAGET-XCBECH-XCARTYPE
824
825 /
826 1063 0000 XCRECH, 0
827 1064 4766 JMS XCRTYPE /WAIT FOR CHAR FROM KEYBOARD
828 1065 4765 JMS CAGET /RESTORE THE REGISTERS
829 1066 2276 ISZ INMODE /SET INMODE IDENTIFYING THIS AS A EXPECTED CHAR
830 1067 4764 JMS XCACNTR /GO CHECK IF IT IS A CONTROL CHAR
831 1070 5663 JMP I XCRECH /WAS A CONTROL CHAR -CONTINUE RUNNING
832 1071 4277 JMS XCRTYPE /NOT A CONTROL CHAR CAPRNT IT
833 1072 3276 DCA INMODE /CLEAR FLAG THAT CHAR EXPECTED
834 1073 1275 TAD CACHAR /GET CHAR IN AC
835 1074 5663 JMP I XCRECH /EXIT
836 1075 0000 CACHAR, 0
837 1076 0000 INMODE, 0
838
839
840 //*****
841 /CBTYPE
842 /THIS ROUTINE WILL CAPRNT ON THE CONSOLE OR THE LPT WITH DEVICE CODE 64.
843 /
844 / CBTYPE= JMS XCRTYP
845
846
847 /EX. JMS XCRTYPE /CAPRNT THE CHAR IN THE AC.
848 / / /RETURN CALL PLUS ONE AC 0000
849 / / /DO NOT CLEAR THE LINK IN THIS ROUTINE NEEDED BYCDDCT
850
851 /CALLS USED ARE -CBANG-XCACNTR-XCAPNT-XCACRLF-XCAINQU-
852
853
854 1077 0000 CBTYPE, 0
855 1100 3320 DCA PNTRUF /STORE CHAR
856 1101 1321 TAD TTYLPT /CHECK 0=TTY 7777=LPT
857 1102 7640 SZA CLA
858 1103 5312 JMP XDOLPT /DO OUT PUT ON LPT
859 1104 1320 TAD PNTRUF
860 1105 6046 TLA
861 1106 6041 TLF
862 1107 5326 JMP *-1
863 1110 6042 TCF
864 1111 5316 JMP CARY3
865 1112 1320 XDOLPT, TAD PNTRUF /GET CHAR
866 1113 6666 PSTA RCLF /CAPRNT IT
    
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866 1114 4322 JMS CRHANG /CHECK KEYBOARD IF HUNG
867 1115 4662 PCLF /CLEAR THE FLAG
868 1116 7600 CRRYS, 7600 /CLEAR THE AC
869 1117 5677 JMP I XCATVP /EXIT
870 1120 2020 PNTRUF, 0
871 1121 2020 TTYLPT, 0
A72
A73
874 1122 2020 CRHANG, 0
875 1123 7200 CLA
876 1124 1316 TAO CRRYS /GFT CONSTANT 7600
877 1125 3320 DCA PNTRUF /PNTRUF IS NOW A COUNTER
878 1126 4661 PSKF /SKIP ON PRINTER DONE
879 1127 7410 SKP /NOT DONE YET
880 1130 5722 JMP I CRHANG /SAW FLAG DONE
881 1131 2315 IS7 CRCONT /FIRST COUNTER FAST ONE
882 1132 5320 IMP J=4 /CHECK IF FLAG SET YET
883 1133 2320 IS7 PNTRUF /MADE 4096 COUNTS ON FAST COUNTER
884 1134 5331 JMP J=3 /KEEP IT UP FOR 5 SEC
885 1135 1740 TAO XCRBCTR /GFT THE RETURN ADDRESS IN CONTROL
886 1136 3322 DCA CRHANG /SAVE IT IN HANG
887 1137 3321 DCA TTYLPT /ALLOW PRINTING ON TTY
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 2020 CRCONT, 0 /COUNTER FOR TMFR
894 1146 1420 MESHANG,TEXT "LPT ERROR"
1147 2440
1150 2522
1151 2317
1152 2240
895
896 1162 2635
897 1163 2323
898 1164 2400
899 1165 2624
900 1166 2272
901 1167 1200
902 1170 1346
903 1171 1347
904 1172 1345
905 1173 2212
906 1174 2215
907 1175 2262
908 1176 2207
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

```

910
911
912
913
914
915
    /IF NOT SET THEN TO CALL PLUS ONE FOR A DEACTIVE CONSOLE PACKAGE.
916
917
918
919 1202 2020 CHKCLA, 0
920 1201 7200 CLA
921 1202 1222 TAO 22 /GFT THE CONTENTS OF LOCATION 22
922 1203 2377 AND 400 /MASK FOR BIT 3 (400)
923 1204 7650 SNA CLA /
924 1205 2200 IS7 CHKCLA /ACTIVE CONSOLE PACKAGE RETURN
925
926 1206 5600 JMP I CHKCLA /CALL PLUS ONE (1) FOR ACTIVE
    /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 CBRRIT REGISTERS.
932 / CBERR= JMS XCBERR
933 /EX. JMS XCBERR /GO TO CBERR CALL IF NOT CONSOLE
934 / RETURN TO CALL PLUS ONE AC #0000
935
936 /CALLS USED ARE -CHKCLA-XCRCLF-XCRSW-XCRINQU-XCRPNT-XCROCTA-
937
938
939 1207 2020 XCBERR, 0
940 1210 6022 IOF
941 1211 3345 DCA ACSAVE /SAVE AC
942 1212 6000 GTF
943 1213 3347 DCA FLSAVE /SAVE THE FLAGS
944 1214 7521 MRA
945 1215 3346 DCA MRSAVE /SAVE THE M0
946 1216 7340 CLA PLL CMA /SUBTRACT A 1 FOR TRUE LOCATION
947 1217 1227 TAO XCBERR /GFT RETURN LOCATION
948 1220 3344 DCA PCSAVE /SAVE ADDR OF CBERR CALL
949 1221 6201 CDF
950 1222 7347 CLA PLL CMA
951 1223 1776 TAO I (CLASTK) /GFT REAL PC.
952 1224 3316 DCA REALPC /SAVE IT.
953 1225 6211 CDF I0
954 1226 4200 JMS CHKCLA /CHECK LOC.22 BIT 3 CONSOLE BIT
955 1227 7410 SKP /ACTIVE CONSOLE PACKAGE
956 1231 5279 JMP NTCLAS /NOT CLASSIC SYSTEM
957 1231 4775 JMS CRGFT /GFT REGISTERS.
958 1232 4774 JMS XCRSW /CHECK SWITCH REG FOR BIT THAT INDICATES
959 /AN ERROR MESSAGE
960 1233 3373 SKTRP1, AND 0200 /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 5262 JMP CRODIP /DO NOT PRINT
965 1236 4772 JMS XCRCLF
966 1237 4771 JMS XCRPNT
967 1240 1320 EDMMFS /PRINT THE ERROR MESSAGE
968 1241 4771 JMS XCRPNT
969 1242 1337 MERPC /PRINT THE PC STATEMENT
970 1243 1316 TAO REALPC /GFT PC

```

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PAL10 V142A 15-APR-76 13124 PAGE 1-18
971 1244 4770 JMS XCB0CTA /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 XCB0CTA
976 1251 4771 JMS XCBPNT
977 1252 1336 MESMQ /PRINT MQ
978 1253 1346 TAD MQSAVE
979 1254 4770 JMS XCB0CTA
980 1255 4771 JMS XCBPNT
981 1256 1341 MESFL /PRINT FL
982 1257 1347 TAD FLSAVE
983 1260 4770 JMS XCB0CTA
984 1261 4772 JMS XCACRLF
985 1262 4775 C0DD10, JMS CAGET /GET REGISTERS.
986 1263 4774 JMS XCB5W /CHECK SWITCH REGISTER
987 1264 7617 SKP CLA /SKIP IF BIT 0 SET
988 1265 5300 JMP C0RYP /LEAVE
989 1266 4767 JMS XCBIND /GO TO THE INQUIRE ROUTINE
990 1267 5300 JMP C0RYP /LEAVE
991 1270 4775 NTCLAS, JMS CAGET /GET REGISTERS.
992 1271 4774 JMS XCB5W /CHECK PSM000 SWITCH REGISTER
993 / /CHECK THE C0SWIT REGISTER
994 1272 7610 SKP CLA /SKIP IF HALT
995 1273 5607 JMP I XCBFRR /NO HALT CONTINUE
996 1274 1366 TAD (7400 /CODE FOR HLT
997 1275 3740 DCA I PCSAVE /PUT IT IN CALL LOC.
998 1276 4775 JMS CAGET
999 1277 5740 JMP I PCSAVE /EXIT TO CALL AND HALT
1000 1307 4775 C0RYP, JMS CAGET /GET THE REGISTERS
1001 1321 5607 JMP I XCBFRR
1002 /
1003 /
1004 1300 7400 /ROUTINE, HLT /PUT INSTRUCTION TO EXECUTE HERE.
1005 1303 7200 NOP
1006 1304 3317 DCA MYAC /SAVE AC
1007 1305 6201 CDF 0
1008 1306 1000 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 CDF 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 /RRMES, TEXT "DHRKRF FAILED "
1021 1321 0213
1022 1322 0206
1023 1323 4040
1024 1324 0601
1025 1325 1114

```

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PAL10 V142A 15-APR-76 13124 PAGE 1-19
1021 1326 0500
1022 1327 4000 MESPC, TEXT " PC:"
1023 1331 2003
1024 1332 7200
1025 1333 4040 MESAC, TEXT " AC:"
1026 1334 2103
1027 1335 7200
1028 1336 4040 MESMQ, TEXT " MQ:"
1029 1337 1521
1030 1340 7200
1031 1341 4040 MESFL, TEXT " FL:"
1032 1342 0614
1033 1343 7200
1034 1344 7777 PCSAVE, 7777
1035 1345 7777 ACSAVE, 7777
1036 1346 7777 MQSAVE, 7777
1037 1347 7777 FLSAVE, 7777
1038 /
1039 /
1040 1365 0700
1041 1366 7400
1042 1367 0635
1043 1371 1200
1044 1371 0303
1045 1372 1223
1046 1373 0700
1047 1374 0262
1048 1375 0274
1049 1376 5100
1050 1377 2400
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	10000001	11111111	11111111
0400	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0500	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0600	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0700	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1100	11111111	11111111	11111111	11111111	11111111	11000000	00111111	11111111
1200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1300	11111111	11111111	11111111	11111111	11111111	00000000	00000000	11111111
1400								
1500								
1600								
1700								
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
3000								
3100								
3200								
3300								
3400								
3500								
3600								
3700								

4000  
4100  
4200  
4300  
4400  
4500  
4600  
4700  
5000  
5100  
5200  
5300  
5400  
5500  
5600  
5700  
6000  
6100  
6200  
6300  
6400  
6500  
6600  
6700  
7000  
7100  
7200  
7300  
7400  
7500  
7600  
7700

```

1242 /
1243 /NOTE: LOCATION 0 WILL CONTAIN THE REVISION
1244 /LEVEL (IN ASCII) ON PROGRAM LOAD.
1245 /
1246 /
1247 /
1248 /ALL KNOWN HALTS
1249 /
1249 1400 4761 FRHLT1 /UNDEFINED INTERRUPT
1250 1401 5576 FRHLT2 /SKIP TRAP FOR DCLR
1251 1402 6173 FRHLT3 /SKIP TRAP FOR DLAG
1252 1403 4776 FRHLT4 /SKIP TRAP FOR DLCA
1253 1404 5161 FRHLT5 /SKIP TRAP FOR DRST
1254 1405 6556 FRHLT6 /SKIP TRAP FOR DLDC
1255 1406 4136 FRHLT7 /SKIP TRAP FOR DMAN
1256 1407 5300 FRHLT9 /THE RECOVERABLE ERROR HALT
1257 1410 4417 STRHLT /PROGRAM STOP OR HALT FROM SW90=1
1258 1411 6625 DMNHLT /I/O CHANGE HALT
1259 1412 2730 DMNHLT1 /HALT FOR "CHECK WRITE PROTECT"
1260 1413 2776 DMNHLT2 /HALT FOR "CHECK WRITE PROTECT"
1261 1414 5273 DMNHLT1 /HALT FOR "CHECK WRITE PROTECT"
1262 1415 4122 ENDHLT /END OF TEST HALT FROM SW90=1
1263 1416 4021 WEDHLT /FROM ALIGNMENT SURTEST
1264 /
1265 /BUFFER LOCATION INFORMATION
1266 /
1267 1417 7177 WKRUF /START OF PROGRAM DATA BUFFER
1268 1420 7576 ENDRUF /END OF PROGRAM DATA BUFFER
1269 1421 7177 WTRUF /DISK ADDRESS WORD IF BUFFER
1270 1422 7200 LTRUF /DISK ADDRESS WORD IN BUFFER
1271 1423 7577 STRCHK /BUFFER+1 "BREAK STOP CHECK" "1234"
1272 /
1273 6741 DSKP=6741 /SKIP ON TRANSFER DONE OR ERROR
1274 6742 DCLR=6742 /CLEAR DISK CONTROL LOGIC
1275 6743 DLAG=6743 /LOAD ADDRESS AND GO
1276 6744 DLCA=6744 /LOAD CURRENT ADDRESS
1277 6745 DRST=6745 /READ STATUS REGISTER
1278 6746 DLDC=6746 /LOAD COMMAND REGISTER
1279 6747 DMAN=6747 /LOAD MAINTENANCE
1280 7346 NL7775=7346 /-3 CONSTANT
1281 /
1282 4406 DSKOUT=JMS I XDNUT
1283 4407 DSKIN=JMS I XDIN
1284 4423 RANADD=JMS I XRNAD
1285 4425 RECAL=JMS I XRESTR
1286 4424 SFK=JMS I XONLY
1287 4426 DISKGO=JMS I XDISKG
1288 4427 WAFCHK=JMS I XWFCBK
1289 4432 KILRUF=JMS I XKLRUF
1290 4431 FILRUF=JMS I XFLRUF
1291 4434 WATISZ=JMS I XWTISZ
1292 4433 SKPWAT=JMS I XSKWAT
1293 4430 FIGURE=JMS I XFIGURE
1294 4437 NERROR=JMS I XNERRO
1295 4440 ERROR=JMS I XERR0
1296 4441 TONWAT=JMS I XIDNWT
    
```

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1097 4442 ACCMP1=JMS I XCOMP1
1098 4443 ACCMP2=JMS I XCOMP2
1099 4444 RNSTAT=JMS I XRDST
1100 4445 RNCMD=JMS I XRDCM
1101 4446 RRDAD=JMS I XRDAD
1102 4452 LDADD=JMS I XLDDA
1103 4447 DSKSKP=JMS I XSDKP
1104 4450 LDCMD=JMS I XLDCM
1105 4451 LDCUR=JMS I XLDCR
1106 4453 CLRALL=JMS I XCLOR
1107 4454 RDCRC=JMS I XRDCR
1108 4455 LDMAN=JMS I XLDMN
1109 4456 DRBUF=JMS I XDRBF
1110 4457 PRNTER=JMS I XPRN
1111 4460 OCTEL=JMS I XPROCT
1112 4461 TWOCY=JMS I XTOCY
1113 4436 TYPE=JMS I XPRINT
1114 4462 CRLF=JMS I XCRLF
1115 4405 CLASIC=JMS I XCLAS
1116 4404 LAS=JMS I XLAS
1117 4530 TICK=JMS I XTICK
1118 /
1119 0000 0000 /
1120 /
1121 0000 0000 /
1122 0001 5001 /REVISION "G"
1123 0002 0002 /
1124 0003 0003 /
1125 /
1126 0004 5075 XLAS, MYLAS
1127 0005 5102 XCLAS, CLASIK
1128 0006 5553 XDOUT, DOUT
1129 0007 4530 XDIN, DIN
1130 /
1131 0010 *10
1132 /
1133 0010 0000 AUTO10, 0
1134 /
1135 0011 0010 K0010, 0010
1136 0012 0020 K0020, 0020
1137 0013 0040 K0040, 0040
1138 0014 0100 K0100, 0100
1139 0015 0200 K0200, 0200
1140 0016 0400 K0400, 0400
1141 0017 1000 K1000, 1000
1142 /
1143 0020 *20
1144 /
1145 0020 0000 SWR, 0
1146 0021 4000 GPI, 4000 /SWITCH REGISTER.
1147 0022 0000 GPP, 0 /CONTROL WORD 1
1148 / /CONTROL WORD 2
1149 /
1150 0023 6321 XPNAD, RNAD
1151 0024 6215 XONLY, ONLY
1152 0025 6200 XRESTR, RESTOR
    
```

1152	0026	5620	XDISK, DISK
1153	0027	6441	XHFCHK, HFCHK
1154	0030	5656	XFGURE, FGURE
1155	0031	5447	XFLRUF, FLRUF
1156	0032	5435	XKLRUF, KLRUF
1157	0033	5134	XSKWAT, SKWAT
1158	0034	4000	XWTRSZ, WTRSZ
1159	0035	0222	XHSFLD, PHSFLD
1160	0036	6151	XPRINT, PRINT
1161	0037	6400	XNFR00, NFR00
1162	0040	5200	XFR00, FR00
1163	0041	4727	XIONWT, IONWT
1164	0042	4557	XCOMP1, COMP1
1165	0043	1627	XCOMP2, COMP2
1166	0044	5154	XPOST, POST
1167	0045	5412	XOPCM, OPCM
1168	0046	4143	XOPAD, OPAD
1169	0047	1327	XOPAR, OPAR
1170	0050	4544	XLOCK, LOCK
1171	0051	4764	XLDCA, LDCA
1172	0052	4164	XLDAD, LDAD
1173	0053	5571	XCLDR, CLDR
1174	0054	6300	XRDOR, RDOR
1175	0055	4131	XLDMN, LDMN
1176	0056	5400	XDRF, DRF
1177	0057	6111	XPRN, PRN
1178	0060	6265	XPROCT, PROCT
1179	0061	6236	XTOCT, TOCT
1180	0062	6253	XCRUF, CRUF
1181	0063	7222	XLOTRK, LOTRK
1182	0064	7177	XHITRK, HITRK
1183	0065	4520	CYL450, 4500
1184	0066	4522	TRK212, 4522
1185	0067	7177	RGNRUF, WRKRUF
1186	0070	0000	DRVNAV, 0
1187	0071	0000	DRVINT, 0
1188	0072	0000	DRVIND, 0
1189	0073	0001	K0001, 0001
1190	0074	0002	K0002, 0002
1191	0075	0003	K0003, 0003
1192	0076	0004	K0004, 0004
1193	0077	0005	K0005, 0005
1194	0100	0006	K0006, 0006
1195	0101	0007	K0007, 0007
1196	0102	1234	K1234, 1234
1197	0103	2000	K2000, 2000
1198	0104	3000	K3000, 3000
1199	0105	4000	K4000, 4000
1200	0106	6000	K6000, 6000
1201	0107	7000	K7000, 7000
1202	0110	7760	K7760, 7760
1203	0111	7700	K7700, 7700
1204	0112	0077	K0077, 0077
1205	0113	2525	K2525, 2525
1206	0114	5252	K5252, 5252

1207	0115	5000	K5000, 5000
1208	0116	7771	K7771, 7771
1209	0117	0017	K0017, 0017
1210	0120	0037	K0037, 0037
1211	0121	6201	KCDF, CDF
1212	0122	7740	K7740, 7740
1213	0123	7400	K7400, 7400
1214	0124	7600	K7600, 7600
1215	0125	1355	XLOAD, LOADCT
1216			/
1217			DECIMAL
1218			/
1219	0126	7764	M12, -12
1220			/
1221			OCTAL
1222			/
1223	0127	7103	KAERRO, AERRO
1224	0130	7132	XTICK, KTICK
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	0140	0000	TCNTR5, 0
1233	0141	0000	TCNTR6, 0
1234			/
1235	0142	0000	GDREG1, 0
1236	0143	0000	GDREG2, 0
1237	0144	0000	DRREG1, 0
1238	0145	0000	DRREG2, 0
1239	0146	0000	STREG, 0
1240	0147	0000	DHREG, 0
1241	0150	0000	DMREG, 0
1242	0151	0000	DAREG, 0
1243	0152	0000	CAREG, 0
1244	0153	0000	ADREG, 0
1245	0154	0000	DTREG, 0
1246	0155	0000	ACREG, 0
1247	0156	0000	HOMEM4, 0
1248	0157	0000	STCON, 0000
1249	0167	0011	CRWRD1, 0011
1250	0161	6047	CRWRD2, 6047
1251	0162	0000	BATCNT, 0
1252	0163	0000	SAVDA, 0
1253	0164	0306	K0306, 0306
1254	0165	5373	K5373, 5373
1255	0166	5300	K5300, 5300
1256	0167	6324	K6324, 6324
1257	0170	3040	FNDRK, 3040
1258	0171	7777	SOPFR, 7777
1259	0172	0000	SAVPCT, 0
1260	0173	0000	RESTR, 0000
1261	0174	5617	XTIME, 5617

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1262 0175 7777 KCNT, =1
1263 /
1264 0200
1265 /
1266 0200 5206 /GN, JMP ,+6 /TO NORMAL TEST
1267 0201 5777 JMP MANUAL /TO MANUAL TEST
1268 0202 5776 JMP CHANG /TO CHANGE IOT DEVICE CODES
1269 0203 5775 JMP MANPRO /CHECK MANUAL WRITE PROTECT
1270 0204 5774 JMP AUTPRO /CHECK PROGRAM WRITE PROTECT
1271 0205 5573 JMP I RESTRY /RESTARTY AFTER PROGRAM STOP!
1272 0206 6224 RIF
1273 0207 3156 DCA HOMEMA
1274 0210 1156 TAD HOMEMA
1275 0211 1121 TAD KDF /MAKE HOMEDF
1276 0212 3222 DCA PRSFLD
1277 0213 1362 TAD KRMF /GET RMF FOR INT. RETURN
1278 0214 6201 CDF ? /SWITCH FIELD B
1279 0215 3473 DCA I K0001 /JMP I 3 FOR LOC. 2
1280 0216 1364 TAD K5403
1281 0217 3474 DCA I K0002
1282 0220 1363 TAD INTRD /GET ADDRESS RETURN
1283 0221 3475 DCA I K0003
1284 0222 7402 PRSFLD, /MAKE DF=IF
1285 0223 4773 JMS I (APT8 /TEST FOR APT SYSTEM
1286 0224 4462 CRLF
1287 0225 4772 JMS I (SELDSK /SETUP DRIVES ON SYSTEM.
1288 0226 1070 TAD DRVMAY
1289 0227 3071 DCA DRVCNT /COUNTER TO AMOUNT OF DRIVES.
1290 0230 4405 CLASIC /CHECK FOR CONSOLE PKG
1291 0231 4431 CARWIT /GET SWITCH REGISTER
1292 0232 7200 NOP
1293 0233 1022 TAD 22
1294 0234 0216 AND K0400
1295 0235 7640 SZA CLA
1296 0236 6007 6007 /CLEAR FLAGS
1297 /
1298 0237 3131 DCA REG0
1299 /
1300 /STATUS AND SELECT TEST
1301 /
1302 /VERIFY THAT THE DISK DRIVE IN "DRIVNO" IS
1303 /READY TO SEEK, READ, OR WRITE. STATUS REGISTER
1304 /SHOULD GO TO 4000.
1305 /
1306 0240 7330 TST0, CLA CLL CML RAR /EXPECTED STATUS
1307 0241 3143 DCA GOREG2 /SETUP COMPARE REGISTER
1308 0242 1215 TAD K0200 /ENABLE SET DONE BIT
1309 0243 1072 TAD DRIVNO /GET CURRENT DRIVE NUMBER
1310 0244 4450 LDCHD /LOAD COMMAND REGISTER
1311 0245 4444 ROSTAT /READ STATUS
1312 0246 4442 ACCMPL /CHECK RESULTS
1313 0247 7610 SKP CLA /O.K. SO FAR
1314 0250 5256 JMP T0E /ERROR STATUS
1315 0251 3143 DCA GOREG2 /SETUP COMPARE REGISTER
1316 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 NERROR /O.K. 4096 LOOPS
1320 0256 4440 T0E, ERROR /ERROR, STATUS
1321 0257 0240 TST0 /SCOPE LOOP POINTER
1322 0260 5200 5200 /TEXT POINTER
1323 /
1324 /SKIP (DSKP) TEST
1325 /
1326 /VERIFY THAT "DSKP" SKIPS ON TRANSFER DONE FLAG
1327 /WHEN THE DISK DRIVE IS READY.
1328 /
1329 0261 3771 DCA I (COUNT
1330 0262 1075 TAD K0003 /SET UP APT TIMING
1331 0263 7041 CIA /GETS =4
1332 0264 3770 DCA I (CNT /STORE IN APT SECTION
1333 0265 1015 TST1, TAD K0200 /ENABLE SET DONE BIT
1334 0266 1072 TAD DRIVNO /CURRENT DRIVE
1335 0267 4450 LDCHD /LOAD COMMAND
1336 0270 4447 DSKSKP /DSKP "DISK SKIP IOT"
1337 0271 5275 JMP T1E /ERROR, NO SKIP
1338 0272 4453 CLRALL /CLEAR SKIP FLAG OUT
1339 0273 4447 DSKSKP /DSKP "DISK SKIP IOT"
1340 0274 4437 NERROR /O.K. 4096 LOOPS
1341 0275 4440 T1E, ERROR /ERROR, DSKP FAILED
1342 0276 0265 TST1 /SCOPE LOOP POINTER
1343 0277 7306 0006 /TEXT POINTER
1344 /
1345 /INTERRUPT TEST
1346 /
1347 /VERIFY THAT INT. OCCURS FROM
1348 /THE TRANSFER DONE FLAG WHEN DISK
1349 /DRIVE UNDER TEST IS READY TO SEEK,
1350 /READ, OR WRITE.
1351 /
1352 0300 2131 TST2, ISZ REG0 /SET ONE TIME TEST FLAG.
1353 0301 1215 TAD K0200 /ENABLE SET DONE BIT
1354 0302 1216 TAD K0400 /ENABLE DISK INT.
1355 0303 1372 TAD DRIVNO /GET CURRENT DRIVE
1356 0304 4450 LDCHD /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 LDCHD /LOAD COMMAND
1368 0320 7340 CLA CLL CMA /SOFTWARE FLAG
1369 0321 4441 IONWAT /WAIT FOR DISK INTERRUPT
1370 0322 4437 NERROR /O.K. 4096 LOOPS
1371 0323 4440 T2E, ERROR /ERROR, DISK INT.

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1372 0324 0301 TST2 /SCOPE LOOP POINTER
1373 0325 0207 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 1127 TST3, TAN K7000
1382 0327 1156 TAD HOMEHA
1383 0332 1272 TAD DRIVND /GET CURRENT DRIVE
1384 0331 4452 LDCMD /LOAD COMMAND REGISTER
1385 0332 1120 TAD K0006
1386 0333 3357 DCA T3T /SETUP TEXT POINTER
1387 0334 4452 LDAO0 /FLAG, LOAD DISK ADDRESS
1388 0335 4433 SKRPWT /WAIT FOR ERROR SKIP
1389 0336 5355 JMP T3E /ERROR, NO SKIP OCCURRED
1390 0337 1166 TAN K5300
1391 0342 3357 DCA T3T /SETUP TEXT POINTER
1392 0341 7332 CLA CLL CML RAR
1393 0342 1013 TAD K0040
1394 0343 3143 DCA GOREG2 /SETUP EXPECTED STATUS
1395 0344 4444 ROSTAT /READ STATUS REGISTER
1396 0345 4442 ACCM1 /CHECK RESULTS
1397 0346 7612 SKP CLA /STATUS IS O.K.
1398 0347 5355 JMP T3E /ERROR STATUS INCORRECT
1399 0352 4453 CLRALL /CLEAR STATUS
1400 0351 3143 DCA GOREG2 /SETUP EXPECTED STATUS
1401 0352 4444 ROSTAT /READ STATUS
1402 0353 4442 ACCM1 /CHECK RESULTS
1403 0354 4437 NERRR /ALL IS O.K.
1404 0355 4442 T3E, ERROR /ERROR, TIMING SKIP OR STATUS
1405 0356 0326 TST3 /SCOPE LOOP POINTER
1406 0357 0206 TST, 0206 /TEXT POINTER
1407 0362 5761 JMP I .+1
1408 0361 0402 TST4
1409 /
1410 0362 6244 KRMF, 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 NERRR /O.K. TO NEXT TEST
1433 0404 4440 T4E, ERROR /ERROR, DISK SKIP OR STATUS
1434 0405 0400 TST4 /SCOPE LOOP POINTER
1435 0406 0206 T4T, 0206 /TEXT POINTER
1436 0407 5610 JMP I .+1
1437 0410 0411 TST5
1438 /
1439 /
1440 /HEAD MOTION AND STATUS TEST
1441 /
1442 /VERIFY THAT "SEEK ONLY" TRACK 312 SETS
1443 /TRANSFER DONE THEN DRIVE IS READY.
1444 /
1445 0411 7301 TST5, CLA CLL IAC /EXTENDED
1446 0412 3152 DCA CMREG /SETUP EXTENDED BIT
1447 0413 1266 TAD TRK212 /GET LOWER DISK ADDRESS
1448 0414 4424 SEEK /SEEK ONLY 312
1449 0415 0422 TST /TEXT POINTER
1450 0416 5222 JMP T5E /ERROR, SKIP OR STATUS
1451 0417 4437 NERRR /O.K. TO NEXT TEST
1452 0420 4442 T5E, ERROR /ERROR, DISK SKIP OR STATUS
1453 0421 0411 TST5 /SCOPE LOOP POINTER
1454 0422 0206 TST, 0206 /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 7321 TST6, CLA CLL IAC /EXTENDED
1463 0424 3152 DCA CMREG /SETUP EXTENDED BIT
1464 0425 1266 TAD TRK212 /GET LOWER DISK ADDRESS
1465 0426 4424 SEEK /SEEK ONLY 312
1466 0427 0437 T6T /TEXT POINTER
1467 0432 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 NERRR /O.K. TO NEXT TEST
1472 0435 4442 T6E, ERROR /ERROR, STATUS
1473 0436 0423 TST6 /SCOPE LOOP POINTER
1474 0437 5302 TAT, 5302 /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 0453 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 ERROR /ERROR, STATUS
1493 0453 5300 T7T, 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 R, 1, 2, 3, ETC.
1500 /CHECK TIMING AND NO ERRORS IN STATUS.
1501 /
1501 0454 3134 TSTA, DCA TCNTR1
1502 0455 3135 DCA TCNTR2
1503 0456 1134 TAP, TAD TCNTR1
1504 0457 3150 DCA CMREG
1505 0460 1135 TAD TCNTR2 /SETUP EXTENDED BIT
1506 0461 4424 SEEK /LOWER DISK ADDRESS BITS
1507 0462 0501 TBT /SEQUENTIAL SEEK ONLY
1508 0463 5277 JMP T8E /TEXT POINTER
1509 0464 2135 ISZ TCNTR2 /ERROR, SKIP OR STATUS
1510 0465 7610 SKP CLA /UPDATE POINTER
1511 0466 2134 ISZ TCNTR1
1512 0467 1134 TAD TCNTR1 /SET EXTENDED BIT
1513 0470 7650 SNA CLA
1514 0471 5256 JMP T8R /IS EXTENDED BIT SET YET
1515 0472 1135 TAD TCNTR2 /NO, CONTINUE
1516 0473 1170 TAD ENDTRK /YES
1517 0474 7640 SZA CLA
1518 0475 5256 JMP T8R /WAS IT LAST TRACK
1519 0476 4437 NERROR /NO, CONTINUE
1520 0477 4440 TAF, ERROR /O.K. TO NEXT TEST
1521 0500 0454 TSTA /ERROR, STATUS
1522 0501 5300 TBT, 5300 /SCOPE LOOP POINTER
1523 /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 /
1530 0502 1066 TST9, TAD TRK2P
1531 0503 1117 TAD K0017
1532 0504 3134 DCA TCNTR1
1533 0505 7301 CLA CLL IAC /SETUP LOWER DISK ADDRESS POINT
1534 0506 3135 DCA TCNTR2
1535 0507 1135 T9R, TAD TCNTR2 /SETUP EXTENDED POINTER

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1536 0510 3150 DCA CMREG /SETUP EXTENDED BIT
1537 0511 1134 TAD TCNTR1
1538 0512 4424 SEEK /DECREMENTAL SEEK ONLY
1539 0513 0534 T9T /TEXT POINTER
1540 0514 5330 JMP T9E /ERROR, SKIP OR STATUS
1541 0515 7340 CLA CLL CMA
1542 0516 1134 TAD TCNTR1
1543 0517 3134 DCA TCNTR1 /DECREMENT
1544 0520 7301 CLA CLL IAC
1545 0521 1134 TAD TCNTR1
1546 0522 7640 SZA CLA /FIRST TIME 0 YET
1547 0523 5307 JMP T9R /NO, CONTINUE
1548 0524 1135 TAD TCNTR2
1549 0525 7650 SNA CLA /PAST EXTENDED BIT
1550 0526 5331 JMP T90K /YES, TEST O.K.
1551 0527 3135 DCA TCNTR2 /CLEAR EXTENDED BIT
1552 0530 5307 JMP T9R /CONTINUE
1553 0531 4437 T90K, NERROR /O.K. TO NEXT TEST
1554 0532 4440 T9E, ERROR /ERROR, SEEK ONLY
1555 0533 0502 TST9 /ERROR, STATUS
1556 0534 5300 T9T, 5300 /SCOPE LOOP POINTER
1557 /TEXT POINTER
1558 /
1559 /VERIFY RESTORE CLEARS ADDRESS BITS.
1560 /
1561 /VERIFY RECALIBRATE FROM ALL
1562 /CYLINDERS, CHECK ALL CYLINDERS
1563 /BETWEEN 0000-14500.
1564 /
1564 0535 1277 TAD K0005
1565 0536 7041 CIA
1566 0537 3777 DCA CNT /INITIALIZES APT TIMING FOR A LONGER VALUE
1567 0540 3134 TST10, DCA TCNTR1
1568 0541 3135 DCA TCNTR2
1569 0542 1134 TAD TCNTR1
1570 0543 3150 T10R, DCA CMREG
1571 0544 1135 TAD TCNTR2 /GET EXTENDED BIT
1572 0545 4424 SEEK /SETUP EXTENDED BIT
1573 0546 2573 T10T /GET CYLINDER
1574 0547 5371 JMP T10E /SEEK ONLY
1575 0550 4425 RECAL /TEXT POINTER
1576 0551 0573 T10T /ERROR IN SEEK ONLY
1577 0552 5371 JMP T10E /"RECALIBRATE"
1578 0553 7300 CLA CLL /TEXT POINTER
1579 0554 1135 TAD TCNTR2 /ERROR, SKIP OR STATUS
1580 0555 1213 TAD K0040 /GET LAST CYLINDER
1581 0556 3135 DCA TCNTR2 /UPDATE
1582 0557 7430 SZL
1583 0560 2134 ISZ TCNTR1 /TIME TO SET EXTENDED?
1584 0561 1134 TAD TCNTR1 /YES
1585 0562 7650 SNA CLA /GET EXTENDED POINTER
1586 0563 5340 JMP T10R /SET?
1587 0564 1135 TAD TCNTR2 /NO DO THIS CYLINDER
1588 0565 1170 TAD ENDTRK /GET LAST CYLINDER
1589 0566 7640 SZA CLA /GET LAST POINTER
1590 0567 5340 JMP T10R /NON-EXISTENT CYLINDER?
/NO, DO IT

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1591 0570 4437 NERR0R /D.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
2600
PAGE
/
/SINGLE DRIVE VIBRATION TEST!!
/
/SEEK ONLY SEEMS TO BE WORKING. NOW DO
/A FEW RANDOM SEEKS TO REALLY SHAKE THE
/DISK DRIVE UNDER TEST.
/
1607 0600 1122 TST11, TAD K7740 /AMOUNT OF PASSES
1608 0601 3134 DCA TCNTR1 /SETUP COUNTER
1609 0602 4423 T11R1, RANADD /GENERATE A RANDOM ADDRESS
1610 0603 3135 DCA TCNTR2 /SAVE IT
1611 0604 7204 RAL /LINK IS EXTENDED BIT
1612 0605 3136 DCA TCNTR3 /SAVE IT
1613 0606 4423 RANADD /GENERATE A RANDOM ADDRESS
1614 0607 3137 DCA TCNTR4 /SAVE IT
1615 0610 7004 RAL /LINK IS EXTENDED BIT
1616 0611 3140 DCA TCNTR5 /SAVE IT
1617 0612 4423 T11R2, RANADD /GET A RANDOM NUMBER
1618 0613 0112 AND K0077 /MASK OUT
1619 0614 1111 TAD K7700 /MAKE COUNT VALUE
1620 0615 3141 DCA TCNTR6 /SETUP COUNTER
1621 0616 1136 T11R3, TAD TCNTR3 /GET EXTENDED BIT
1622 0617 3150 DCA CMREG /SETUP COMMAND REGISTER
1623 0620 1135 TAD TCNTR2
1624 0621 4424 SEEK /SEEK ONLY
1625 0622 0641 T11T /TEXT POINTER
1626 0623 5237 JMP T11E /ERROR, SKIP OR STATUS
1627 0624 1140 TAD TCNTR5 /GET EXTENDED BIT
1628 0625 3150 DCA CMREG /SETUP COMMAND
1629 0626 1137 TAD TCNTR4
1630 0627 4424 SEEK /SEEK ONLY
1631 0630 0641 T11T /TEXT POINTER
1632 0631 5237 JMP T11E /ERROR, SKIP OR STATUS
1633 0632 2141 ISZ TCNTR6 /UPDATE COUNTER
1634 0633 5216 JMP T11R3 /SAME LOOP
1635 0634 2134 ISZ TCNTR1 /UPDATE PASS COUNTER
1636 0635 5202 JMP T11R1 /MAKE NEW ADDRESS
1637 0636 4437 NERR0R /D.K. TO NEXT
1638 0637 4440 T11E, ERROR /ERROR, SKIP OR STATUS
1639 0640 0600 TST11 /SCOPE LOOP POINTER
1640 0641 0000 T11T, 0000 /MODIFIED TEXT POINTER
1641 /
1642 /SELECT ERROR TEST
1643 /
1644 /VERIFY A "NOT READY" ON ALL
    
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1645 /DRIVES NOT ON THE CONTROL.
1646 /
1647 0642 4525 JMS I XLOAD
1648 0643 7000 7000
1649 0644 3131 DCA REG0 /SETUP FOR 4096 PASSES
1650 0645 7301 TST12, CLA CLL IAC
1651 0646 4453 CLRALL /CLEAR CONTROL
1652 0647 1157 TAD STCON /EXPECTED STATUS
1653 0650 3143 DCA GOREG2 /SETUP COMPARE
1654 0651 3145 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 0657 7640 SZA CLA /DISK ON THE SYSTEM
1662 0661 5273 JMP T12A /NO UPDATE AND TRY NEXT DRIVE.
1663 0662 1135 TAD TCNTR2
1664 0663 7104 CLL RAL /SHIFT TO UNIT BITS
1665 0664 1215 TAD K0200 /ENABLE SET DONE
1666 0665 4450 LDCHD /LOAD COMMAND
1667 0666 4444 RDSTAT /READ STATUS
1668 0667 4442 ACCMP1 /CHECK RESULTS
1669 0670 7610 SKP CLA /D.K.
1670 0671 5277 JMP T12E /ERROR, STATUS
1671 0672 4453 CLRALL /CLEAR STATUS
1672 0673 2135 T12A, ISZ TCNTR2 /UPDATE DRIVE NO.
1673 0674 2134 ISZ TCNTR1 /WAS IT LAST DRIVE
1674 0675 5254 JMP T12R /NO, MORE TO TEST
1675 0676 4437 NERR0R /D.K. 4096 LOOPS
1676 0677 4440 T12E, ERROR /ERROR, STATUS
1677 0700 0645 TST12 /SCOPE LOOP POINTER
1678 0721 5200 S200 /TEXT POINTER
1679 /
1680 /SELECT ERROR TEST
1681 /
1682 /VERIFY A DRIVE STATUS ERROR ON ALL DRIVES
1683 /NOT ON THE CONTROL, ACTUALLY A SELECT ERROR.
/
1684 0722 7301 TST13, CLA CLL IAC
1685 0723 4453 CLRALL /CLEAR CONTROL
1686 0724 3135 DCA TCNTR2 /TO START WITH DRIVE 0.
1687 0725 1777 TAD M4
1688 0726 3134 DCA TCNTR1 /COUNTER FOR NO. OF DRIVES.
1689 0727 1135 TAD TCNTR2 /GET DRIVE POINTER
1690 0710 1776 TAD DSKON /POINTER TO DISK BUFFER.
1691 0711 3136 DCA TCNTR3 /SAVE POINTER TO DISK BUFFER.
1692 0712 1536 TAD I TCNTR3
1693 0713 7640 SZA CLA /DISK ON THE SYSTEM
1694 0714 5347 JMP T13A /NO UPDATE AND TRY NEXT DRIVE.
1695 0715 1074 TAD K0002
1696 0716 1157 TAD STCON /EXPECTED STATUS
1697 0717 3143 DCA GOREG2 /SETUP COMPARE REGISTER
1698 0720 1135 TAD TCNTR2 /GET DRIVE NO.
1699 0721 7104 CLL RAL /PUT IN UNIT BITS
    
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1700 0722 1015 TAD K0200 /ENABLE SET DONE
1701 0723 1104 TAD K3000 /FUNCTION SEEK ONLY
1702 0724 4450 LDCMD /LOAD COMMAND
1703 0725 4452 LDADD /LOAD AND GO
1704 0726 4444 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 #000
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
1000 PAGE
1736 /
1737 /SURROUTINE TO ISSUE DSKP DISK SKIP IOT
1738 /
1739 1000 0000 SDKP, 0
1740 1001 6741 IOT1, DSKP /DISK SKIP IOT
1741 1002 7410 SKP /NO FLAG1
1742 1003 2200 ISZ SDKP /UPDATE NO FLAG POINTER.
    
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1743 1004 5600 JMP I SDKP /RETURN,
1744 /
1745 /
1746 /SELECT ERROR TEST
1747 /
1748 /VERIFY THAT DISK CAPACITY EXCEEDED DOES 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 LDADD /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 1078 1017          TAD K1000          /FUNCTION READ ALL
1818 1079 3150          DCA CMREG          /SETUP COMMAND REGISTER
1819 1080 4426          DISKGO          /DISK READ ALL
1820 1081 1110          T15T          /TEXT POINTER
1821 1082 5306          JMP T15E          /ERROR, SKIP OR STATUS
1822 1083 4437          NERROR          /O.K. TO NEXT TEST
1823 1084 4440          T15E, ERROR          /ERROR, WRITE ALL
1824 1085 1073          TST15          /SCOPE LOOP POINTER
1825 1086 5300          T15T, 5300          /MODIFIED TEXT POINTER
1826 /
1827 /STATUS TEST
1828 /
1829 /VERIFY THAT SKIP AND STATUS DOES OCCUR AFTER
1830 /128 WRITE ALL AND READ ALL BREAKS.
1831 /THIS SHOULD WRITE ALL ZEROS ON AND READ ALL
1832 /ALL ZEROS OFF THE DISK SECTOR 00000.
1833 /
1834 1111 1115          TST16, TAD K5000          /FUNCTION WRITE ALL
1835 1112 1014          TAD K0100          /HALF BIT
1836 1113 3150          DCA CMREG          /SETUP COMMAND
1837 1114 4426          DISKGO          /DISK WRITE ALL
1838 1115 1130          T16T          /TEXT POINTER
1839 1116 5306          JMP T16E          /ERROR, DISK SKIP OR STATUS
1840 1117 1017          TAD K1000          /FUNCTION READ ALL
1841 1118 1014          TAD K0100          /HALF BIT
1842 1119 3150          DCA CMREG          /SETUP COMMAND
1843 1120 4426          DISKGO          /DISK READ ALL
1844 1121 1130          T16T          /TEXT POINTER
1845 1122 5306          JMP T16E          /ERROR, SKIP OR STATUS
1846 1123 4437          NERROR          /O.K. TO NEXT TEST
1847 1124 4440          T16E, ERROR          /ERROR, WRITE ALL
1848 1125 1111          TST16          /SCOPE LOOP POINTER
1849 1126 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+2525.
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 1138 3150          DCA CMREG          /SETUP COMMAND
1867 1139 1134          TAD TCNTR1
1868 1140 0120          AND K0037          /MASK OFF SECTORS
1869 1141 3463          DCA I XLOTRK          /SETUP ADDRESS WORD IN BUFFER
1870 1142 1072          TAD DRIVNO          /GET DRIVE NUMBER
1871 1143 3464          DCA I XHITRK          /SETUP ADDRESS WORD IN BUFFER
1872 1144 1463          TAD I XLOTRK
1873 1145 4426          DISKGO          /DISK WRITE ALL
1874 1146 1173          T17T          /TEXT POINTER
1875 1147 5371          JMP T17E          /ERROR, SKIP OR STATUS
1876 1148 4432          KILBUF          /KILL DATA BUFFER
1877 1149 1017          TAD K1000          /FUNCTION READ ALL
1878 1150 3150          DCA CMREG          /SETUP COMMAND
1879 1151 1134          TAD TCNTR1
1880 1152 0120          AND K0037          /MASK OF SECTORS
1881 1153 4426          DISKGO          /DISK READ ALL
1882 1154 1173          T17T          /TEXT POINTER
1883 1155 5371          JMP T17E          /ERROR, STATUS OR SKIP
1884 1156 1113          TAD K2525
1885 1157 4430          FIGURE          /WORD BY WORD COMPARE OF DATA
1886 1158 7610          SKP CLA          /THIS SECTOR O.K.
1887 1159 5371          JMP T17E          /ERROR, DATA
1888 1160 2134          ISZ TCNTR1          /UPDATE SECTOR COUNTER
1889 1161 5335          JMP T17S          /TRY NEXT SECTOR
1890 1162 4437          NERROR          /O.K. TO NEXT TEST
1891 1163 4440          T17E, ERROR          /ERROR, READ ALL
1892 1164 1133          TST17          /SCOPE LOOP POINTER
1893 1165 5373          T17T, 5373          /TEXT POINTER
1894 /
1895 1174 5775          JMP I .+1          /TO NEXT TEST
1896 1175 1202          TST18
1897 /
1898 /
1899 PAGE
1900 /
1901 /VERIFY ALL SECTORS CAN BE ACCESSED.
1902 /
1903 /VERIFY A WRITE DATA TO ALL OF CYLINDER 0
1904 /AND USE DATA PATTERN 5252+2525.
1905 /MAKE THE FIRST TWO WORDS OF THE BUFFER
1906 /EQUAL THE DISK ADDRESS. CHECK THE
1907 /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 /MASK OF SECTORS
1918 1212 3443 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
1919 1213 1072 TAD DRIVNO /GET DRIVE NUMBER
1920 1214 3464 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
1921 1215 1463 TAD I XLOTRK /GET ADDRESS
1922 1216 4426 DISKGO /DISK WRITE DATA
1923 1217 1241 T18T /TEXT POINTER
1924 1220 5237 JMP T18E /ERROR, STATUS OR SKIP
1925 1221 4432 KILBUF /CLEAR DATA BUFFER
1926 1222 3150 DCA CMREG /SETUP COMMAND
1927 1223 1134 TAD TCNTR1
1928 1224 0120 AND K0037 /MASK OFF SECTORS
1929 1225 4426 DISKGO /DISK READ DATA
1930 1226 1241 T18T /TEXT POINTER
1931 1227 5237 JMP T18E /ERROR, STATUS OR SKIP
1932 1230 1114 TAD K5252
1933 1231 4430 FIGURE /WORD BY WORD COMPARE OF DATA
1934 1232 7610 SKP CLA /THIS SECTOR O.K.
1935 1233 5237 JMP T18E /ERROR, DATA
1936 1234 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
1937 1235 5204 JMP T188 /TRY NEXT SECTOR
1938 1236 4437 NERRDR /O.K. TO NEXT TEST
1939 1237 4440 T18E, ERROR /ERROR, DATA BREAK
1940 1240 1202 TST18 /SCOPE LOOP POINTER
1941 1241 5373 T18T, 5373 /TEXT POINTER
1942 /
1943 /VERIFY HALF BLOCK TRANSFERS.
1944 /
1945 /VERIFY THAT DISK STOPS BREAK AFTER 128
1946 /IF THE HALF BIT IS SET, THE REMAINDER OF THE
1947 /THE BUFFER SHOULD BE 0000.
1948 /THE FIRST TWO WORDS OF THE BUFFER SHOULD
1949 /EQUAL THE ABSOLUTE DISK ADDRESS.
1950 /THE DATA PATTERN USED IS 2525+5252.
1951 /
1952 1242 1113 TST19, TAD K2525
1953 1243 4431 FILBUF /FILL BUFFER WITH DATA
1954 1244 1072 TAD DRIVNO
1955 1245 3464 DCA I XHITRK /MAKE DISK ADDRESS WORD
1956 1246 3463 DCA I XLOTRK /MAKE DISK ADDRESS WORD
1957 1247 1115 TAD K5000 /FUNCTION WRITE ALL
1958 1250 1014 TAD K0100 /HALF BIT
1959 1251 3150 DCA CMREG /SETUP COMMAND
1960 1252 4426 DISKGO /DISK WRITE ALL
1961 1253 1271 T19T /TEXT POINTER
    
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1962 1254 5267 JMP T19E /ERROR, SKIP OR STATUS
1963 1255 4453 CLRALL /CLEAR STATUS
1964 1256 4432 KILBUF /ZERO BUFFER
1965 1257 1017 TAD K1000 /FUNCTION READ ALL
1966 1260 3150 DCA CMREG /SETUP COMMAND
1967 1261 4426 DISKGO /DISK READ ALL
1968 1262 1271 T19T /TEXT POINTER
1969 1263 5267 JMP T19E /ERROR, SKIP OR STATUS
1970 1264 1113 TAD K2525
1971 1265 4427 HAFCHK /WORD BY WORD COMPARE DATA
1972 1266 4437 T190K, NERRDR /O.K. TO NEXT TEST
1973 1267 4440 T19E, ERROR /ERROR, DATA BREAK
1974 1270 1242 TST19 /SCOPE LOOP POINTER
1975 1271 5373 T19T, 5373 /TEXT POINTER
1976 /
1977 /VERIFY HALF BLOCK TRANSFERS.
1978 /
1979 /VERIFY THAT DISK STOPS BREAK AFTER 128
1980 /IF THE HALF BIT IS SET, THE REMAINDER OF THE
1981 /THE BUFFER SHOULD BE 0000.
1982 /THE FIRST TWO WORDS OF THE BUFFER SHOULD
1983 /EQUAL THE ABSOLUTE DISK ADDRESS.
1984 /THE DATA PATTERN USED IS 5252+2525.
1985 /
1986 1272 1114 TST20, TAD K5252
1987 1273 4431 FILBUF /FILL BUFFER WITH DATA
1988 1274 1072 TAD DRIVNO
1989 1275 3464 DCA I XHITRK /MAKE DISK ADDRESS WORD
1990 1276 3463 DCA I XLOTRK /MAKE DISK ADDRESS WORD
1991 1277 1115 TAD K5000 /FUNCTION WRITE ALL
1992 1300 3150 DCA CMREG /SETUP COMMAND
1993 1301 4426 DISKGO /DISK WRITE ALL
1994 1302 1321 T20T /TEXT POINTER
1995 1303 5317 JMP T20E /ERROR, SKIP OR STATUS
1996 1304 4453 CLRALL /CLEAR STATUS
1997 1305 4432 KILBUF /CLEAR BUFFER
1998 1306 1017 TAD K1000 /FUNCTION READ ALL
1999 1307 1014 TAD K0100 /HALF BIT
2000 1310 3150 DCA CMREG /SETUP COMMAND
2001 1311 4426 DISKGO /DISK READ ALL
2002 1312 1321 T20T /TEXT POINTER
2003 1313 5317 JMP T20E /ERROR, SKIP OR STATUS
2004 1314 1114 TAD K5252
2005 1315 4427 HAFCHK /WORD BY WORD COMPARE DATA
2006 1316 4437 T200K, NERRDR /O.K. TO NEXT TEST
2007 1317 4440 T20E, ERROR /ERROR, DATA BREAK
2008 1320 1272 TST20 /SCOPE LOOP POINTER
2009 1321 5373 T20T, 5373 /TEXT POINTER
2010 /
2011 /VERIFY HALF BLOCK TRANSFERS.
2012 /
2013 /VERIFY A WRITE ALL THEN READ ALL 128 WORDS.
2014 /THE FIRST TWO WORDS OF THE BUFFER SHOULD
2015 /EQUAL THE ABSOLUTE DISK ADDRESS.
2016 /THE DATA PATTERN USED IS 2525+5252.
    
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2017 /
2018 1322 1113 /
2019 1323 4431 TST21, TAD K2525
2020 1324 1272 FILBUF /FILL BUFFER WITH DATA
2021 1325 3464 DCA I XHTRK /MAKE DISK ADDRESS WORD
2022 1326 3463 DCA I XLOTRK /MAKE DISK ADDRESS WORD
2023 1327 1115 TAD K5000 /FUNCTION WRITE ALL
2024 1330 1014 TAD K0100 /HALF BIT
2025 1331 3150 DCA CMREG /SETUP COMMAND
2026 1332 4426 DISKRD /DISK WRITE ALL
2027 1333 1352 T21T /TEXT POINTER
2028 1334 5350 JMP T21F /ERROR, SKIP OR STATUS
2029 1335 4453 CLRALL /CLEAR STATUS
2030 1336 4432 KILBUF /ZERO BUFFER
2031 1337 1217 TAD K1000 /FUNCTION READ ALL
2032 1340 1214 TAD K0100 /HALF BIT
2033 1341 3150 DCA CMREG /SETUP COMMAND
2034 1342 4426 DISKRD /DISK READ ALL
2035 1343 1352 T21T /TEXT POINTER
2036 1344 5350 JMP T21E /ERROR, SKIP OR STATUS
2037 1345 1113 TAD K2525
2038 1346 4427 HAFCHK /WORD BY WORD COMPARE DATA
2039 1347 4437 T210K, NEHRNR /O.K. TO NEXT TEST
2040 1350 4440 T21E, ERROR /ERROR, DATA BREAK
2041 1351 1322 TST21 /SCOPE LOOP POINTER
2042 1352 5373 T21T, 5373 /TEXT POINTER
2043 /
2044 1353 5754 / JMP I +1 /TO NEXT TEST
2045 1354 1400 TST22
2046 /
2047 /
2048 /
2049 /
2050 1355 2222 /
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 /
2061 1367 7162 /
2062 1377 7161 /
2063 1377 7161 /
2064 PAGE
2065 /
2066 /
2067 /
2068 /
2069 /
2070 /

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2071 /
2072 /
2073 1400 1122 /
2074 1401 3134 TST22, TAD K7740
2075 1402 1113 DCA TCNTR1 /SETUP SECTOR COUNTER
2076 1403 4431 TAD K2525
2077 1404 1134 FILBUF /FILL BUFFER WITH DATA
2078 1405 0120 T22R1, TAD TCNTR1
2079 1406 3463 AND K0037 /MASK SECTOR BITS
2080 1407 1072 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
2081 1410 3464 TAD DRIVNO /GET DRIVE NUMBER
2082 1411 1115 DCA I XHTRK /SETUP ADDRESS WORD IN BUFFER
2083 1412 3150 TAD K5000 /FUNCTION WRITE ALL
2084 1413 1463 DCA CMREG /SETUP COMMAND
2085 1414 4426 TAD T XLOTRK /GET TRACK AND SECTOR
2086 1415 1444 DISKRD /DISK WRITE ALL
2087 1416 5242 T22T /TEXT POINTER
2088 1417 2134 JMP T22E /ERROR, STATUS OR SKIP
2089 1420 5204 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2090 1420 5204 JMP T22R1 /MORE SECTORS TO GO
2091 /
2092 /
2093 /
2094 1421 1122 /
2095 1422 3134 TAD K7740
2096 1423 4432 DCA TCNTR1 /COUNTER FOR 37 SECTORS
2097 1424 1217 KILBUF /CLEAR DATA BUFFER
2098 1425 3150 TAD K1000 /READ ALL FUNCTION
2099 1426 1134 DCA CMREG /SETUP COMMAND
2100 1427 2122 AND K0037
2101 1430 4426 DISKRD /DISK READ ALL
2102 1431 1444 T22T /TEXT POINTER
2103 1432 5242 JMP T22E /ERROR, STATUS OR SKIP
2104 1433 1113 TAD K2525
2105 1434 4427 FIGURE /WORD BY WORD COMPARE OF DATA
2106 1435 7617 SKP CLA /BUFFER O.K.
2107 1436 5242 JMP T22E /ERROR, DATA
2108 1437 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2109 1440 5223 JMP T22R2 /MORE SECTORS TO CHECK
2110 1441 4437 NEHRNR /O.K. TO NEXT TEST
2111 1442 4440 T22E, ERROR /ERROR, STATUS
2112 1443 1400 TST22 /SCOPE LOOP POINTER
2113 1444 5373 T22T, 5373 /TEXT POINTER
2114 /
2115 /
2116 /
2117 /
2118 /
2119 /
2120 /
2121 /
2122 /
2123 1445 1122 /
2124 1446 3134 TST23, TAD K7740
2125 1447 1113 DCA TCNTR1 /SETUP SECTOR COUNTER

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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          OCA I XL0TRK      /SETUP ADDRESS WORD IN BUFFER
2130 1454 1072          TAD DRIVNO        /GET DRIVE NUMBER
2131 1455 3464          OCA I XH1TRK      /SETUP ADDRESS WORD IN BUFFER
2132 1456 1105          TAD K4000         /FUNCTION WRITE DATA
2133 1457 3150          OCA CMREG         /SETUP COMMAND
2134 1460 1463          TAD I XL0TRK     /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 2 WAS O.K. CHECK WITH READ DATA.
2144 /
2144 1466 1122          TAD K7740
2145 1467 3134          OCA TCNTR1     /COUNTER FOR 37 SECTORS
2146 1470 4432          T23R2, KILBUF    /CLEAR DATA BUFFER
2147 1471 3150          OCA CMREG      /SETUP COMMAND
2148 1472 1134          TAD TCNTR1
2149 1473 0120          AND K0037
2150 1474 4426          DISKGO        /DISK READ DATA
2151 1475 1510          T23T         /TEXT POINTER
2152 1476 5306          JMP T23E      /ERROR, STATUS OR SKIP
2153 1477 1114          TAD K5252
2154 1500 4430          FIGURE       /WORD BY WORD COMPARE OF DATA
2155 1501 7610          SKP CLA     /DATA O.K.
2156 1502 5306          JMP T23E     /ERROR, DATA
2157 1503 2134          ISZ TCNTR1 /UPDATE SECTOR COUNTER
2158 1504 5270          JMP T23R2   /MORE SECTORS TO CHECK
2159 1505 4437          NERROR      /O.K. TO NEXT TEST
2160 1506 4440          T23E, ERROR /ERROR, WRITE ALL
2161 1507 1445          TST23       /SCOPE LOOP POINTER
2162 1510 5373          T23T, 5373 /TEXT POINTER
2163 /
2164 /VERIFY ALL SECTORS CAN BE ACCESSED
2165 /
2166 /VERIFY A WRITE ALL TO ALL OF CYLINDER 1450
2167 /AND USE DATA PATTERN 2525+5252.
2168 /THE FIRST TWO WORDS OF THE SECTOR SHOULD
2169 /EQUAL THE DISK ADDRESS. CHECK THE DATA
2170 /WITH READ ALL.
2171 /
2172 1511 1122          TST24, TAD K7740
2173 1512 3134          OCA TCNTR1   /SETUP SECTOR COUNTER
2174 1513 1113          T24S, TAD K2525
2175 1514 4431          FILBUF      /FILL OUTBOUND BUFFER
2176 1515 7301          CLA CLL IAC
2177 1516 1272          TAD DRIVNO  /GET DRIVE NUMBER
2178 1517 3464          OCA I XH1TRK /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          OCA 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          OCA I XL0TRK /SETUP ADDRESS WORD IN BUFFER
2186 1527 1463          TAD I XL0TRK
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          OCA 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          T24S     /TRY NEXT SECTOR
2206 1553 4437          NERROR   /O.K. TO NEXT TEST
2207 1554 4440          T24E, ERROR /ERROR, READ ALL
2208 1555 1511          TST24     /SCOPE LOOP POINTER
2209 1556 5373          T24T, 5373 /TEXT POINTER
2210 /
2211 1557 5760          JMP I .+1   /TO NEXT TEST
2212 1560 1600          TST25
2213 /
2214 1561 0000          DISK0, 0
2215 1562 0000          DISK1, 0
2216 1563 0000          DISK2, 0
2217 1564 0000          DISK3, 0
2218 1565 0000          DISK4, 0
2219 1566 0000          DISK5, 0
2220 1567 0000          DISK6, 0
2221 1570 0000          DISK7, 0
2222 /
2223 1600          PAGE
2224 /
2225 /VERIFY ALL SECTORS CAN BE ACCESSED
2226 /
2227 /VERIFY A WRITE DATA TO ALL OF CYLINDER 1450
2228 /AND USE DATA PATTERN 5252+2525.
2229 /THE FIRST TWO WORDS OF THE SECTOR SHOULD
2230 /EQUAL THE DISK ADDRESS. CHECK THE DATA
2231 /WITH READ DATA.
2232 /
2233 1600 1122          TST25, TAD K7740
2234 1601 3134          OCA TCNTR1 /SETUP SECTOR COUNTER
2235 1602 1114          T25S, TAD K5252

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2236 1603 4431 FILBUF
2237 1604 7301 CLA CLL IAC /FILL OUTROUND BUFFER
2238 1605 1072 TAD DRIVNO /GET DRIVE NUMBER
2239 1606 3464 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
2240 1607 7301 CLA CLL IAC /EXTENDED BIT
2241 1610 1105 TAD K0000 /FUNCTION WRITE DATA
2242 1611 3150 DCA CMREG /SETUP COMMAND
2243 1612 1134 TAD TCNTR1 /SECTOR COUNTER
2244 1613 0127 AND K0037 /MASK OFF SECTOR BITS
2245 1614 1065 TAD CYL450 /ADD IN CYLINDER
2246 1615 3463 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
2247 1616 1463 TAD I XLOTRK
2248 1617 4426 DISKGO /DISK WRITE DATA
2249 1620 1644 T25T /TEXT POINTER
2250 1621 5242 JMP T25E /ERROR, SKIP OR STATUS
2251 1622 4432 KILBUF /CLEAR DATA BUFFER
2252 1623 7301 CLA CLL IAC /EXTENDED BIT
2253 1624 3150 DCA CMREG /SETUP COMMAND
2254 1625 1134 TAD TCNTR1 /SECTOR COUNTER
2255 1626 0127 AND K0037 /MASK OFF SECTORS
2256 1627 1065 TAD CYL450
2257 1630 4426 DISKGO /DISK READ DATA
2258 1631 1644 T25T /TEXT POINTER
2259 1632 5242 JMP T25E /ERROR, STATUS OR SKIP
2260 1633 1114 TAD K5252
2261 1634 4430 FIGURE /WORD BY WORD COMPARE OF DATA
2262 1635 7610 SKP CLA /THIS SECTOR O.K.
2263 1636 5242 JMP T25E /ERROR, DATA
2264 1637 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2265 1640 5202 JMP T255 /TRY NEXT SECTOR
2266 1641 4437 NERROR /O.K. TO NEXT TEST
2267 1642 4440 T25E, ERROR /ERROR, DATA BREAK
2268 1643 1600 TST25 /SCOPE LOOP POINTER
2269 1644 5373 T25T, 5373 /TEXT POINTER
2270 /
2271 /VERIFY ALL SECTORS CAN BE ACCESSED INDIVIDUALLY.
2272 /
2273 /VERIFY A WRITE ALL TO ALL OF CYLINDER 1450
2274 /USE DATA PATTERN 5252+2525
2275 /CHECK FOR NO ERRORS IN STATUS.
2276 /MAKE FIRST TWO WORDS OF EVERY SECTOR
2277 /EQUAL TO ADDRESS OF SECTOR.
2278 /
2279 1645 1122 TST26, TAD K7740
2280 1646 3134 DCA TCNTR1 /SETUP SECTOR COUNTER
2281 1647 1114 TAD K5252
2282 1650 4431 FILBUF /FILL BUFFER WITH DATA
2283 1651 1134 T26R1, TAD TCNTR1
2284 1652 0127 AND K0037 /MASK SECTOR BITS
2285 1653 1065 TAD CYL450
2286 1654 3463 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
2287 1655 7301 CLA CLL IAC
2288 1656 1072 TAD DRIVNO /GET DRIVE NUMBER
2289 1657 3464 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
2290 1660 7301 CLA CLL IAC /EXTENDED BIT
    
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2291 1661 1115 TAD K5000 /FUNCTION WRITE ALL
2292 1662 3150 DCA CMREG /SETUP COMMAND
2293 1663 1463 TAD I XLOTRK /GET TRACK AND SECTOR
2294 1664 4426 DISKGO /DISK WRITE ALL
2295 1665 1716 T26T /TEXT POINTER
2296 1666 5314 JMP T26E /ERROR, STATUS OR SKIP
2297 1667 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2298 1670 5251 JMP T26R1 /MORE SECTORS TO GO
2299 /
2300 /VERIFY THAT THE DATA WRITTEN ABOVE
2301 /ON CYLINDER 1450 WAS O.K. CHECK WITH READ ALL.
2302 /
2303 1671 1122 TAD K7740
2304 1672 3134 DCA TCNTR1 /COUNTER FOR 37 SECTORS
2305 1673 4432 T26R2, KILBUF /CLEAR DATA BUFFER
2306 1674 7301 CLA CLL IAC /EXTENDED BIT
2307 1675 1017 TAD K1000 /READ ALL FUNCTION
2308 1676 3150 DCA CMREG /SETUP COMMAND
2309 1677 1134 TAD TCNTR1
2310 1678 0127 AND K0037
2311 1681 1065 TAD CYL450
2312 1682 4426 DISKGO /DISK READ ALL
2313 1683 1716 T26T /TEXT POINTER
2314 1684 5314 JMP T26E /ERROR, STATUS OR SKIP
2315 1685 1114 TAD K5252
2316 1686 4430 FIGURE /WORD BY WORD COMPARE OF DATA
2317 1687 7610 SKP CLA /BUFFER O.K.
2318 1688 5314 JMP T26E /ERROR, DATA
2319 1689 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2320 1692 5273 JMP T26R2 /MORE SECTORS TO CHECK
2321 1693 4437 NERROR /O.K. TO NEXT TEST
2322 1694 4440 T26E, ERROR /ERROR, STATUS
2323 1695 1645 TST26 /SCOPE LOOP POINTER
2324 1696 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 1697 1122 TST27, TAD K7740
2335 1698 3134 DCA TCNTR1 /SETUP SECTOR COUNTER
2336 1699 1113 TAD K2525
2337 1699 4431 FILBUF /FILL BUFFER WITH DATA
2338 1699 1134 T27R1, TAD TCNTR1
2339 1699 0127 AND K0037 /MASK SECTOR BITS
2340 1699 1065 TAD CYL450
2341 1699 3463 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
2342 1699 7301 CLA CLL IAC
2343 1699 1072 TAD DRIVNO /GET DRIVE NUMBER
2344 1699 3464 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
2345 1699 7301 CLA CLL IAC /EXTENDED BIT
    
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2346 1733 1105 TAD K4000 /FUNCTION WRITE DATA
2347 1734 3150 DCA CMREG /SETUP COMMAND
2348 1735 1463 TAD I XLOTRK /SECTOR TO LOAD
2349 1736 4426 DISKGO /DISK WRITE ALL
2350 1737 1767 T27T /TEXT POINTER
2351 1740 5365 JMP T27E /ERROR, STATUS OR SKIP
2352 1741 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2353 1742 5323 JMP T27R1 /MORE SECTORS TO GO
2354
2355 /
2356 /VERIFY THAT THE DATA WRITTEN ABOVE
2357 /ON CYLINDER 1450 WAS O.K. CHECK WITH READ DATA.
2358
2358 1743 1122 TAD K7740
2359 1744 3134 DCA TCNTR1 /COUNTER FOR 37 SECTORS
2360 1745 4432 T27R2, KILBUF /CLEAR DATA BUFFER
2361 1746 7301 CLA CLL IAC /FUNCTION READ DATA
2362 1747 3150 DCA CMREG /SETUP COMMAND
2363 1750 1134 TAD TCNTR1
2364 1751 0120 AND K0037
2365 1752 1065 TAD CYL450
2366 1753 4426 DISKGO /DISK READ DATA
2367 1754 1767 T27T /TEXT POINTER
2368 1755 5365 JMP T27E /ERROR, STATUS OR SKIP
2369 1756 1113 TAD K2525
2370 1757 4430 FIGURE
2371 1760 7610 SKP CLA /WORD BY WORD COMPARE OF DATA
2372 1761 5365 JMP T27E /DATA O.K.
2373 1762 2134 ISZ TCNTR1 /ERROR, DATA
2374 1763 5345 JMP T27R2 /UPDATE SECTOR COUNTER
2375 1764 4437 NERROR /MORE SECTORS TO CHECK
2376 1765 4440 T27E, ERROR /O.K. TO NEXT TEST
2377 1766 1717 TST27 /ERROR, WRITE ALL
2378 1767 5373 T27T, 5373 /SCOPE LOOP POINTER
2379 /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
2387 1770 1156 TAD HOME4
2388 1771 1072 TAD DRIVNO
2389 1772 3136 DCA TCNTR3 /SAVE FIELD+DRIVE
2390 1773 4525 TST28, JMS I XLOAD
2391 1774 7700 T20R
2392 1775 1122 TAD K7740
2393 1776 3134 DCA TCNTR1
2394 1777 1115 TAD K5000 /SETUP SECTOR COUNTER
2395 2000 3150 DCA CMREG /FUNCTION WRITE ALL
2396 2001 7340 CLA CLL CMA /SETUP COMMAND
2397 2002 1120 TAD K0037
2398 2003 4426 DISKGO /SECTOR TO GO
2399 2004 2057 T28T /DISK WRITE ALL
2400 2005 5255 JMP T28E /TEXT POINTER
/ERROR, DISK SKIP OR STATUS

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2401 2006 1166 TAD K5300
2402 2007 3257 DCA T28T
2403 2010 1134 T28R, TAD TCNTR1 /MODIFY TEXT POINTER
2404 2011 0073 AND K0001
2405 2012 7112 CLL RTR
2406 2013 1017 TAD K1000
2407 2014 1136 TAD TCNTR3 /MAKE READ ALL OR WRITE ALL
2408 2015 6746 T2810A, DLDC /GET FIELD+DRIVE
2409 2016 1067 TAD /LOAD COMMAND REGISTER
2410 2017 6744 T2810B, DLCA /GET BEGINNING OF BUFFER POINTER
2411 2020 1134 TAD TCNTR1 /LOAD CURRENT ADDRESS
2412 2021 0120 AND K0037
2413 2022 6743 T2810C, DLAG /MASK SECTOR BITS
2414 2023 1174 TAD /LOAD AND GO
2415 2024 3135 DCA TCNTR2
2416 2025 6745 T2810D, DRST /TIME COUNTER
2417 2026 1105 TAD K4000 /READ STATUS REGISTER
2418 2027 7450 TAD
2419 2030 5252 JMP T280K /WAS STATUS 4000
2420 2031 2135 ISZ TCNTR2 /YES, GOT TRANSFER DONE
2421 2032 5225 JMP T2810D /UPDATE TIME COUNTER
2422 2033 1105 TAD K4000 /WAIT FOR GOOD STATUS
2423 2034 3146 DCA STREG /SUBTRACT, RESET STATUS
2424 2035 1134 TAD TCNTR1 /SAVE FOR ERROR PRINTER
2425 2036 0073 AND K0001
2426 2037 7112 CLL RTR
2427 2040 1017 TAD K1000
2428 2041 3150 DCA CMREG /MAKE READ ALL OR WRITE ALL
2429 2042 1067 TAD BGNBUF /SAVE FOR ERROR PRINTER
2430 2043 3152 DCA CAREG /GET START OF BUFFER
2431 2044 1134 TAD TCNTR1 /SAVE FOR PRINTER
2432 2045 0120 AND K0037
2433 2046 3151 DCA DAREG /MAKE SECTOR ADDRESS
2434 2047 4447 DISKSKP /SAVE FOR ERROR PRINTER
2435 2050 5247 JMP =-1 /ERROR, HAVE TO WAIT FOR FLAG
2436 2051 5255 JMP T28E /HANG IF NO SKIP
2437 2052 2134 T280K, ISZ TCNTR1 /ERROR, SECTOR RESPONSE NOT FOUND
2438 2053 5210 JMP T28R /UPDATE SECTOR COUNTER
2439 2054 4437 NERROR /MORE TO TEST
2440 2055 4440 T28E, ERROR /O.K. TO NEXT TEST
2441 2056 1773 TST28 /ERROR, WRITE OR READ ALL
2442 2057 5300 T28T, 5300 /SCOPE LOOP POINTER
2443 /TEXT POINTER
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 T27T
2454 2062 1122 TST29, TAD K7740
2455 2063 3134 DCA TCNTR1 /SECTOR COUNTER

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PAL10 V142A 15-APR-76 13124 PAGE 1-48
2456 2064 3150 DCA CMREG /SETUP COMMAND
2457 2065 1120 TAD K0037
2458 2066 4426 DISKGD /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 3337 DCA T30T /MODIFY TEXT POINTER
2463 2073 3143 DCA G0REG2 /EXPECTED STATUS
2464 2074 1134 T29R, TAD TCNTR1
2465 2075 2073 AND K0001
2466 2076 7112 CLL RTR /MAKE READ OR WRITE
2467 2077 1136 TAD TCNTR1 /GET FIELD+DRIVE
2468 2127 6746 T2910A, BLDC TAD /LOAD COMMAND REGISTER
2469 2121 1967 TAD RGNRUF
2470 2122 6744 T2910B, DCA /LOAD CURRENT ADDRESS
2471 2123 1134 TAD TCNTR1
2472 2124 2122 AND K0037
2473 2125 6743 T2910C, BLAC /MASK SECTOR BITS
2474 2126 1174 TAD KTIME /LOAD AND GO
2475 2127 3135 DCA TCNTR2 /TIME COUNTER
2476 2110 6745 T2910D, DNST /READ STATUS REGISTER
2477 2111 7452 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 K0001
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 0120 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 T29A, ISZ TCNTR2 /UPDATE TIME COUNTER
2491 2127 5317 JMP T2910D /WAIT FOR GOOD STATUS
2492 2130 4447 DSKSKP /ERROR, HAVE TO WAIT FOR FLAG
2493 2131 5332 JMP _-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 2062 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 0'S FOR ALL 0'S DATA PATTERN.
2506 /
2507 2140 1112 TST30, TAD K77A0 /SETUP SECTOR COUNTER
2508 2141 3134 DCA TCNTR1
2509 2142 7301 T30R, CLA CLL IAC
2510 CLRALL /CLEAR CONTROL
2511 2143 4453

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PAL10 V142A 15-APR-76 13124 PAGE 1-49
2511 2144 4432 KILBUF /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 DISKGD /DISK WRITE ALL
2517 2152 2211 T30T /TEXT POINTER
2518 2153 5777* JMP T30E /ERROR, STATUS OR SKIP
2519 2154 1017 TAD K1000 /FUNCTION READ ALL
2520 2155 3152 DCA CMREG /SETUP COMMAND
2521 2156 1134 TAD TCNTR1
2522 2157 2117 AND K0017 /MASK SECTOR BITS
2523 2160 4426 DISKGD /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 BRK ENABLE FLOP
2530 2167 3142 DCA G0REG1 /STORE IN COMPARE REGISTER
2531 2170 3143 DCA G0REG2 /STORE IN COMPARE REGISTER
2532 2171 5772 JMP T --1
2533 2172 2200 T30D
2534 2176 2211
2535 2177 2207
PAGE 2200
2536 2202 4454 T30D, RDCRC /READ CRC REGISTER
2537 2201 4443 ACCMP2 /CHECK RESULTS
2538 2202 7612 SKP CLA /O.K.
2539 2223 5227 JMP T30E /ERROR, CRC
2542 2204 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2541 2205 5777* JMP T30E /MORE SECTORS TO TEST
2542 2226 4437 NERROR /O.K. TO NEXT TEST
2543 2207 4440 T30F, ERROR /ERROR, CRC
2544 2210 2147 TST30 /SCOPE LOOP POINTER
2545 2211 6304 T30T, 6304 /TEXT POINTER
2546 /
2547 /CRC TEST
2548 /
2549 /VERIFY THAT THE CRC WORD WRITTEN
2550 /ON DISK IS CORRECT, COMPARE IT TO
2551 /KNOWN VALUE IN CORE. ON A READ ALL THE
2552 /CRC READ FROM DISK IS LEFT IN THE CRC BUFFER,
2553 /THE CRC SHOULD BE 11A047 FOR DATA 2525+5252.
2554 /
2555 2212 1110 TST31, TAD K7760
2556 2213 3134 DCA TCNTR1 /SETUP SECTOR COUNTER
2557 2214 7301 T31R, CLA CLL IAC
2558 2215 4453 CLRALL /CLEAR CONTROL
2559 2216 1113 TAD K2525
2560 2217 4431 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 /DISK WRITE ALL
2567 2226 2261 T31T /TEXT POINTER
2568 2227 5257 JMP T31E /ERROR, STATUS OR SKIP
2569 2230 1017 TAD K1000 /FUNCTION READ ALL
2570 2231 3150 DCA CMREG /SETUP COMMAND
2571 2232 1134 TAD TCNTR1
2572 2233 0117 AND K0017 /MASK SECTOR BITS
2573 2234 1110 TAD K7760
2574 2235 4426 DISKGO /DISK READ ALL
2575 2236 2261 T31T /TEXT POINTER
2576 2237 5257 JMP T31E /ERROR, STATUS OR SKIP
2577 2240 1167 TAD K6304
2578 2241 3261 DCA T31T /MODIFY TEXT POINTER
2579 2242 7301 CLA CLL IAC /ENABLE CLEAR CONTROL AND
2580 2243 4453 CLRALL /CLEAR BRK ENABLE FLOP,
2581 2244 1160 TAD CRWRD1 /GET GOOD CRC
2582 2245 3142 DCA GOREG1 /STORE IN COMPARE REGISTER
2583 2246 1161 TAD CRWRD2 /GET GOOD CRC
2584 2247 3143 DCA GOREG2 /STORE IN COMPARE REGISTER
2585 2250 4454 RDRCR /READ CRC REGISTER
2586 2251 4443 ACCMP2 /CHECK RESULTS
2587 2252 7610 SKP CLA /O.K.
2588 2253 5257 JMP T31E /ERROR, CRC
2589 2254 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2590 2255 5214 JMP T31R /MORE SECTORS TO TEST
2591 2256 4437 NERROR /O.K. TO NEXT TEST
2592 2257 4440 ERROR /ERROR, CRC
2593 2260 2212 TST31 /SCOPE LOOP POINTER
2594 2261 6304 T31T /TEXT POINTER
2595
2596 /
2597 /VERIFY HEAD MOTION AND CAPABILITY
2598 /OF SELECTING TWO TRACKS INDIVIDUALLY.
2599 /
2600 /VERIFY A WRITE ALL TO ALL OF CYLINDER 1450
2601 /AND THEN CYLINDER 0. USE DATA PATTERN 5252+2525 ON
2602 /CYLINDER 1450 AND 2525+5252 ON CYLINDER 0.
2603 /CHECK FOR NO ERRORS IN STATUS.
2604 /MAKE FIRST TWO WORDS OF EVERY SECTOR
2605 /EQUAL TO ADDRESS OF SECTOR.
2606 /
2607 /FIRST WRITE CYLINDER 1450
2608 /
2609 TST32, TAD K7740 /SETUP SECTOR COUNTER
2610 DCA TCNTR1
2611 TAD K5252
2612 FILRUF /FILL BUFFER WITH DATA
2613 CLA CLL IAC
2614 TAD DRIVNO /GET DRIVE NUMBER
2615 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
2616 TAD TCNTR1
2617 AND K0037 /MASK SECTOR BITS
2618 TAD CYL450 /LOWER CYLINDER
2619 DCA I XLOTRK /SETUP WORD IN BUFFER
2620 CLA CLL IAC
    
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2620 2276 1115 TAD K5000 /FUNCTION WRITE ALL
2621 2277 3150 DCA CMREG /SETUP COMMAND
2622 2320 1463 TAD I XLOTRK /SECTOR TO GO
2623 2321 4426 DISKGO /DISK WRIT ALL
2624 2322 2374 T32T /TEXT POINTER
2625 2323 5372 JMP T32E /ERROR, STATUS OR SKIP
2626 2324 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2627 2325 5271 JMP T32R1 /MORE SECTORS TO GO
2628
2629 /
2630 /WRITE ALL TO ALL OF CYLINDER 0
2631 /
2632 TAD K7740 /SETUP SECTOR COUNTER
2633 DCA TCNTR1
2634 TAD K2525
2635 FILRUF /FILL BUFFER WITH DATA
2636 TAD TCNTR1
2637 AND K0037 /MASK SECTOR BITS
2638 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
2639 TAD DRIVNO /GET DRIVE NUMBER
2640 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
2641 TAD K5000 /FUNCTION WRITE ALL
2642 DCA CMREG /SETUP COMMAND
2643 TAD I XLOTRK /SECTOR TO LOAD
2644 DISKGO /DISK WRITE ALL
2645 T32T /TEXT POINTER
2646 JMP T32E /ERROR, SKIP OR STATUS
2647 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2648 JMP T32RP /MORE SECTORS TO GO
2649
2650 /
2651 /VERIFY THAT THE DATA WRITTEN ABOVE
2652 /ON CYLINDER 1450 WAS O.K. CHECK WITH READ ALL.
2653 /
2654 TAD K7740 /COUNTER FOR 37 SECTORS
2655 DCA TCNTR1 /CLEAR DATA BUFFER
2656 FILRUF
2657 CLA CLL IAC
2658 TAD K1000 /READ ALL FUNCTION
2659 DCA CMREG /SETUP COMMAND
2660 TAD TCNTR1
2661 AND K0037
2662 TAD CYL450 /ADD IN CYLINDER
2663 DISKGO /DISK READ ALL
2664 T32T /TEXT POINTER
2665 JMP T32E /ERROR, STATUS OR SKIP
2666 TAD K5252
2667 FIGURE /WORD BY WORD COMPARE OF DATA
2668 SKP CLA /DATA O.K.
2669 JMP T32E /ERROR, DATA
2670 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2671 JMP T32R3 /MORE SECTORS TO CHECK
2672
2673 /
2674 /VERIFY THAT THE DATA WRITTEN ABOVE
2675 /ON CYLINDER 0 WAS O.K. CHECK WITH READ ALL.
2676 /
2677 TAD K7740
    
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2675 2352 3134          DCA      TCNTR1
2676 2353 4432          T32R4, KILBUF
2677 2354 1017          TAD      K1000
2678 2355 3150          DCA      CMREG
2679 2356 1134          TAD      TCNTR1
2680 2357 0120          AND      K0037
2681 2360 4426          DISKGO
2682 2361 2374          T32T
2683 2362 5372          JMP      T32E
2684 2363 1113          TAD      T32E
2685 2364 4430          TAD      K2525
2686 2365 7610          FIGURE
2687 2366 5372          SKP CLA
2688 2367 2134          JMP      T32E
2689 2370 5353          ISZ     TCNTR1
2690 2371 4437          JMP      T32R4
2691 2372 4440          NERROR
2692 2373 2262          T32E,  ERROR
2693 2374 5373          T32T,  T3T3P
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2695 2375 5776          /
2696 2376 2400          JMP I   +*1
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2698 2377 2142          TST33
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2712 2400 1122          /
2713 2401 3134          PAGE
2714 2402 1114          /VERIFY HEAD MOTION AND CAPABILITY
2715 2403 4431          /OF SELECTING TWO TRACKS INDIVIDUALLY.
2716 2404 7300          /
2717 2405 1134          /VERIFY A WRITE DATA TO ALL OF CYLINDER 0
2718 2406 0120          /THEN CYLINDER 1450. USE DATA PATTERN 2525+5252 ON
2719 2407 3463          /CYLINDER 1450 AND 5252+2525 ON CYLINDER 0.
2720 2410 1072          /CHECK FOR NO ERRORS IN STATUS.
2721 2411 3464          /MAKE FIRST TWO WORDS OF EVERY SECTOR
2722 2412 1105          /EQUAL TO ADDRESS OF SECTOR.
2723 2413 3150          /
2724 2414 1463          /FIRST WRITE DATA TO CYLINDER 0.
2725 2415 4426          /
2726 2416 2511          TST33, TAD      K7740
2727 2417 5307          DCA      TCNTR1
2728 2420 2134          TAD      K5252
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2729 2421 5204          JMP      T33R1
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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 T33T, TST33 /SCOPE LOOP POINTER
2796 2511 5373 T33T, 5373 /TEXT POINTER
2797 /
2798 /FORCE CYLINDER ADDRESS ERROR
2799 /
2800 /VERIFY A CYLINDER ADDRESS ERROR IN
2801 /STATUS REGISTER, CAN BE CAUSED BY ISSUING
2802 /MAINTENANCE SHIFT CRC AFTER DISK
2803 /HAS ACCEPTED THE ADDRESS.
2804 /
2805 2512 4525 JMS I XLOAD
2806 2513 0001 I
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 DRQ 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 KILBUF /CLEAR BUFFER AREA
2846 2554 1067 TAD 06NRUF
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 DRQ TO ENARLE SHIFT
2857 2567 7010 RAR
2858 2570 1074 TAD K0000 /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 06NRUF
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 T35T, 5300 /TEXT POINTER
2882 /
2883 /BIG ADDRESSING TEST
2884 /FORMAT THE COMPLETE DISK SURFACE WITH
2885 /WRITE ALL, USE DATA PATTERN 2524+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 I
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 3150 DCA CMREG /SETUP COMMAND
2902 2635 1267 TAD RGNRUF /GET START OF BUFFER
2903 2636 3150 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, DLDC /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
2920 2657 5262 JMP *-3 /DON'T SET EXTENDED TRACK
2921 2660 2150 ISZ CMREG /YES, SET IT
2922 2661 2464 ISZ I XMITRK /SETUP BUFFER ALSO
2923 2662 1464 TAD I XMITRK /GET TRACK WORD
2924 2663 7110 CLL RAR /GET EXTENDED BIT TO LINK
2925 2664 7620 SNL CLA /WAS IT SET
2926 2665 5237 JMP T36R /NO, CONTINUE
2927 2666 1463 TAD I XLOTRK /GET LOWER TRACK WORD
2928 2667 1170 TAD ENDTRK /ADD IN FUDGE FACTOR
2929 2670 7640 SZL CLA /DONE WITH DISK
2930 2671 5237 JMP T36R /NO, MORE TO GO
2931 2672 5300 JMP T36N /DONE
2932 2673 1125 TAD K4000 /RESET STATUS
2933 2674 3146 DCA STREG /SAVE FOR ERROR PRINTER
2934 2675 1463 TAD I XLOTRK /GET ADDRESS
2935 2676 3151 DCA DAREG /FOR ERROR PRINTER
2936 2677 7410 SKP /REPORT ERROR!
2937 2700 4437 T36N, NERROR /O.K. TO NEXT TEST
2938 2701 4400 ERROR /ERROR, STATUS
2939 2702 2622 TST36 /SCOPE LOOP POINTER
2940 2703 5300 T36T, S300 /TEXT POINTER
2941 2704 5705 JMP I *-1
2942 2705 3000 TST37=2
/
/ THE FOLLOWING IS A ROUTINE TO CHECK THE WRITE PROTECT
/ FUNCTION WHEN IT IS MANUALLY SET BY THE OPERATOR.
/ NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS TEST.
/
2943
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2948 2706 4425 MANPRO, CLASIC /CHECK FOR CLASSIC.
    
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2949 2707 4431 C8SWIT /ROUTINE TO EXECUTE.
2950 2710 7000 NOP
2951 2711 4404 LAR /GET THE SWITCHES
2952 2712 7104 CLL RAL
2953 2713 0100 AND K0006 /MASK DRIVE NUMBER
2954 2714 3072 DCA DRIVNO /SAVE DRIVE NUMBER
2955 2715 1111 TAD K7700
2956 2716 3132 DCA REG1 /SETUP PASS COUNTER
2957 2717 3131 DCA REG0 /SETUP FLAG POINTER
2958 2720 1113 TAD K2525 /DATA PATTERN TO WRITE
2959 2721 4431 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 4425 CLASIC
2969 2733 4436 CAERR
2970 2734 7402 MPMLT1, MLT /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 4442 ACCMPL /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 CBERR
3008 2776 7402 MPHLT2, WLT /SUCCESSFUL WRITE PROTECT
3009 /TO REPEAT TEST: IF ON
3010 /CLASSIC CONSOLE PACKAGE
3011 /HIT CONTROL E. IF NOT THEN
3012 /PRESS KEY CONTINUE.
3013 2777 5306 JMP MANPRO /REPEAT
3014 3000 PAGE
3015 /
3016 /BIG ADDRESSING 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 TST37, DCA TCNTR1
3032 3003 1017 TAD K1000 /FUNCTION READ ALL
3033 3004 1156 TAD HOMEHA /CURRENT FIELD
3034 3005 1072 TAD DRIVNO /CURRENT DRIVE
3035 3006 3150 DCA CMREG /SETUP COMMAND
3036 3007 1211 TAD +2 /GET TEXT POINTER
3037 3010 7410 SKP
3038 3011 3102 T37T /TEXT POINTER
3039 3012 3172 DCA SAVPCT /SAVE FOR CRC ERROR
3040 3013 1067 TAD RGNRUF /GET START OF BUFFER
3041 3014 3152 DCA CAREG /SAVE FOR ERROR PRINTER
3042 3015 4530 T37R, TICK /APT TIMING
3043 3016 7340 CLA CLL CMA
3044 3017 3171 DCA S0FERR /SETUP CRC ERROR POINTER
3045 3020 4432 KILBUF /CLEAR DATA BUFFER
3046 3021 1134 TAD TCNTR1 /LOWER DISK ADDRESS
3047 3022 3151 DCA DAREG /SAVE FOR PRINTER
3048 3023 1067 TAD BGNBUF /GET START OF BUFFER
3049 3024 6744 IOT4A2, DLCA /LOAD CURRENT ADDRESS
3050 3025 1152 TAD CMREG /GET COMMAND
3051 3026 6746 IOT6A2, DLOC /LOAD COMMAND REGISTER
3052 3027 1134 TAD TCNTR1 /GET DISK ADDRESS
3053 3030 6743 IOT3A2, DLAG /LOAD DISK ADDRESS AND GO
3054 3031 6741 IOT1A2, DSKP /DISK SKIP IOT
3055 3032 5231 JMP -1 /WAIT FOR DISK SKIP
3056 3033 6745 IOT5A2, DRST /READ STATUS
3057 3034 3146 DCA STREG /SAVE FOR ERROR PRINTER
3058 3035 1146 TAD STREG

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3059 3036 1105 TAD K4000 /ADD IN FUDGE FACTOR
3060 3037 7650 SNA CLA /STATUS O.K.
3061 3040 5254 JMP T37A /NO STATUS ERRORS
3062 3041 7330 CLA CLL CML RAR /EXPECTED STATUS
3063 3042 3143 DCA GDREG2 /SETUP COMPARE REGISTER
3064 3043 1146 TAD STREG /GET STATUS READ
3065 3044 0011 AND K0010 /MASK FOR CRC
3066 3045 7640 SZA CLA /WAS IT CRC ERROR
3067 3046 5252 JMP +4 /YES CRC ERROR
3068 3047 1166 TAD K5300 /GET TEXT POINTER
3069 3050 3302 DCA T37T /SAVE IT
3070 3051 5300 JMP T37E /STATUS ERROR NOT CRC
3071 3052 3171 DCA S0FERR /SET CRC ERROR POINTER
3072 3053 5256 JMP +3 /DON'T CLEAR CONTROL
3073 3054 7301 T37A, CLA CLL IAC /ENABLE CLEAR CONTROL
3074 3055 6742 IOT2A2, DCLR /CLEAR CONTROL
3075 3056 1165 TAD K5373
3076 3057 3302 DCA T37T /SETUP TEXT POINTER
3077 3060 1113 TAD K2525 /GET EXPECTED DATA
3078 3061 4430 FTGURE /CHECK DATA READ
3079 3062 7610 SKP CLA /THIS ONE O.K.
3080 3063 5300 JMP T37E /ERROR, DATA
3081 3064 2134 ISZ TCNTR1 /UPDATE LOWER DISK ADDRESS
3082 3065 7610 SKP CLA
3083 3066 2150 ISZ CMREG /SET EXTENDED BIT
3084 3067 1150 TAD CMREG
3085 3070 0073 AND K0001
3086 3071 7650 SNA CLA /IS EXTENDED SET
3087 3072 5215 JMP T37R /NO, CONTINUE
3088 3073 1134 TAD TCNTR1
3089 3074 1170 TAD ENDRK
3090 3075 7640 SZA CLA /ADD IN FUDGE FACTOR
3091 3076 5215 JMP T37R /DONE WITH DISK
3092 3077 4437 NERROR /NO, MORE TO GO
3093 3100 4440 T37E, ERROR /O.K. TO NEXT TEST
3094 3101 3002 TST37 /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 /READ ALL SECTORS ON THE DISK AND CHECK
3105 /THE STATUS. IF STATUS ERROR OCCURES THEN CHECK THE DATA.
3106 /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3107 /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR
3108 /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3109 /
3110 3103 4525 JMS I XLOAD
3111 3104 7770 7770
3112 3105 7340 TST38, CLA CLL CMA
3113 3106 3171 DCA S0FERR /SETUP CRC ERROR POINTER

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3114 3107 3134 DCA TCNTR1 /SETUP LOWER ADDRESS
3115 3110 3135 DCA TCNTR2 /SETUP EXTENDED
3116 3111 1017 TAD K1000 /FUNCTION READ ALL
3117 3112 1072 TAD DRIVNO /CURRENT DRIVE
3118 3113 1156 TAD HOMEMA /CURRENT FIELD
3119 3114 3150 DCA CMREG /SETUP COMMAND
3120 3115 4530 T38R, TICK /APT TIMING
3121 3116 1067 TAD RGNBUF /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 ROSTAT /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 ERROR 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 T380E, ERROR /ERROR, READ DATA
3155 3160 3105 T3T3A /SCOPE LOOP POINTER
3156 3161 5300 T38T, 5300 /TEXT POINTER
3157 /
3158 /
3159 /BIG ADDRESSING CHECK/
3160 /IF A DATA ERROR SHOULD HAPPEN TO OCCUR
3161 /WITH THE FIRST TWO WORDS OF THE BUFFER, YOU
3162 /SHOULD REALIZE THAT THE PROBLEM COULD BE
3163 /ADDRESSING.
3164 /
3165 /CHECK DISK HEADER WORD WITH READ DATA
3166 /IF STATUS ERROR OCCURRES THEN CHECK DATA.
3167 /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3168 /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR

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3169 /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3170 /
3171 3162 4525 JMS I XLOAD
3172 3163 7776 7776
3173 3164 7340 T3T39, CLA CLL CMA
3174 3165 3171 DCA SOFERR /NO SOFT ERRORS
3175 3166 3134 DCA TCNTR1 /SETUP LOWER ADDRESS
3176 3167 3135 DCA TCNTR2 /SETUP EXTENDED
3177 3170 1072 TAD DRIVNO /CURRENT DRIVE
3178 3171 1156 TAD HOMEMA /CURRENT FIELD
3179 3172 3150 DCA CMREG /SETUP COMMAND
3180 3173 4530 T39R, TICK /APT TIMING
3181 3174 1067 TAD RGNBUF /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 ROSTAT /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 T390E, ERROR /ERROR, READ DATA
3215 3236 3164 T3T39 /SCOPE LOOP POINTER
3216 3237 5300 T39T, 5300 /TEXT POINTER
3217 /
3218 /DO A RANDOM READ DATA
3219 /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3220 /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR
3221 /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3222 /
3223 3240 1107 T3T40, TAD K7000

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3224 3241 3140 DCA TCNTR5 /LENGTH OF TIME FOR THIS TEST
3225 3242 4423 T40R, RANADD /GET AN ADDRESS FOR SEEK/READ
3226 3243 3136 DCA TCNTR3 /SAVE IT
3227 3244 7004 RAL /LINK IS EXTENDED
3228 3245 3137 DCA TCNTR4 /SAVE IT
3229 3246 1137 T40S, TAD TCNTR4
3230 3247 3150 DCA CMREG /SETUP COMMAND
3231 3250 1136 TAD TCNTR3
3232 3251 4426 DISKGO /DISK READ DATA
3233 3252 3265 T40T /TEXT POINTER
3234 3253 5263 JMP T40E /ERROR, SKIP OR STATUS
3235 3254 1113 TAD K2525
3236 3255 4430 FIGURE /WORD BY WORD COMPARE OF DATA
3237 3256 7610 SKP CLA /DATA O.K.
3238 3257 5263 JMP T40E /DATA ERROR
3239 3260 2140 ISZ TCNTR5
3240 3261 5242 JMP T40R /LOOP
3241 3262 4437 NERROR /O.K. TO NEXT TEST
3242 3263 4440 T40E, ERROR /ERROR, READ
3243 3264 3240 TST40 /SCOPE LOOP POINTER
3244 3265 0000 T40T, 0000 /TEXT POINTER
/
/RANDOM SEEK THEN WRITE TMFN SEEK THEN READ TEST
/THE DATA WRITTEN IS 2525+5252 AND THE TWO
/FIRST WORDS OF THE SECTOR ARE SET TO THE DISK ADDRESS.
/
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 X0017
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 XHTRK /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
/
/
/VERIFY A RECALIBRATE THEN A RANDOM WRITE DATA,
/THEN A RECALIBRATE THEN RANDOM READ DATA,
/THE DATA PATTERN WRITTEN IS 2525+5252 AND
/THE FIRST TWO WORDS OF EVERY SECTOR
/SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
/
/
3321 3377 3173 PAGE
3322 3400 /
3323 3400 1111 TST42, TAD K7700
3324 3401 3140 DCA TCNTR5 /PASS COUNTER
3325 3402 4423 T42R, RANADD /RANDOM DISK ADDRESS
3326 3403 3134 DCA TCNTR1 /SAVE
3327 3404 7004 RAL /LINK IS EXTENDED BIT
3328 3405 3135 DCA TCNTR2 /SAVE
3329 3406 1113 T42S, TAD K2525
3330 3407 4431 FILBUF /FILL BUFFER
3331 3410 1135 TAD TCNTR2 /GET EXTENDED BIT
3332 3411 1072 TAD DRIVNO /GET DRIVE NUMBER

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3333 3412 3464          DCA I  XNITRK          /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 3152          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 3428 3451          T42T          /TEXT POINTER
3348 3431 5247          JMP    T42E          /ERROR, SKIP OR STATUS
3349 3432 1145          TAD   TCNTR2          /GET EXTENDED BIT
3350 3433 3152          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          TSY42          /TEXT POINTER
3364 3451 5373          T42T, 5373      /TEXT POINTER
3365 /
3366 /SINGLE DRIVE VARIATION TEST
3367 /
3368 /TRY TO CAUSE CYLINDER ADDRESS ERRORS BY
3369 /ADDING A FEW RANDOM SEEKS THEN A READ DATA.
3370 /
3371 3452 1341          TST43, TAD    TIMSTP
3372 3453 3140          DCA  TCNTR5          /SETUP PASS COUNTER
3373 3454 4432          T43R1, KILBUF      /CLEAR BUFFER
3374 3455 4423          RANADD          /GET RANDOM NUMBER
3375 3456 0120          AND   K0037
3376 3457 1122          TAD   K7740
3377 3460 3137          DCA  TCNTR4          /SETUP COUNTER FOR SEEKS
3378 3461 4423          T43R2, RANADD      /GET RANDOM SEEK ADDRESS
3379 3462 3136          DCA  TCNTR3          /SAVE IT
3380 3463 7004          RAL          /LINK IS EXTENDED BIT
3381 3464 3135          DCA  TCNTR2          /SAVE IT
3382 3465 1135          TAD   TCNTR2
3383 3466 3150          DCA  CMREG          /SETUP COMMAND
3384 3467 1136          TAD   TCNTR3
3385 3470 4424          SEEK          /SEEK ONLY A RANDOM TRACK
3386 3471 3514          T43T          /TEXT POINTER
3387 3472 5312          JMP    T43E          /ERROR, SKIP OR STATUS

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3388 3473 2137          ISZ   TCNTR4          /COUNT NUMBER TO DO
3389 3474 5261          JMP    T4302
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.O.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   HOME4          /CURRENT FIELD
3421 3525 3150          DCA  CMREG          /SETUP COMMAND
3422 3526 4530          T44R, TICK
3423 3527 1067          TAD   RGNBUF          /START OF BUFFER
3424 3530 4451          LDCUR          /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          LDADD          /LOAD AND GO
3429 3535 4447          DSKSKP          /DISK SKIP IOT
3430 3536 5335          JMP    -1          /HANG IF NO SKIP
3431 3537 4444          RDSTAT          /READ STATUS
3432 3540 1105          TAD   K4000          /SHOULD ONLY BE DONE
3433 3541 7640          TIMSTP, BZA CLA  /JUST DONE FLAG ?
3434 3542 5357          JMP    T44E          /STATUS ERROR
3435 3543 2134          ISZ   TCNTR1          /UPDATE ADDRESS
3436 3544 5347          JMP    +3          /DON'T SET EXTENDED TRACK
3437 3545 2150          ISZ   CMREG          /YES, SET IT
3438 3546 2135          ISZ   TCNTR2
3439 3547 1135          TAD   TCNTR2
3440 3550 7650          SNA CLA          /IS EXTENDED SET
3441 3551 5326          JMP    T44R          /NO, CONTINUE
3442 3552 1134          TAD   TCNTR1

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3443 3553 1170 TAD ENDTRK /ADD IN FUDGE FACTOR
3444 3554 7640 SZA CLA /DONE WITH DISK
3445 3555 5326 JMP T44R /NO, MORE TO GO
3446 3556 5367 JMP T440K /ALL O.K.
3447 3557 1113 T44E, TAD K2525
3448 3560 4430 FIGURE /WORD BY WORD COMPARE OF DATA
3449 3561 5364 JMP .+3 /ERROR, JUST STATUS
3450 3562 1165 TAD K5373 /TEXT POINTER
3451 3563 7410 SKP /ERROR
3452 3564 1166 TAD K5300 /STATUS ERROR POINTER
3453 3565 3372 DCA T44T /SETUP
3454 3566 7610 SKP CLA
3455 3567 4437 T440K, NERROR /O.K. TO NEXT TEST
3456 3570 4400 ERROR /ERROR, READ DATA
3457 3571 3517 TST44 /SCOPE LOOP POINTER
3458 3572 5300 T44T, 5300 /TEXT POINTER
3459 /
3460 3573 5774 JMP I .+1
3461 3574 3616 TST45=4 /NEXT TEST
3462 3600
3463 /
3464 /ROUTINE TO COMPARE CRREG1 AND CRREG2 TO
3465 /GDREG1 AND GDREG2.
3466 /
3467 3600 0000 COMP2, 0
3468 3601 7300 CLA CLL
3469 3602 1142 TAD GDREG1
3470 3603 0117 AND K0017
3471 3604 7041 CIA
3472 3605 1144 TAD CRREG1
3473 3606 7640 SZA CLA
3474 3607 5214 JMP CRERR /NOT THE SAME
3475 3610 1145 TAD CRREG2
3476 3611 7041 CIA
3477 3612 1143 TAD GDREG2
3478 3613 7640 SZA CLA
3479 3614 2200 CRERR, ISZ COMP2 /ERROR, NOT THE SAME
3480 3615 5600 JMP I COMP2
3481 /
3482 /
3483 /VERIFY THAT WRITING ON A TRACK DOES NOT AFFECT
3484 /AN ADJACENT TRACK. THE TEST SEQUENCE IS AS FOLLOWS:
3485 /WRITE TRACKS 00000-00100-00040 THEN READ AND CHECK
3486 /TRACKS 00040-00000-00100, WRITE TRACKS 00020-00120-00060
3487 /THEN READ AND CHECK TRACKS 00060-00020-00120, ETC.
3488 /THE CENTER TRACK IS SET TO A DATA PATTERN OF
3489 /2525+5252. THE LOWER AND UPPER TRACKS ARE
3490 /SET TO A DATA PATTERN OF 5252+2525. THE FIRST TWO
3491 /WORDS OF EVERY SECTOR ARE SET TO THE ABSOLUTE
3492 /DISK ADDRESS.
3493 /
3494 3616 7346 CLL CLA CMA RTL
3495 3617 3175 DCA KCNT /ESTABLISH PROPER COUNT
3496 3620 4525 JMS I XLOAD
3497 3621 7750 T750
    
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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
3506 3632 1113 TAD K2525 /WRITE CENTER TRACK FIRST
3507 3633 5244 JMP T45A1 /DATA PATTERN FOR CENTER TRACK
3508 3634 1137 T45R1, TAD TCNTR4 /GO WRITE CENTER TRACK
3509 3635 7110 CLL RAR /GET POINTER
3510 3636 7630 SZL CLA
3511 3637 1122 TAD K7760 /WRITE UPPER OR LOWER????
3512 3640 1012 TAD K0020 /DO LOWER
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 7100 CLL RAL /PUT EXTENDED BIT IN LINK
3525 3655 0110 AND K7760
3526 3656 1463 TAD I XLOTRK /ADD IN SECTORS
3527 3657 3463 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
3528 3660 7630 SZL CLA /SET EXTENDED BIT????
3529 3661 7001 IAC /YES!!!
3530 3662 1072 TAD DRIVNO /ADD IN CURRENT DRIVE
3531 3663 3464 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
3532 3664 1464 TAD I XHITRK /GET EXTENDED BIT
3533 3665 1105 TAD K4000 /FUNCTION WRITE DATA
3534 3666 3150 DCA CMREG /SETUP COMMAND REGISTER POINTER
3535 3667 1463 TAD I XLOTRK /GET CYL., SURFACE, AND SECTOR
3536 3670 4426 DISKGO /WRITE ALL
3537 3671 3767 T45T /TEXT POINTER
3538 3672 5365 JMP T45E /ERROR, WRITE SKIP OR STATUS
3539 3673 1141 TAD TCNTR6
3540 3674 1075 TAD K0003 /UPDATE SECTOR POINTER
3541 3675 3141 DCA TCNTR6
3542 3676 2135 ISZ TCNTR2 /UPDATE SECTOR COUNTER
3543 3677 5250 JMP T45R2 /DO REST OF TRACK
3544 3700 2137 ISZ TCNTR4 /UPDATE TRACK COUNTER
3545 3701 5234 JMP T45R1 /DO OTHERS
3546 /
3547 3702 7340 CLA CLL CMA
3548 3703 3144 DCA CRREG1 /SETUP FIRST TIME POINTER
3549 3704 7346 CLA CLL CMA RTL
3550 3705 3137 DCA TCNTR4 /TRACK COUNTER POINTER
3551 3706 1134 TAD TCNTR1
3552 3707 3136 DCA TCNTR3 /SETUP FOR READ CENTER FIRST
    
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3553 3710 5320 JMP T45A2
3554 3711 1137 TAD TCNTR4 /READ AND CHECK CENTER TRACK
3555 3712 7110 T45R3, CLL RAR /POINTER
3556 3713 7630 SZL CLA
3557 3714 1122 TAD K7740 /CHECK UPPER OR LOWER
3558 3715 1012 TAD K0020 /CHECK LOWER
3559 3716 1134 TAD TCNTR1
3560 3717 3136 DCA TCNTR3 /REDUCE OR UPDATE
3561 3720 1110 T45A2, TAD K7760 /SAVE THE TRACK TO READ
3562 3721 3135 DCA TCNTR2 /AMOUNT OF SURFACE SECTORS
3563 3722 3141 DCA TCNTR6 /SETUP SECTOR COUNTER
3564 3723 1136 T45R4, TAD TCNTR3 /START WITH 0
3565 3724 7194 CLL RAL /GET DISK ADDRESS
3566 3725 0110 AND K7740 /PUT EXTENDED BIT IN LINK
3567 3726 3145 DCA CRREG2
3568 3727 7630 SZL CLA /SAVE RESULTS
3569 3730 7001 IAC /SET EXTENDED BIT
3570 3731 3150 DCA CHREG /YES
3571 3732 1141 TAD TCNTR6 /SETUP COMMAND FOR READ DATA
3572 3733 0117 AND K0017 /GET SECTOR POINTER
3573 3734 1145 TAD CRREG2 /MASK
3574 3735 4026 DISKGD /ADD IN TRACK
3575 3736 3767 T45T /READ DATA
3576 3737 5365 JMP T45E /TEXT POINTER
3577 3740 1144 TAD CRREG1 /ERROR, READ SKIP OR STATUS
3578 3741 7650 SWA CLA /GET FIRST TIME POINTER
3579 3742 1113 TAD K2525 /FIRST TIME????
3580 3743 1113 TAD K2525 /NO
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 TCNTRP
3588 3753 5323 JMP T45R6 /UPDATE SECTOR COUNTER
3589 3754 3144 DCA CRREG1 /DO REST OF SURFACE
3590 3755 2137 ISZ TCNTR4 /CLEAR FIRST TIME FLAG
3591 3756 5311 JMP T45R3 /UPDATE TRACK COUNTER
3592 3757 1134 TAD TCNTR1 /DO OTHER TRACKS
3593 3760 1011 TAD K0010 /GET CURRENT TRACK POINTER
3594 3761 3134 DCA TCNTR1 /UPDATE
3595 3762 2140 ISZ TCNTR5 /SAVE IT
3596 3763 5226 JMP T45SC /UPDATE TOTAL AMOUNT TO DO
3597 3764 4037 NEPROR /MORE TO DO
3598 3765 4040 T45F, ERROR /ALL O.K. TO END OF TEST
3599 3766 3622 T45T, T45S /ERROR, TRACKS AFFECTED
3600 3767 0200 T45T, 0000 /SCOPE LOOP POINTER
3601 / /MODIFIED TEXT POINTER
3602 3770 5771 / JMP I .+1 /TO END OF TEST
3603 3771 4962 / ENDTST
3604 /
3605 3772 7156 / K7156, 7156
3606 /
3607 4000 / PAGE

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3608 /
3609 /ROUTINE TO WAIT FOR 500 MS.
3610 /
3611 4000 0000 WTISZ, 0
3612 4201 7320 CLA CLL
3613 4202 1122 TAD K7740 /GET TIME CONSTANT
3614 4203 3340 DCA RDAD
3615 4204 3331 DCA LDMN
3616 4205 2331 ISZ LDMN
3617 4206 5205 JMP .-1
3618 4207 2340 ISZ RDAD
3619 4210 5205 JMP .-3
3620 4211 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
3630 4013 4431 C0SWIT /CHECK FOR CLASSIC.
3631 4014 7000 NOP /ROUTINE TO EXECUTE.
3632 4015 4404 LAS
3633 4016 3134 DCA TCNTR1 /GET FIRST ADDRESS
3634 4017 4405 CLASIC /SAVE IT
3635 4020 4436 CBERR /CHECK FOR CLASSIC ACTIVE
3636 4021 7402 HEDHLT, HLT /ROUTINE TO EXECUTE.
3637 /WAIT FOR SECOND ADDRESS. IF ON
3638 /CLASSIC CONSOLE PACKAGE HIT
3639 /CONTROL E, IF NOT THEN PRESS
3640 /KEY CONTINUE.
3641 4022 4405 RESEK, CLASIC /CHECK FOR CLASSIC
3642 4023 4431 C0SWIT /ROUTINE TO EXECUTE.
3643 4024 7000 NOP
3644 4025 4404 LAS /GET SECOND ADDRESS
3645 4026 3135 DCA TCNTR2 /SAVE IT
3646 4027 1135 TAD TCNTR2
3647 4030 0101 AND K0007
3648 4031 1194 TAD K3000 /MASK DRIVE+EXT. BIT
3649 4032 4450 LDCMD /GET SEEK FUNCTION
3650 4033 1135 TAD TCNTR2 /LOAD COMMAND REGISTER
3651 4034 0110 AND K7760
3652 4035 4452 LDADD /MASK OFF CYLINDER+SURFACE
3653 4036 4447 DSKSKP /GO SEEK ONLY
3654 4037 5236 JMP .-1 /SKIP ON DONE
3655 4040 4453 CLRALL /CLEAR STATUS
3656 4041 4444 ROSTAT /READ STATUS
3657 4042 7640 SZL CLA /DRIVE DONE?
3658 4043 5240 JMP .-3 /NO, WAIT
3659 4044 1134 TAD TCNTR1 /GET FIRST ADDRESS
3660 4045 0101 AND K0007 /MASK DRIVE+EXT. BIT
3661 4046 1104 TAD K3000 /GET SEEK FUNCTION
3662 4047 4450 LDCMD /LOAD COMMAND REGISTER
3663 4048 1134 TAD TCNTR1

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3663 0051 0110 AND K7760 /MASK OFF CYLINDER AND SURFACE
3664 0052 4452 LDADD /LOAD AND GO SEEK
3665 0053 4447 DSKSKP /WAIT FOR DONE
3666 0054 5253 JMP .-1
3667 0055 4453 CLRALL /CLEAR STATUS
3668 0056 4440 RDSTAT /READ STATUS
3669 0057 7640 SZA CLA /DRIVE DONE?
3670 0060 5255 JMP .-3 /NO, WAIT
3671 0061 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 /
3680 0062 4777 ENDTST, JMS I (GETDRV /GET NEXT DRIVE.
3681 0063 0071 ISZ DRVCNT /UPDATE NO. OF DRIVES COUNTER.
3682 0064 5323 JMP NEXOSK /TEST NEXT DRIVE.
3683 0065 1070 TAD DRVHAV
3684 0066 3071 DCA DRVCNT /SETUP NO. OF DRIVES COUNTER.
3685 0067 4763 TSTSEK, JMS I XLAP /PERFORM OVERLAP SEEKS
3686 0070 4764 JMS I XOVRRD /OVERLAP SEEKS+WRITES+READS
3687 0071 3776 DCA DCNT2 /START OVER AT 0.
3688 0072 4777 JMS I (GETDRV /SELECT FIRST DRIVE.
3689 0073 4405 SAMDSK, CLASIC /CHECK FOR CLASSIC ACTIVE
3690 0074 4424 CAPASS /PASS COMPLETE
3691 0075 7610 SKP CLA
3692 0076 5302 JMP .+4
3693 0077 1022 TAD 22
3694 0100 0105 AND K0000 /SFF IF ON APT
3695 0101 7650 SNA CLA /APT??
3696 0102 5307 JMP .+5 /NO
3697 0103 3775 DCA I (CLKCNT /CLRFR APT TIMING COUNTER
3698 0104 7340 CLL CLA CMA
3699 0105 3175 DCA KCNT
3700 0106 5323 JMP NEXOSK /LOOP PROGRAM
3701 0107 4462 CRLF
3702 0108 4457 PRNTER /PRINT PASS COMPLETE
3703 0109 0760 NMES1
3704 0110 4457 PRNTER
3705 0111 7315 TEXEND
3706 0112 4424 LAB
3707 0113 0076 AND K0000
3708 0114 7650 SNA CLA /SWITCH 9 SFT?
3709 0115 5323 JMP .+4
3710 0116 4405 CLASIC
3711 0117 4437 C0INQU
3712 /
3713 ENDMHT, MLY /YES, STOP PROGRAM
3714 NEXOSK, CLA CLL IAC
3715 /DCLR
3716 DCA REG0
3717 DCA REG1
3718 JMP I .+1 /LOOP ON PROGRAM
3719 TST0

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3718 /
3719 /SURROUTINE TO ISSUE "DMAN" MAINTENANCE IOT
3720 /
3721 0131 0000 LDMN, 0
3722 0132 6747 IOT7, DMAN /"DMAN" MAINTENANCE IOT
3723 0133 5731 JMP I LDMN /EXIT
3724 0134 4405 CLASIC
3725 0135 4436 C0ERR
3726 0136 7402 ERHLT7, MLY /SKIP TRAP ERROR
3727 0137 5334 JMP .-3
3728 /
3729 /SUBROUTINE TO SHIFT, THEN READ DISK ADDRESS
3730 /INTO DATA BUFFER, 12 SHIFTS
3731 /
3732 0140 0000 R0AD, 0
3733 0141 7300 CLA CLL
3734 0142 1126 TAD M12
3735 0143 3133 DCA SRCNT1
3736 0144 7330 CLA CLL CML RAR /SET MAIN(I) ENARLE BIT
3737 0145 4455 LDMAN /LOAD MAINTENANCE
3738 0146 7010 RAR
3739 0147 4455 LDMAN /LOAD MAINTENANCE
3740 0150 7300 CLA CLL
3741 0151 1015 TAD K0200 /SHIFT TRACK ADDRESS BIT
3742 0152 4455 LDMAN /LOAD MAINTENANCE IOT
3743 0153 2133 ISZ SRCNT1
3744 0154 5352 JMP .-2 /SHIFT 12 BITS
3745 0155 7300 CLA CLL
3746 0156 1012 TAD K0020
3747 0157 4455 LDMAN
3748 0160 3151 DCA DAREG /READ DATA BUFFER
3749 0161 1151 TAD DAREG /SAVE RESULTS
3750 0162 5740 JMP I R0AD /EXIT
3751 /
3752 0163 4200 XLAP, OVRLAP
3753 0164 4400 XOVRRD, OVRRD
3754 /
3755 0165 0411 NMES3, TEXT "DISK"
3756 /
3757 0175 7162 /
3758 0176 4371 /
3759 0177 4345 /
3760 4200 PAGE
3761 /
3762 /ROUTINE TO DO OVERLAP SEEKS ON EXISTING DRIVES
3763 /AFTER ALL HAVE RUN THE COMPLETE DIAGNOSTIC
3764 /
3765 0200 0000 OVRLAP, 0
3766 0201 1105 TAD K4000
3767 0202 3140 DCA TCNTR5 /PASS COUNTER
3768 0203 1070 OVRR1, TAD DRVHAV
3769 0204 3137 DCA TCNTR4 /SET COUNTER FOR NO. OF DRIVES.

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3772 4205 3371 DCA DCNT2
3771 4206 4777 OVRP2, JMS I (GETDRV /START WITH DRIVE 0
3772 4207 1072 TAD DRIVNO /GET NEXT DRIVE.
3773 4210 7110 CLL RAR /GET DRIVE NO.
3774 4211 4423 RANARD
3775 4212 4406 DSKOUT /SELECT A RANDOM ADDRESS
3776 4213 4453 CLRALL /SEND DISK OUT
3777 4214 2137 ISZ TCNTR4 /CLEAR STATUS
3778 4215 5206 JMP OVRP2 /UPDATE DISK COUNTER
3779 4216 3371 DCA DCNT2 /DO ALL EXISTING DISKS
3780 4217 1070 TAD DRVHAV /CLEAR FOR 0
3781 4220 3137 DCA TCNTR4 /NO. OF DRIVES.
3782 4221 4777 OVRP3, JMS I (GETDRV /SETUP COUNTER
3783 4222 1072 TAD DRIVNO /GET NEXT DRIVES.
3784 4223 7110 CLL RAR /GET SELECTED DRIVE.
3785 4224 4407 DSKIN
3786 4225 5230 JMP NOTDON /CHECK FOR DRIVE DONE
3787 4226 5233 JMP OVR0K /DRIVE NOT DONE
3788 4227 5254 JMP OVRERR /DRIVE DONE AND NO ERRORS
3789 4230 2137 NOTDON, ISZ TCNTR4 /DRIVE ERRORS
3790 4231 5221 JMP OVRP3 /UPDATE NO. OF DRIVE COUNTER.
3791 4232 5217 JMP OVRP3-2 /NO. NO REST
3792 4233 7340 OVR0K, CLA CLL CMA /YES, RESET
3793 4234 3137 DCA TCNTR4
3794 4235 2140 ISZ TCNTR5
3795 4236 5227 JMP OVRP2+1 /UPDATE PASS COUNTER, DONE ?
3796 4237 3371 DCA DCNT2 /NO. SEND OUT
3797 4240 1070 TAD DRVHAV /SET FOR 0
3798 4241 3137 DCA TCNTR4 /NO. OF DRIVES ON SYSTEM.
3799 4242 4777 ALLBAK, JMS I (GETDRV /GET NEXT DRIVE.
3800 4243 1072 TAD DRIVNO /GET SELECTED DRIVE.
3801 4244 7110 CLL RAR
3802 4245 4407 DSKIN
3803 4246 5242 JMP ALLBAK /CHECK FOR DRIVE DONE
3804 4247 7610 SKP CLA /WAIT FOR THIS DRIVE
3805 4250 5254 JMP OVRERR /WAIT FOR NEXT
3806 4251 2137 ISZ TCNTR4 /DRIVE ERRORS
3807 4252 5242 JMP ALLBAK /LAST DRIVE HOME YET
3808 4253 4437 NERROR /WAIT FOR ALL
3809 4254 4400 OVRERR, ERROR /O.K. TO NEXT
3810 4255 4201 OVRLAP+1 /ERROR, OVERLAP SEEKS
3811 4256 5300 /SCOPE LOOP POINTER
3812 4257 5600 JMP I OVRLAP /TEXT POINTER
3813 /TO NEXT TEST
3814 /ROUTINE TO GET DRIVES FROM OPERATOR.
3815 /
3816 4260 0000 /
3817 4261 4462 SELDSK, 0
3818 4262 4457 CRLF
3819 4263 2760 PRNTER /PRINT MESSAGE "RK0-E DRIVE"
3820 4264 4462 NMES1 /MESSAGE POINTER
3821 4265 4457 CRLF
3822 4266 5660 PRNTER /PRINT MESSAGE "TEST"
3823 4267 3370 NMES2 /MESSAGE POINTER
3824 4270 3070 DCA DCNT1 /COUNTER FOR NO. OF DRIVES.
        DRVHAV
    
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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 NXTOSK, PRNTER
3829 4275 4165 NMES3
3830 4276 1370 TAD DCNT1
3831 4277 1374 TAD DSKON
3832 4300 3372 DCA DCNT3 /COMPUTE WAY TO DISK BUFFER.
3833 4301 1370 TAD DCNT1 /SAVE POINTER.
3834 4302 1364 TAD K0260 /GET DRIVE NO.
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 5376 JMP .-1
3840 4310 6036 KRR
3841 4311 0367 AND K0177 /GET INPUT.
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 SELDSK+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 SELDSK /EXIT.
3869 /
3870 /ROUTINE TO SELECT DRIVES ON SYSTEM.
3871 /
3872 4345 0000 GETDRV, 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
3901 /
3902 /ROUTINE TO PERFORM RANDOM OVERLAP SEEKS, WRITES AND,
3903 /READS ON ALL EXISTING DRIVES AFTER THEY HAVE RUN THE
3904 /COMPLETE DIAGNOSTIC.
3905 /
3906 4400 0200 OVRRED, 0
3907 4401 7330 CLA CLL CML RAR
3908 4402 3140 DCA TCNTR5 /PASS COUNTER
3909 4403 1070 OVRRD1, TAD DRVHAV
3910 4404 3137 DCA TCNTR4 /SET COUNTER FOR NO. OF DRIVES.
3911 4405 3777 DCA DCNT2 /START WITH DRIVE 0
3912 4406 4776 OVRRD2, JMS I (GETDRV /SELECT DRIVE NO.
3913 4407 1072 TAD DRIVNO /DRIVE NO, SELECTED.
3914 4410 7110 CLL RAR
3915 4411 4423 RANADD /SELECT A RANDOM ADDRESS
3916 4412 4406 DSKOUT /SEND DISK OUT
3917 4413 4453 CLRALL /CLEAR STATUS
3918 4414 2137 ISZ TCNTR4 /UPDATE DISK COUNTER
3919 4415 5206 JMP OVRRD2 /DO ALL EXISTING DISKS
3920 4416 3777 DCA DCNT2 /CLEAR FOR 0
3921 4417 1070 TAD DRVHAV
3922 4420 3137 DCA TCNTR4 /SET COUNTER FOR NO. OF DRIVES.
3923 4421 4776 OVRRD3, JMS I (GETDRV /SELECT DRIVE.
3924 4422 1072 TAD DRIVNO /GET DRIVE SELECTED
3925 4423 7110 CLL RAR
3926 4424 4407 DSKIN /CHECK THIS DRIVE
3927 4425 5232 JMP CHKNEX /CHECK FOR NEXT DRIVE
3928 4426 5235 JMP OVRDDK /DONE AND NO ERRORS
3929 4427 1166 POLERR, TAD
3930 4430 3324 DCA TOVRDT /SETUP TEXT POINTER
3931 4431 5322 JMP OVRDER /ERRORS
3932 4432 2137 CHKNEX, ISZ TCNTR4 /UPDATE NO. COUNTER.
3933 4433 5221 JMP OVRRD3 /NO, DO REST

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3934 4434 5217 JMP OVRRD3-2 /YES, RESET
3935 4435 1072 OVRDDK, 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 KR004 /ADD IN FUDGE FACTOR
3943 4445 3326 DCA DSKADD /MAKE ADDRESS
3944 4446 1114 TAD K5252 /GET DATA PATTERN TO USE
3945 4447 4431 FILBUF /FILL DATA BUFFER
3946 4450 1726 TAD I 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 XLOTRK /SETUP ADDRESS WORD IN BUFFER
3951 4455 1464 TAD I XHITRK /GET EXTENDED BIT
3952 4456 1105 TAD K4000 /ADD IN WRITE FUNCTION
3953 4457 3150 DCA CHREG /SETUP COMMAND POINTER
3954 4460 1463 TAD I XLOTRK /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 CHREG /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          /
3994 4527 6366          DSKADD, 0
3995          DSKPOT, DSKBA
3996          /
3997          /ROUTINE TO CHECK DRIVE IN AC
3998          /
3998 4530 0000          DIN, 0
3999 4531 7104          CLL RAL          /MAKE DRIVE NO.
4000 4532 4450          LOCMD          /FIRST SELECT DRIVE
4001 4533 1150          TAD          CHREG
4002 4534 1015          TAD          K0000
4003 4535 0450          LOCMD          /ENABLE SET DONE BIT
4004 4536 7332          CLA CLL CML RTR  /LOAD COMMAND
4005 4537 3143          DCA          GDREG2 /MAYBE EXPECTED STATUS
4006 4540 4444          ROSTAT          /SETUP COMPARE REGISTER
4007 4541 4447          DSKAMP          /READ STATUS
4008 4542 5353          JMP          NOIN   /CHECK FOR SKIP
4009 4543 7332          CLA CLL CML RAR  /CHECK FOR NOT DONE
4010 4544 3143          DCA          GDREG2 /EXPECTED STATUS
4011 4545 4444          ROSTAT          /SETUP COMPARE REGISTER
4012 4546 1105          TAD          K4000  /READ STATUS
4013 4547 7640          SZA CLA          /ADD IN FUDGE FACTOR
4014 4550 2330          ISZ          DIN   /O.K.????
4015 4551 2330          ISZ          DIN   /ERROR!!!!
4016 4552 5730          JMP I   DIN          /EXIT
4017 4553 1106          NOIN, TAD          K6000
4018 4554 7640          SZA CLA          /SKIP IF NO ERROR
4019 4555 5350          JMP          -5     /ERROR EXIT
4020 4556 5730          JMP I   DIN          /EXIT
4021
4022          /ROUTINE TO COMPARE AC TO GDREG2
4023          /
4024 4557 0000          COMPI, 0
4025 4560 3155          DCA          ACREG
4026 4561 1155          TAD          ACREG          /SAVE AC
4027 4562 7041          CIA
4028 4563 1143          TAD          GDREG2
4029 4564 7640          SZA CLA          /SKIP IF O.K.
4030 4565 2357          ISZ          COMPI  /ERROR, DON'T COMPARE
4031 4566 5757          JMP I   COMPI
4032
4033
4034 4576 4345          /
4035 4577 4371          /
4036          PAGE
4037          /
4038          /MANUAL FUNCTION TEST
4039          /LOAD ADDRESS 0201 OR "MANUAL".
4040          /SET SWITCHES TO FUNCTION
4041          /PRESS START
4042          /MACHINE SHOULD HALT
          /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 CLASSIC.
4054 4601 4431          C0SWIT          /ROUTINE TO EXECUTE.
4055 4602 7000          NOP
4056 4603 4404          LAS
4057 4604 0326          AND          K7707          /MASK
4058 4605 3134          DCA          TCNTR1 /SAVE FUNCTION
4059 4606 7340          CLA CLL CMA
4060 4607 3131          DCA          REG0
4061 4610 6224          RIF          /SETUP FOR ONE PASS
4062 4611 1134          TAD          TCNTR1 /USE CURRENT FIELD
4063 4612 3134          DCA          TCNTR1
4064 4613 1134          TAD          TCNTR1 /ACTUAL FUNCTION
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          C0SWIT          /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          C0SWIT          /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
4097 4643 7300          TMANS, CLA CLL /FILL BUFFER WITH DATA

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/ PAL10 VI42A 15-APR-76 13124 PAGE 1-78
4098 4644 1134 TAD TCNTR1 /GET FUNCTION
4099 4645 2107 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 2107 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 5321 JMP THANE /ERROR, SKIP OR STATUS
4115 4665 5321 JMP THANOK /TO HANDLER
4116 4666 1134 NTSEK, TAD TCNTR1 /GET FUNCTION
4117 4667 2101 AND K0007 /MASK
4118 4670 7464 DCA I XHTRK /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 XLDTRK /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 2014 AND K0100 /MASK OUT HALF BIT
4135 4711 7650 SNA CLA /WAS IT HALF BLOCK TRANSFERS
4136 4712 5317 JMP ,+5 /NO, COMPARE WHOLE BLOCK
4137 4713 1136 TAD TCNTR3 /GET GOOD WORD POINTER
4138 4714 4427 HAFCHK /CHECK FOR HALF BLOCK
4139 4715 5321 JMP 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 TMANS / LOOP
4149 /
4150 4726 7707 K7707, 7707
4151 /
4152 /SUBROUTINE TO WAIT FOR INTERRUPTS

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/ PAL10 VI42A 15-APR-76 13124 PAGE 1-79
4153 /IF INTERRUPT OCCURES GO BACK+1
4154 /
4155 4727 0000 IONWT, 0
4156 4730 7450 SNA /FAST OR SLOW
4157 4731 1122 TAD K7740 /GET SLOW CONSTANT
4158 4732 3364 DCA ICNTR2 /SETUP COUNTER
4159 4733 3363 DCA ICNTR1 /SETUP COUNTER
4160 4734 6001 ION /TURN IT ON
4161 4735 2363 ISZ ICNTR1
4162 4736 5335 JMP ,-1
4163 4737 2364 ISZ ICNTR2
4164 4740 5335 JMP ,-3
4165 4741 6002 IOF /TURN IT OFF
4166 4742 5727 JMP I IONWT /NO INT OCCURED
4167 4743 1022 INTADD, TAD 22
4168 4744 2016 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 CREPR
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 CARFG /SETUP INITIAL CURRENT ADDRESS
4193 4771 1153 TAD ADRFG
4194 4772 6744 IOT4, DLCA /LOAD CURRENT ADDRESS IOT
4195 4773 5765 JMP I LDCA
4196 4774 4405 CLASIC
4197 4775 4436 CREPR
4198 4776 7402 ERHLT4, HLT /SKIP TRAP ERROR.
4199 4777 5374 JMP ,-3
4200 /
4201 PAGE
4202 /
4203 /ROUTINE TO CHECK THE WRITE PROTECT FUNCTION
4204 /WHEN IT IS SET UNDER PROGRAM CONTROL
4205 /NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS TEST
4206 /
4207 5000 4405 AUTPRO, CLASIC /CHECK FOR CLASSIC.

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PAL10 V142A 15-APR-76 13124 PAGE 1-80
4200 5001 4431 CASWIT /ROUTINE TO EXECUTE.
4209 5002 7200 NOP
4210 5003 4424 LAS /GET THE SWITCHES
4211 5004 7124 CLL RAL
4212 5005 0100 AND K0006 /MASK DRIVE NUMBER
4213 5006 3072 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 FILRHF /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 1172 TAD DRIVNO /CURRENT DRIVE
4229 5026 4450 LDCMDR /LOAD COMMAND REGISTER
4230 5027 4452 LDRADR /LOAD AND GO
4231 5028 4444 ROSTAT /READ STATUS REGISTER
4232 5031 7640 SZA CLA /SHOULD BE 0000 ????
4233 5032 5245 JMP APA1 /ERROR, STATUS
4234 5033 4432 KILRHF /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 RTL
4243 5044 1212 TAD K0020 /MAKE EXPECTED STATUS
4244 5045 3143 DCA GDRREG2 /SETUP COMPARE REGISTER
4245 5046 1166 TAD K5300
4246 5047 3270 DCA TAPROT
4247 5050 1146 TAD STREG /SETUP TEXT POINTER
4248 5051 4442 ACCMPL /GET STATUS READ
4249 5052 7610 SKP CLA /CHECK RESULTS
4250 5053 5266 JMP APERR /STATUS O.K.
4251 5054 7301 CLA CLL IAC /ERROR, WRITE PROTECT
4252 5055 4453 CLRALL /ENABLE 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., DO ONE MORE TIME
4261 5066 4442 APERR, ERROR /ERROR, WRITE PROTECT
4262 5067 5724 APR1

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PAL10 V142A 15-APR-76 13124 PAGE 1-81
4263 5071 2000 TAPROT, 0000 /TEXT POINTER
4264 5071 4425 CLASIC
4265 5072 4436 CRERR
4266 5073 7422 APHLT, 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 CLASIC /CHECK IF CLASSIC
4276 5077 4425 CRCKSW /GET SWITCHES
4277 5100 7604 7604 /NOT CLASSIC, GET SWITCHES
4278 5101 5675 JMP I MYLAS
4279 /
4280 /THIS ROUTINE WILL BE A SKTP INSTRUCTION WITHOUT
4281 /CLASSIC, OTHERWISE IT WILL EXECUTE NEXT INSTRUCTION
4282 /IN FIELD 0 AND THEN SKIP THE INSTRUCTION AFTER THAT ONE.
4283 /
4284 5102 2000 CLASIK, 0
4285 5103 3332 DCA SAVAC /SAVE CURRENT AC
4286 5104 1722 TAD I CLASIK
4287 5105 3333 DCA ROUTHMP /SAVE THE CLASSIC ROUTINE
4288 5106 2302 ISZ CLASIK
4289 5107 1222 TAD OP2
4290 5110 0377 AND (400
4291 5111 7640 SZA CLA
4292 5112 5315 JMP ,+3
4293 5113 1332 TAD SAVAC /NO RETURN TO PROGRAM
4294 5114 5702 JMP I CLASIK
4295 5115 2302 ISZ CLASIK
4296 5116 6211 COF 10 /CHANGE TO FIELD 1
4297 5117 1020 TAD SWR
4298 5120 3776 DCA I (SWR) /MOVE POINTERS TO FIELD 1
4299 5121 1021 TAD OP1
4300 5122 3775 DCA I (OP1)
4301 5123 1022 TAD OP2
4302 5124 3774 DCA I (OP2)
4303 5125 1333 TAD ROUTHMP
4304 5126 3773 DCA I (ROUTINS) /SAVE ROUTINE IN FIELD 1
4305 5127 1332 TAD SAVAC
4306 5130 6212 CIF 10
4307 5131 5773 JMP I (ROUTINS) /GO TO FIELD 1
4308 /
4309 5132 2002 SAVAC, 0
4310 5133 2002 ROUTHMP, 0
4311 /
4312 /ROUTINE TO WAIT FOR DISK SKIPS
4313 /
4314 5134 2000 SKWAT, 0
4315 5135 7300 CLA CLL
4316 5136 4530 TAD K7740 /TIMING FOR APT
4317 5137 1122 TAD /GET TIME CONSTANT

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4318 5100 3275 DCA MYLAB
4319 5141 3302 DCA CLASIK
4320 5142 4447 DSKBKP
4321 5143 7610 SKP CLA /DSKP *DISK SKIP TOT*
4322 5144 5352 JMP .+6 /NO SKIP OCCURRED YET
4323 5145 2302 ISZ CLASIK /GDT THE SKIP
4324 5146 5342 JMP .-4
4325 5147 2275 ISZ MYLAB
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 5154 0000 RDST, 0
4334 5155 6745 IOTS, ORST /READ STATUS IOT
4335 5156 5363 JMP .+5
4336 5157 4405 CLASIC
4337 5160 4436 CRERR
4338 5161 7402 FRHLT5, HLT /SKIP TRAP ERROR
4339 5162 5357 JMP .-3
4340 5163 3146 DCA STREG /SAVE RESULTS
4341 5164 1146 YAD STREG
4342 5165 5754 JMP I RDST /EXIT
4343 5173 1302
4344 5174 0022
4345 5175 0021
4346 5176 0020
4347 5177 2400
4348 PAGE
4349 /
4350 /SUBROUTINE FOR "ERRORS," SCOPE LOOPS, AND
4351 /ERROR TYPEOUTS.
4352 /
4353 5200 0000 ERRO, 0
4354 5201 4527 JMS I KAERRO /REPORT ERROR TO APT
4355 5202 1600 TAD I ERRO /GET RESTART ADDRESS
4356 5203 3173 DCA RESTRY /STORE
4357 5204 4404 LAS /GET SWITCH 0
4358 5205 7700 SMA CLA /IS IT SCOPE LOOP
4359 5206 5217 JMP ERRA1 /NO, CONTINUE
4360 5207 4404 LAS /GET SWR2
4361 5210 7006 RTL
4362 5211 7710 SPA CLA /INHIRT BELL????
4363 5212 5215 JMP .+3 /YES
4364 5213 1356 TAD K0207
4365 5214 4436 TYPE
4366 5215 1600 TAD I ERRO
4367 5216 5757 JMP I ESCOPE /CHECK FOR BELL
4368 5217 1600 ERRA1, TAD I ERRO
4369 5220 3367 DCA RETRNP /STORE FOR RETURN
4370 5221 2200 ISZ ERRO
4371 5222 7301 CLA CLL IAC
4372 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 HLT
4380 5234 3236 DCA .+2 /MODIFIED HEADER TAD
4381 5235 4057 PRNTER /MODIFIED HEADER POINTER
4382 5236 7402 HLT
4383 5237 4462 CRLF
4384 5240 4457 PRNTER /PRINT PC:
4385 5241 5750 TEXPC
4386 5242 7340 CLA CLL CMA
4387 5243 1200 TAD ERRO /GET PC POINTER
4388 5244 4460 OCTEL /PRINT PC STORED
4389 5245 1600 TAD I ERRO /GET TEXT POINTER
4390 5246 7104 CLL RAL
4391 5247 7420 SNL
4392 5250 5264 JMP NTGN /NOT GD: REGISTER
4393
4394
4395 5251 3200 DCA ERRO
4396 5252 4457 PRNTER /PRINT GD:
4397 5253 5752 TEXGD
4398 5254 1200 TAD ERRO
4399 5255 7700 SMA CLA /WAS IT A 6 BIT OCTAL BYTE
4400 5256 5261 JMP .+3 /NO
4401 5257 1142 TAD GDREG1 /GET DATA
4402 5260 4461 TWOCT /PRINT TWO OCTAL
4403 5261 1143 TAD GDREG2
4404 5262 4460 OCTEL /PRINT FOUR OCTAL
4405 5263 7610 SKP CLA
4406 5264 3200 NTGN, DCA ERRO
4407 5265 1200 TAD ERRO /GET TEXT POINTER
4408 5266 7104 CLL RAL
4409 5267 7420 SNL
4410 5270 5301 JMP NTCRC
4411 5271 3200 DCA ERRO
4412 5272 4457 PRNTER /PRINT CR:
4413 5273 5754 TEXCR
4414 5274 1144 TAD CRREG1
4415 5275 4461 TWOCT /PRINT
4416 5276 1145 TAD CRREG2
4417 5277 4460 OCTEL /PRINT FOUR OCTAL
4418 5300 7610 SKP CLA
4419 5301 3200 NTCRC, DCA ERRO
4420 5302 1363 TAD XTEXT
4421 5303 3366 DCA PCNTR2
4422 5304 1364 TAD XREG
4423 5305 3010 DCA AUTO10
4424 5306 1116 TAD K7771
4425 5307 3365 DCA PCNTR1 /COUNTER FOR # OF HEADS
4426 5310 1200 STRAUT, TAD ERRO /GET TEXT POINTER

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4427 5311 7500 SMA
4428 5312 5350 JMP NOTEX
4429 5313 7104 CLL RAL /NOT THIS ONE
4430 5314 3200 OCA ERRO
4431 5315 1366 TAD PCNTRP
4432 5316 2366 ISZ PCNTR2 /GET TEXT MESSAGE POINTER
4433 5317 2366 ISZ PCNTR2
4434 5320 3322 OCA .+2
4435 5321 4457 PRNTRF /STORE FOR PRINTER
4436 5322 7422 HLT /PRINT XX:
4437 5323 1410 TAD I AUTO10 /MODIFIED TEXT POINTER
4438 5324 4460 OCTFL
4439 5325 2365 AGAIN, ISZ PCNTR1 /PRINT FOUR OCTAL
4440 5326 5312 JMP STRAUT
4441 5327 4474 LAS
4442 5328 7224 RTL
4443 5331 2216 AND K0400
4444 5332 7652 SWA CLA /MASK
4445 5333 5342 JMP CHKERR /WAS IT INHIBIT HALT
4446 5334 7632 SZL CLA /NO HALT
4447 5335 5340 JMP .+3 /SAME OR NEXT TEST
4448 5336 1361 TAD INHIBT /SAME TEST
4449 5337 5757 JMP I ESCOPE /GET RETURN
4450 5340 1360 TAD RETRN2 /CHECK FOR BELL
4451 5341 5757 JMP I ESCOPE /GET RETURN
4452 5342 4405 CHKERR, CLASTC /CHECK FOR BELL
4453 5343 4436 CAFRR
4454 5344 7402 FRHLT9, HLT
4455 5345 4762 JMS I XGTREG /ALL RECOVERABLE ERROR HALTS
4456 5346 5760 JMP I RETRN2 /CHECK FOR GET ALL REGISTERS
4457 5347 5264 JMP NTR0 /NO, TRY SAME TEST AGAIN
4458 5350 7104 NOTEX, CLL RAL /DUMP
4459 5351 3200 OCA ERRO
4460 5352 2366 ISZ PCNTR2
4461 5353 2366 ISZ PCNTRP
4462 5354 2010 ISZ AUTO10
4463 5355 5325 JMP AGAIN
4464
4465 5356 0207 K0207, 0207
4466 5357 5470 ESCOPE, SCOPE
4467 5360 0000 RETRN2, 0
4468 5361 0000 INHIBT, 0
4469 5362 5527 XGTREG, GTREG
4470 5363 5756 XTEXT, TEXT
4471 5364 0145 XREG, CRREG2
4472 5365 0000 PCNTR1, 0
4473 5366 0000 PCNTR2, 0
4474 5367 1370 HENTAD, TAD HEDLST
4475 5370 6671 HEDLST, ERTX1
4476 5371 6704 ERTX2
4477 5372 6720 ERTX3
4478 5373 6736 ERTX4
4479 5374 6746 ERTX5
4480 5375 6760 ERTX6
4481 5376 6772 ERTX7

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4482 5377 7002 / ERTXA
4483 /
4484 / PAGE
4485 5400 /
4486 /
4487 /
4488 /
4489 5400 0000 /SUBROUTINE TO READ DATA BUFFER TO AC
4490 5401 7330 RDRF, 0
4491 5402 4455 CLA CLL CML RAR
4492 5403 1012 LDMAN
4493 5404 4455 TAD K0020
4494 5405 3147 LDMAN /LOAD MAINTENANCE
4495 5406 1147 OCA DRREG
4496 5407 3154 TAD DRREG
4497 5410 1154 OCA DTREG
4498 5411 5600 TAD DTREG
4499 JMP I RDRF /EXIT
4500 /
4501 /SUBROUTINE TO SHIFT COMMAND REGISTER TO
4502 /DATA BUFFER THEN READ DATA BUFFER
4503 /
4504 5412 0200 RDM, 0
4505 5413 7322 CLA CLL
4506 5414 1126 TAD M12
4507 5415 3133 OCA SRCNT1 /12 BIT SHIFT
4508 5416 7330 CLA CLL CML RAR
4509 5420 7010 LDMAN /LOAD MAINTENANCE
4510 5421 4455 RAR
4511 5422 7300 LDMAN /LOAD MAINTENANCE
4512 5423 1216 CLA CLL
4513 5424 4455 TAD K0400 /ENABLE BIT FOR SHIFT COMMAND
4514 5425 2133 LDMAN /LOAD AND GO
4515 5426 5224 ISZ SRCNT1
4516 5427 7320 JMP .-2 /SHIFT 12
4517 5430 1012 CLA CLL K0020
4518 5431 4455 LDMAN /ENABLE READ BUFFER
4519 5432 3150 OCA CMREG /LOAD AND GO
4520 5433 1150 TAD CMREG /SAVE IT
4521 5434 5612 JMP I RDM /EXIT
4522 /
4523 /ROUTINE TO ZERO WORK BUFFER
4524 /
4525 5435 0000 KLBUF, 0
4526 5436 7340 CLA CLL CMA
4527 5437 1067 TAD RGNRUF
4528 5440 3010 OCA AUTO10 /START OF BUFFER=1
4529 5441 1123 TAD K7400 /SETUP AUTO INDEX
4530 5442 3162 OCA DATCNT
4531 5443 3410 OCA I AUTO10 /SETUP COUNTER
4532 5444 2162 ISZ DATCNT /CLEAR BUFFER
4533 5445 5243 JMP .-2 /UPDATE COUNTER
4534 5446 5635 JMP I KLBUF /NOT ALL CLEARED YET
4535 / /BUFFER CLEARED
4536 /ROUTINE TO FILL THE WORK BUFFER WITH

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4537 /THE COMPLEMENT DATA THATS IN THE AC.
4538 /
4539 5447 0000 FLBUF, 0
4540 5450 3163 DCA SAVDAT /SAVE DATA WORD
4541 5451 7340 CLA CLL CMA
4542 5452 1067 TAD RGNBUF /START OF BUFFER=1
4543 5453 3210 DCA AUTO10 /SETUP AUTO INDEX
4544 5454 1124 TAD K7600
4545 5455 3162 DCA DATCNT /SETUP COUNTER
4546 5456 1163 LPDAT, TAD SAVDAT /GET FIRST WORD
4547 5457 3410 DCA I AUTO10 /STORE IN BUFFER
4548 5460 1163 TAD SAVDAT /GET SECOND WORD
4549 5461 7040 CMA /COMPLEMENT IT
4550 5462 3410 DCA I AUTO10 /STORE IN BUFFER
4551 5463 2162 ISZ DATCNT /UPDATE COUNTER
4552 5464 5256 JMP LPDAT /MORE WORDS TO GO
4553 5465 1102 TAD K1236
4554 5466 3410 DCA I AUTO10 /MAKE WORD IN BUFFER=1
4555 5467 5647 JMP I FLBUF /BUFFER FULL
4556 /
4557 /ROUTINE TO CHECK FOR WAIT AND RECALIBRATE
4558 /
4559 5470 3326 SCOPE, DCA TOTST /SAVE SCOPE LOOP POINTER
4560 5471 4404 LAS /GET SWITCH 7
4561 5472 0012 AND K0020 /MASK
4562 5473 7640 SZA CLA /WAIT LOOP?
4563 5474 4434 WATISZ /YES
4564 5475 4404 LAS /GET SWITCH 6
4565 5476 0013 AND K0040 /MASK
4566 5477 7650 SNA CLA /IS IT CLEAR DISK
4567 5500 5322 JMP NOCLR /NO, DON'T
4568 5501 7301 CLA CLL IAC /ENABLE CLEAR CONTROL
4569 5502 4453 CLRALL /CLEAR CONTROL
4570 5503 1150 TAD CMREG /GET LAST COMMAND
4571 5504 0325 AND K7577 /MASK OUT SFT DONE
4572 5505 4450 LDCMD /LOAD COMMAND
4573 5506 7326 CLA CLL CML RYL /ENABLE RECALIBRATE
4574 5507 4453 CLRALL /RECALIBRATE
4575 5510 4433 SKPWAT /WAIT FOR FIRST DONE
4576 5511 7000 NOP
4577 5512 1150 TAD CMREG /LAST COMMAND
4578 5513 1015 TAD K0200
4579 5514 4450 LDCMD /LOAD COMMAND
4580 5515 4433 SKPWAT /WAIT FOR SECOND DONE
4581 5516 7000 NOP
4582 5517 1150 TAD CMREG
4583 5520 0325 AND K7577 /MASK SET DONE
4584 5521 3150 DCA CMREG
4585 5522 7301 NOCLR, CLA CLL IAC /ENABLE CLEAR CONTROL
4586 5523 4453 CLRALL /CLEAR CONTROL
4587 5524 5726 JMP I TOTST /GO TO TEST
4588 /
4589 5525 7577 K7577, 7577
4590 5526 0000 TOTST, 0
4591 /
    
```

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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 5527 0200 GTREG, 0
4598 5530 4404 LAS /GET SWITCH A
4599 5531 0011 AND K0010 /MASK
4600 5532 7650 SNA CLA /WAS IT GET ALL REGISTERS
4601 5533 5727 JMP I GTREG /NO, GO BACK
4602 5534 2327 ISZ GTREG /YES, UPDATE POINTER
4603 5535 4404 RDSTAT /READ STATUS
4604 5536 4456 ROBUF /READ LOWER BUFFER
4605 5537 7300 CLA CLL
4606 5540 4451 LDCUR /SET CA TO 0 FOR BREAK
4607 5541 7332 CLA CLL CML RYL /ENABLE SHIFT TO LOWER BUFFER
4608 5542 4455 LDMAN /BREAK IF LAST BREAK WAS A READ
4609 5543 4454 RDCRC /READ CRC
4610 5544 4446 R0ADD /READ TRACK
4611 5545 4445 RDCMD /READ COMMAND
4612 5546 4462 CRLF
4613 5547 7301 CLA CLL IAC /ENABLE CLEAR CONTROL
4614 5550 4453 CLRALL /CLEAR CONTROL
4615 5551 1124 TAD K7600
4616 5552 5727 JMP I GTREG /EXIT
4617 /
4618 /ROUTINE TO SEND DRIVES ON AN OVERLAP SEEK
4619 /
4620 5553 0200 DOUT, 0
4621 5554 3327 DCA GTREG /SAVE ADDRESS
4622 5555 7304 RAL
4623 5556 1072 TAD DRIVNO /GET CURRENT DRIVE
4624 5557 4450 LDCMD /LOAD COMMAND REGISTER
4625 5560 1150 TAD CMREG /GET LAST COMMAND ISSUED
4626 5561 1124 TAD K3000 /ADD IN SEEK ONLY FUNCTION
4627 5562 1156 TAD WOMEMA /ADD IN CURRENT FIELD
4628 5563 4450 LDCMD /LOAD COMMAND REGISTER
4629 5564 1327 TAD GTREG /GET SAVED ADDRESS
4630 5565 4452 LDADD /LOAD AND GO
4631 5566 4447 DSKSKP /WAIT FOR FIRST DONE FLAG
4632 5567 5366 JMP =-1 /HANG IF NO SKIP
4633 5570 5753 JMP I DOUT /DISK IS OUT
4634 /
4635 /SUBROUTINE TO ISSUE "DCLR" CLEAR IOT
4636 /
4637 5571 0000 CLDR, 0
4638 5572 6742 IOT2, DCLR /DCLR "CLEAR IOT"
4639 5573 5771 JMP I CLDR /EXIT
4640 5574 4405 CLASIC
4641 5575 4436 COERR
4642 5576 7402 FRHLT2, HLT /SKIP TRAP ERROR
4643 5577 5376 JMP =-3
4644 /
4645 5600 PAGE
4646 /
    
```

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4647 /ROUTINE TO READ OR WRITE ON DISK
4648 /PRTURN+1 SKIP OR STATUS ERROR
4649 /RETURN+2 O.K.
4650 /
4651 5600 0000 /DISK, 0
4652 5601 3254 DCA SAVTRK /SAVE TRACK ADDRESS
4653 5602 7340 CLA CLL CMA /SET CRC ERROR FLAG
4654 5603 3171 DCA S0FERR /GET TEXT POINTER
4655 5604 1600 TAD I DISKG /SAVE IT
4656 5605 3172 DCA SAVPCT /UPDATE POINTER
4657 5606 2200 ISZ DISKG /GET COMMAND
4658 5607 1150 TAD CMREG /UPDATE POINTER
4659 5610 0255 AND K7501 /MASK OFF
4660 5611 1156 TAD HOMEHA /CURRENT FIELD
4661 5612 1272 TAD DRIVNO /CURRENT DRIVE
4662 5613 4450 LDCMD /LOAD COMMAND
4663 5614 1267 TAD RGNRIUF /GET BEGINNING OF BUFFER
4664 5615 4451 LDCUR /LOAD CURRENT ADDRESS
4665 5616 1254 TAD SAVTRK /GET TRACK+SECTOR
4666 5617 4452 LDADD /LOAD AND GO
4667 5620 4433 SKPWAT /WAIT FOR DISK SKIP
4668 5621 5234 JMP SKPERR /ERROR, NO SKIP
4669 5622 7330 CLA CLL CML RAR /EXPECTED STATUS
4670 5623 3143 DCA GOREG2 /SETUP COMPARE REGISTER
4671 5624 4440 ROSTAT /READ STATUS
4672 5625 1125 TAD K0000
4673 5626 7640 SZA CLA /WAS STATUS 4000
4674 5627 5236 JMP STAFRR /ERROR, STATUS
4675 5630 1165 TAD K5373 /TEXT POINTER
4676 5631 2200 ISZ DISKG /UPDATE FOR GOOD RETURN
4677 5632 3572 RTRN, DCA I SAVPCT /STORE IN TEXT POINTER
4678 5633 5600 JMP I DISKG /EXIT
4679 5634 1164 SKPERR, TAD K0306 /SKIP TEXT POINTER
4680 5635 5232 JMP RETRN /EXIT
4681 5636 1146 STAFRR, TAD STREG /GET STATUS JUST READ
4682 5637 0011 AND K0010 /MASK OUT CRC ERRORS
4683 5640 7650 SNA CLA /WERE THERE ANY
4684 5641 5252 JMP HRDERR /NO, OTHERS
4685 5642 7320 CLA CLL
4686 5643 1150 TAD CMREG /GET LAST COMMAND
4687 5644 0107 AND K7000 /MASK FUNCTION
4688 5645 1126 TAD K6000 /ADD IN FUDGE FACTOR
4689 5646 7630 SZL CLA /WAS IT A READ ALL OR READ
4690 5647 5252 JMP HRDERR /NO, MUST BE A WRITE
4691 5650 3171 DCA S0FERR /SET CRC ERROR FLAG
4692 5651 5230 JMP RETRN-2 /GO CHECK DATA OR RETURN
4693 5652 1166 HRDERR, TAD K5300
4694 5653 5232 JMP RETRN /EXIT
4695 /
4696 5654 0000 SAVTRK, 0
4697 5655 7521 K7501, 7501
4698 /
4699 /ROUTINE TO COMPARE WORDS IN BUFFER TO
4700 /KNOWN DATA PATTERN IN THE AC.
4701 /

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4702 5656 0000 FIGURE, 0
4703 5657 3143 DCA GOREG2 /SAVE FOR ERROR PRINTER
4704 5660 1267 TAD RGNRIUF /GET START OF BUFFER
4705 5661 3153 DCA ADREG /SAVE FOR ERROR PRINTER
4706 5662 1150 TAD CMREG /GET DISK NO. AND EXT. BIT
4707 5663 0101 AND K0007 /MASK THEM
4708 5664 7041 CIA
4709 5665 1553 TAD I ADREG
4710 5666 7650 SNA CLA /GET FIRST TRACK WORD
4711 5667 5273 JMP .+4 /WAS IT O.K. ?
4712 5670 1150 TAD CMREG /YES, CHECK NEXT TRACK WORD
4713 5671 0101 AND K0007 /GET DISK NO. AND EXT. BIT
4714 5672 5343 JMP DTERR /MASK THEM
4715 5673 2153 ISZ ADREG /DATA ERROR
4716 5674 1553 TAD I ADREG /UPDATE ADDRESS
4717 5675 7041 CIA /GET SECOND WORD
4718 5676 1151 TAD DAREG
4719 5677 7650 SNA CLA /COMPARE TO ADDRESS
4720 5700 5303 JMP .+3 /WAS SECOND TRACK WORD O.K.
4721 5701 1151 TAD DAREG /YES, NOW CHECK DATA
4722 5702 5343 JMP DTERR /GET GOOD INFO
4723 5703 7326 CLA CLL CML RTL /DATA ERROR
4724 5704 1123 TAD K7400
4725 5705 3162 DCA DATCNT /SETUP COUNTER
4726 5706 2153 ISZ ADREG /UPDATE ADDRESS
4727 5707 1553 TAD I ADREG /GET DATA WORD
4728 5710 7041 CIA
4729 5711 1143 TAD GOREG2
4730 5712 7640 SZA CLA /COMPARE TO GOOD ONE
4731 5713 5344 JMP DTERR+1 /WAS WORD O.K. ?
4732 5714 1143 TAD GOREG2 /NO, DATA ERROR
4733 5715 7040 CMA /GET GOOD DATA
4734 5716 3143 DCA GOREG2
4735 5717 2162 ISZ DATCNT /IT IS A COMPLEMENT DATA PATTERN
4736 5720 5306 JMP LFFIG /UPDATE BUFFER COUNTER
4737 5721 2153 ISZ ADREG /MORE TO CHECK
4738 5722 1102 TAD K1234 /UPDATE ADDRESS
4739 5723 7041 CIA
4740 5724 1553 TAD I ADREG
4741 5725 7650 SNA CLA /GET WORD IN BUFFER+1
4742 5726 5331 JMP .+3 /WAS IT O.K.
4743 5727 1102 TAD K1234 /YES ALL DATA O.K.
4744 5730 5343 JMP DTERR
4745 5731 7330 CLA CLL CML RAR /WORD LOST IN BUFFER+1
4746 5732 3143 DCA GOREG2 /EXPECTED STATUS
4747 5733 1171 TAD S0FERR /SETUP COMPARE REGISTER
4748 5734 7640 SZA CLA /GET CRC ERROR FLAG
4749 5735 5656 JMP I FIGURE /WAS IT SET
4750 5736 7340 CLA CLL CMA /NO THE BUFFER IS O.K.
4751 5737 3171 DCA S0FERR /SETUP CRC FLAG
4752 5740 1166 TAD K5300 /RESET FLAG
4753 5741 3572 DCA I SAVPCT /TEXT MESS
4754 5742 7330 CLA CLL CML RAR /SETUP TEXT POINTER
4755 5743 3143 DCA GOREG2 /EXPECTED STATUS
4756 5744 1553 TAD I ADREG /SETUP COMPARE
/GET BAD WORD

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4757 5745 3154          DCA  DTREG          /SAVE FOR PRINTER
4758 5744 2256          ISZ  FGURE          /UPDATE FOR ERROR RETURN
4759 5747 5656          JMP  I  FGURE
4760
4761          5750 2003    TEXPC, TEXT  "PC:"
          5751 7200
4762 5752 0704    TEXGD, TEXT  "GD:"
          5753 7200
4763 5754 0322    TEXCR, TEXT  "CR:"
          5755 7200
4764 5756 2324    TEXST, TEXT  "ST:"
          5757 7200
4765 5760 0402    TEXDB, TEXT  "DB:"
          5761 7200
4766 5762 0415    TEXCM, TEXT  "CM:"
          5763 7200
4767 5764 0401    TEXDA, TEXT  "DA:"
          5765 7200
4768 5766 0301    TEXCA, TEXT  "CA:"
          5767 7200
4769 5770 0104    TEXAD, TEXT  "AD:"
          5771 7200
4770 5772 0424    TEXDT, TEXT  "DT:"
          5773 7200
4771
4772          /
          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  CRREG2          /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  CRFG1          /SAVE OTHER HALF
4808 6035 5600    JMP  I  ROCR          /EXIT
4809
4810          /SUBROUTINE TO PRINT TWO OCTAL
4811          /
4812 6036 0000    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 0000    UPONE,  0
4831 6054 7300    CLA CLL
4832 6055 1262    TAD  K0215
4833 6056 4436    TYPE
4834 6057 1263    TAD  K0212
4835 6060 4436    TYPE
4836 6061 5653    JMP  I  UPONE
4837
4838 6062 0215    K0215, 0215
4839 6063 0212    K0212, 0212
4840 6064 0240    K0240, 0240
4841
4842          /ROUTINE TO PRINT FOUR OCTAL
4843          /
4844 6065 0000    FROCT,  0
4845 6066 7006    RTL
4846 6067 7006    RTL
4847 6070 3253    DCA  UPONE
4848 6071 1310    TAD  H4
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 PROCT
4863 6110 7774 M4, 7774
4864
4865 /SUBROUTINE TO PRINT TEXT
4866 /
4867 PRN, 0
4868 CLA CLL
4869 TAD I PRN /GET POINTER
4870
4871
4872 6114 2311 ISZ PRN
4873 6115 3265 DCA PROCT
4874 6116 1665 TAD I PROCT
4875 6117 0111 AND K7700
4876 6120 7050 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 PROCT
4886 6132 0112 AND K0077
4887 6133 7450 SNA
4888 6134 5345 JMP EXIT
4889 6135 1350 TAD K3700
4890 6136 7500 SNA
4891 6137 1347 TAD K4100
4892 6140 1264 TAD K0240
4893 6141 4436 TYPE
4894 6142 2265 ISZ PROCT
4895 6143 7300 CLA CLL
4896 6144 5316 JMP PRN+S
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 PRINT, 0
4907 CLASIC /CHK FOR CLASSIC
4908 CBTYPE
4909 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 DCA 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 CBERR
4927 6173 7002 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 DRIVF.
4934 /
4935 6200 0000 RESTOR, 0
4936 6201 7300 CLA CLL
4937 6202 1600 TAD I RESTOR /GET TEXT POINTER
4938 6203 3316 DCA SAVPC /SAVE FOR ERROR
4939 6204 2200 ISZ RESTOR /UPDATE PC
4940 6205 1200 TAD RESTOR /GET PC
4941 6206 3215 OCA ONLY /SAVE FOR END OF SEEK ROUTINE
4942 6207 1072 TAD DRIVNO /CURRENT DRIVE
4943 6210 1156 TAD HOMEWA /CURRENT FIELD
4944 6211 4450 LDCMD /LOAD COMMAND
4945 6212 7326 CLA CLL CML RTL /ENABLE RECALIBRATE BIT
4946 6213 4453 CLRALL /"RECALIBRATE"
4947 6214 5232 JMP CHECK /CHECK FOR ERRORS
4948
4949 6215 0000 ONLY, 0
4950 6216 3317 DCA SAVTO /SAVE LOWER TRACK BITS
4951 6217 1615 TAD I ONLY /GET TEXT POINTER
4952 6220 3316 DCA SAVPC /SAVE FOR ERROR
4953 6221 2215 ISZ ONLY
4954 6222 1150 TAD CMREG /GET COMMAND
4955 6223 0073 AND K0001 /MASK OFF EXTENDED BIT
4956 6224 1156 TAD HOMEWA /CURRENT FIELD
4957 6225 1072 TAD DRIVNO /CURRENT DRIVE
4958 6226 1104 TAD K3000 /SEEK ONLY FUNCTION
4959 6227 4450 LDCMD /LOAD COMMAND
4960 6230 1317 TAD SAVTO /GET POSITION
4961 6231 4452 LDADD /LOAD AND GO
4962 6232 4433 CHECK, SKPNAT /WAIT FOR FIRST DONE FLAG
4963 6233 5314 JMP SEKER1 /ERROR, NO SKIP
4964 6234 7330 CLA CLL CML RAR /EXPECTED STATUS
4965 6235 3143 DCA GOREG2 /SETUP COMPARE REGISTER
    
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/ PAL10 V142A 15-APR-76 13124 PAGE 1-94
4966 6236 1122 TAD K7740
4967 6237 3321 DCA RNAD
4968 6240 4444 ROSTAT
/SETUP SKIP TIMER
/READ STATUS
4969 6241 1125 TAD K4000
4970 6242 7650 SNA CLA
/AS DRIVE DONE?
/YES
4971 6243 5252 JMP ,+7
4972 6244 1176 TAD K6000
/NO, DRIVE MUST BE BUSY!
4973 6245 3143 DCA GOREG2
/EXPECTED STATUS
4974 6246 1146 TAD STREG
/GET STATUS READ
4975 6247 1173 TAD K2000
/ADD IN FUDGE FACTOR
4976 6250 7640 SZA CLA
/AS DRIVE BUSY
/NO, ERROR
4977 6251 5311 JMP SEKER2
4978 6252 1015 TAD K0200
/ENABLE SET SECOND DONE FLAG
4979 6253 1150 TAD CMREG
/ORIGINAL COMMAND
4980 6254 4450 LDCMD
/LOAD COMMAND
4981 6255 7332 DCA CLL CML RTR
4982 6256 3143 DCA GOREG2
/EXPECTED STATUS
4983 6257 4530 TICK
/APT TIMING
4984 6260 4444 ROSTAT
/READ STATUS
4985 6261 4447 DSKSKP
/FLAG SET?
4986 6262 7410 SKP
/NO
4987 6263 5274 JMP GOTSKP
/YES GOT IT!
4988 6264 1106 TAD K6000
4989 6265 7640 SZA CLA
/DRIVE BUSY?
/NO, ERROR
4990 6266 5311 JMP SEKER2
4991 6267 2365 ISZ RNWRD4
4992 6270 5257 JMP CHKSKP
4993 6271 2321 ISZ RNAD
4994 6272 5257 JMP CHKSKP
4995 6273 5314 JMP SEKER1
/ERROR, NO SKIP!
4996 6274 7330 GOTSKP, CLA CLL CML RAR
4997 6275 3143 DCA GOREG2
/SETUP EXPECTED STATUS
4998 6276 4444 ROSTAT
/READ STATUS
4999 6277 1105 TAD K4000
5000 6300 7640 SZA CLA
/AS 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
/AS 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
/
/ROUTINE TO GET A RANDOM DISK ADDRESS
/

```

```

/ PAL10 V142A 15-APR-76 13124 PAGE 1-95
5021 6321 0000 RNAD, 0
5022 6322 3361 DCA SAVPOT
/SAVE DISK NO, POINTER
5023 6323 7171 CLL IAC
5024 6324 1363 TAD RNWRD1
5025 6325 1364 TAD RNWRD2
5026 6326 7176 CLL RTL
5027 6327 3363 DCA RNWRD1
5028 6330 1364 TAD RNWRD2
5029 6331 7012 RTR
5030 6332 1363 TAD RNWRD1
5031 6333 3364 DCA RNWRD2
5032 6334 1364 TAD RNWRD2
5033 6335 7420 SNL
5034 6336 5342 JMP GOTADD
/USE THIS AS DISK ADDRESS
5035 6337 1170 TAD ENDTRK
/HAVE TO CHECK BOUNDARIES
5036 6340 7200 CLA
5037 6341 1364 TAD RNWRD2
5038 6342 3365 GOTADD, DCA RNWRD4
/GET SAME
/SAVE WORD
5039 6343 1362 TAD DSKSAV
/GET POINTER
5040 6344 1361 TAD SAVPOT
/ADD IN DRIVE NUMBER
5041 6345 3361 DCA SAVPOT
/MAKE ADDRESS
5042 6346 1365 TAD RNWRD4
/GET WORD
5043 6347 3761 DCA I SAVPOT
/STORE IT
5044 6350 1361 TAD SAVPOT
5045 6351 1076 TAD K0004
/ADD IN FUDGE FACTOR
5046 6352 3361 DCA SAVPOT
/MAKE ADDRESS
5047 6353 7000 RAL
/GET THE LINK
5048 6354 3761 DCA I SAVPOT
/SAVE EXTENDED BIT
5049 6355 1761 TAD I SAVPOT
/GET IT
5050 6356 7110 CLL RAR
/SHIFT
5051 6357 1365 TAD RNWRD4
/GET WORD
5052 6360 5721 JMP I RNAD
/EXIT
5053
5054 6361 0000 SAVPOT, 0
5055 6362 6366 DSKSAV, DSK0A
5056 6363 1234 RNWRD1, 1234
5057 6364 2345 RNWRD2, 2345
5058 6365 0000 RNWRD4, 0
5059 6366 0000 DSK0A, 0
5060 6367 0000 DSK1A, 0
5061 6370 0000 DSK2A, 0
5062 6371 0000 DSK3A, 0
5063 6372 0000 DSK0B, 0
5064 6373 0000 DSK1B, 0
5065 6374 0000 DSK2B, 0
5066 6375 0000 DSK3B, 0
5067
5068 6400 PAGE
/
5069
/ROUTINE FOR "NO ERRORS" AND SCOPE
/LOOPS, UPDATE UP COUNTER "REG1" ON EVERY ENTRY.
/
5070
5071
5072
5073 6400 0000 NFRD, 0
5074 6401 2200 ISZ NERRO
5075 6402 7300 CLA CLL

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5076 6403 4530 TICK
5077 6404 1620 TAD I NERRO
5078 6405 3173 DCA RESTRY /GET RSTART ADDRESS
5079 6406 4405 CLASIC /STORE
5080 6407 4440 C8CKPA
5081 6410 7000 NOP
5082 6411 4400 LAS /GET SWITCH 0
5083 6412 0215 AND K0200 /MASK
5084 6413 7650 SNA CLA /PROGRAM HALT
5085 6414 5223 JMP .+4
5086 6415 4405 CLASIC
5087 6416 4437 C8CKPA
5088 6417 7400 STPHLT, HLT /STOP HALT FROM SWR#1
5089 6420 4400 LAS /GET SWITCH 1
5090 6421 7000 RAL
5091 6422 7720 SNA CLA
5092 6423 5226 JMP .+3 /IS IT SCOPE LOOP
5093 6424 1620 TAD I NERRO /NO
5094 6425 5640 JMP I NSCOPE /GET RETURN POINTER
5095 6426 1131 TAD RFG0 /CHECK FOR WAIT AND RETURN
5096 6427 7640 SZA CLA /1 OR 4096 PASSES
5097 6430 5233 JMP NEXTST /1 PASS PER TEST
5098 6431 2130 ISZ REG1 /UPDATE UPCOUNTER
5099 6432 5573 JMP I RESTRY /BACK TO SAME TEST
5100 6433 7301 NEXTST, CLA CLL IAC /ENABLE CLEAR CONTROL
5101 6434 4453 CLRALL /CLEAR CONTROL
5102 6435 2220 ISZ NERRO /UPDATE PC STORE
5103 6436 2220 ISZ NERRO /UPDATE PC STORE
5104 6437 5600 JMP I NERRO /TO NEXT SEQUENTIAL TEST
5105
5106 6440 5470 / NSCOPE, SCOPE
5107
5108 /ROUTINE TO DO HALF BLOCK DATA CHECKS
5109 /
5110 6441 0200 HFCHK, 0
5111 6442 3143 DCA GOREG2 /SETUP FOR ERROR PRINTER
5112 6443 1267 TAD RGNRUF /GET START OF BUFFER
5113 6444 3153 DCA ADREG /FOR ERROR PRINTER
5114 6445 1150 TAD CMREG
5115 6446 0101 AND K0007
5116 6447 7041 CIA
5117 6450 1553 TAD I ADREG
5118 6451 7650 SNA CLA /COMPARE TO BUFFER WORD
5119 6452 5256 JMP .+4 /SAME ?
5120 6453 1150 TAD CMREG /YES
5121 6454 0101 AND K0007
5122 6455 5337 JMP HFERR /NO
5123 6456 2153 ISZ ADREG /UPDATE ADDRESS
5124 6457 1553 TAD I ADREG
5125 6460 7041 CIA
5126 6461 1151 TAD DAREG /COMPARE TO DISK ADDRESS
5127 6462 7650 SNA CLA /SAME????
5128 6463 5266 JMP .+3 /YES
5129 6464 1151 TAD DAREG
5130 6465 5337 JMP HFERR /NO

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5131 6466 2153 ISZ ADREG /UPDATE ADDRESS
5132 6467 7526 CLA CLL CML RTL
5133 6470 1124 TAD K7600
5134 6471 3162 DCA DATCNT /SETUP COUNTER FOR FIRST HALF
5135 6472 1553 HFRR1, TAD I ADREG
5136 6473 7041 CIA
5137 6474 1143 TAD GOREG2
5138 6475 7640 SZA CLA /COMPARE TO GOOD VALUE
5139 6476 5340 JMP HFERR+1 /WHERE THEY THE SAME
5140 6477 2153 ISZ ADREG /ERROR, DATA BREAK
5141 6500 1143 TAD GOREG2 /UPDATE ADDRESS POINTER
5142 6501 7040 CMA
5143 6502 3143 DCA GOREG2 /NEXT WORD IS COMPLEMENT
5144 6503 2162 ISZ DATCNT
5145 6504 5272 JMP HFRR1 /MORE TO TEST IN FIRST HALF
5146 6505 1124 TAD K7600
5147 6506 3162 DCA DATCNT
5148 6507 3143 DCA GOREG2 /SETUP COUNTER
5149 6510 1553 HFRR2, TAD I ADREG /REST OF BUFFER SHOULD BE 0000
5150 6511 7640 SZA CLA
5151 6512 5337 JMP HFERR /WAS IT 0
5152 6513 2153 ISZ ADREG /ERROR
5153 6514 2162 ISZ DATCNT
5154 6515 5310 JMP HFRR2
5155 6516 1553 TAD I ADREG /MORE TO CHECK
5156 6517 7041 CIA /GET WORD IN BUFFER+1
5157 6520 1102 TAD K1234
5158 6521 7650 SNA CLA
5159 6522 5325 JMP .+3 /WAS IT 0,K.?
5160 6523 1122 TAD K1234 /YES
5161 6524 5337 JMP HFERR
5162 6525 7330 CLA CLL CML RAR /ERROR, BUFFER+1
5163 6526 3143 DCA GOREG2 /EXPECTED STATUS
5164 6527 1171 TAD SOFERR /SETUP COMPARE REGISTER
5165 6530 7640 SZA CLA /GET CRC ERROR FLAG
5166 6531 5641 JMP I HFCHK /WAS IT SET
5167 6532 7340 CLA CLL CMA /NO ERRORS
5168 6533 3171 DCA SOFERR
5169 6534 1166 TAD K5300 /RESET CRC ERROR FLAG
5170 6535 3572 DCA I SAVPCT /TEXT
5171 6536 7330 CLA CLL CML RAR /SET UP POINTER
5172 6537 3143 HFERR, DCA GOREG2 /EXPECTED STATUS
5173 6540 1553 TAD I ADREG /SETUP COMPARE
5174 6541 3154 DCA DTREG /GET RAD WORD
5175 6542 2241 ISZ HFCHK /SAVE FOR PRINTER
5176 6543 5641 JMP I HFCHK
5177
5178 /SUBROUTINE TO LOAD COMMAND REGISTER
5179 /
5180 6544 0200 LOCH, 0
5181 6545 3150 DCA CMREG /SAVE OUTBOUND DATA
5182 6546 4405 CLASIC
5183 6547 4400 C8CKPA
5184 6550 7000 NOP
5185 6551 1150 TAD CMREG

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5186 6552 6746 TOT6, DLOC /LOAD COMMAND REGISTER
5187 6553 5744 JMP I LDCM /EXIT
5188 6554 4405 CLASIC /CHECK FOR CLASSIC.
5189 6555 4436 CBERR /ROUTINE TO EXECUTE.
5190 6556 7402 ERHLT6, HLT /SKIP TRAP ERROR.
5191 6557 5354 JMP .=-3
5192 /
5193 6560 2405 NMES2, TEXT "TEST (Y=YES OR N=NO):"
6561 2324
6562 4050
6563 3175
6564 3105
6565 2340
6566 1722
6567 4016
6570 7516
6571 1751
6572 7200

5194 /
5195 6600 PAGE
5196 /
5197 /ROUTINE TO CHANGE PROGRAM DEVICE CODES
5198 /
5199 6600 4405 CHANG, CLASIC
5200 6601 4431 CASWIT
5201 6602 7300 NDP
5202 6603 4404 LAS
5203 6604 0227 AND K0770
5204 6605 3631 DCA I KMFCHK /SAVE DESIRED CODE
5205 6606 1235 TAD CCNTR1
5206 6607 3632 DCA I KNERR0
5207 6610 1236 TAD CHNPT0
5208 6611 3733 DCA CNGSAV
5209 6612 1633 CHANGR, TAD I CNGSAV /GET ADDRESS POINTER
5210 6613 3000 DCA 0 /SAVE IT
5211 6614 1400 TAD I 0 /GET OLD IOT CODE
5212 6615 0234 AND K7007 /MASK
5213 6616 1631 TAD I KMFCHK /ADD IN DESIRED
5214 6617 3400 DCA I 0 /CHANGE CORE
5215 6620 2233 ISZ CNGSAV /UPDATE ADDRESS POINTER
5216 6621 2632 ISZ I KNERR0 /UPDATE CHANGE COUNTER
5217 6622 5212 JMP CHANGR
5218 6623 4405 CLASTC
5219 6624 4436 CBERR
5220 6625 7402 CHNHLT, HLT /DEVICE CODES CHANGED
5221 6626 5630 JMP I RSTRT /TO START PROGRAM AT
5222 / /LOCATION 02001 IF ON CLASSIC
5223 / /CONSOLE PACKAGE HIT CONTROL
5224 / /E. IF NOT PRESS KEY CONTINUE.
5225 6627 0770 K0770, 0770
5226 /
5227 6630 2200 RSTRT, RGN
5228 6631 6441 KMFCHK, HFCMK
5229 6632 6400 KNERR0, NERR0
5230 /

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```

5231 6633 2200 CNGSAV, 0
5232 6634 7007 K7007, 7007
5233 6635 7746 CCNTR1, 7746
5234 6636 6637 CHNPT0, CHNPT0+1
5235 6637 1701 IOT1
5236 6640 5572 IOT2
5237 6641 6167 IOT3
5238 6642 4772 IOT4
5239 6643 5155 IOT5
5240 6644 6552 IOT6
5241 6645 4132 IOT7
5242 6646 2650 IOT1A1
5243 6647 2647 IOT3A1
5244 6650 2643 IOT4A1
5245 6651 2652 IOT5A1
5246 6652 2645 IOT6A1
5247 6653 3731 IOT1A2
5248 6654 3255 IOT2A2
5249 6655 3030 IOT3A2
5250 6656 3224 IOT4A2
5251 6657 3033 IOT5A2
5252 6660 3226 IOT6A2
5253 6661 2215 T2810A
5254 6662 2017 T2810B
5255 6663 2322 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 2124
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 2440
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"

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6721 2313
6722 4001
6723 0004
6724 2205
6725 2323
6726 4022
6727 0507
6730 1123
6731 2405
6732 2740
6733 2522
6734 2217
6735 2200
5265 6736 2411 FRTX4, TEXT "DISK DATA ERROR"
6737 2313
6740 4004
6741 2124
6742 2140
6743 2522
6744 2217
6745 2200
5266 6746 2322 FRTX5, TEXT "CRC REGISTER ERROR"
6747 2340
6750 2205
6751 2711
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 2411 FRTX7, TEXT "DISK SKIP ERROR"
6773 2313
6774 4023
6775 1311
6776 2040
6777 2522
7000 2217
7001 2200
5269 7002 2411 FRTX8, TEXT "DISK INTERRUPT ERROR"
7003 2313
7004 4011
7005 1624
7006 2522
7007 2225
    
```

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7010 2024
7011 4005
7012 2222
7013 1722
7014 0000
5270 /
5271 7015 4020 /TXEND, TEXT " PASS COMPLETE"
7016 2123
7017 2340
7020 2317
7021 1520
7022 1405
7023 2405
7024 2000
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 R2
5283 7027 0105 AND K0000 /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
5288 7034 3022 DCA 22 /NOP CONSOLE PACKAGE
5289 7035 1107 TAD K7000
5290 7036 3701 DCA I XMYLAS /NOP SWITCH REGISTER ROUTINE
5291 7037 3362 DCA CLKCNT /NOP SWITCHES
5292 7040 3072 DCA DRIVNO
5293 7041 1022 TAD 22 /START WITH DRIVE 0.
5294 7042 2075 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 KTICK
5301 7051 1022 APTAR, TAD 22
5302 7052 2014 AND K0100
5303 7053 7650 SNA CLA /SINGLE DRIVE TEST?
5304 7054 9264 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 3327 DCA PCSAV
5315 7067 7240 CLA CMA
5316 7070 3727 DCA I PCSAV /SET ACTIVE INDICATOR.
5317 7071 2362 ISZ CLKCNT
5318 7072 2330 ISZ KTICK
5319 7073 5251 JMP APTAR
5320 7074 1071 TAD DRVCNT
5321 7075 3070 DCA DRVHAV /TALLY FOR AMOUNT OF DRIVES.
5322 7076 5702 JMP I TSTOP /RETURN WITH CONSOLE PACKAGE
5323 /NOP AND SWITCH REGISTER NOP.
5324 /
5325 7077 4374 XDSKON, DSKON
5326 7100 7377 K7377, 7377
5327 7101 5100 MYLARS, MYLARS+3
5328 7102 2233 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 AFRRO, 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 AFRRO /NO
5339 7111 7340 CLL CLA CMA /SET UP FOR GETTING ERROR PC
5340 7112 1725 TAD I PERPRD /GET ERROR PC
5341 7113 3327 DCA PCSAV /STORE FOR FUTURE USE
5342 7114 6000 IOF /DISABLE INTERRUPT SYSTEM
5343 7115 6224 RIF /SET UP FOR DATA FIELD IN ERROR
5344 7116 1121 TAD KCDF /ESTABLISHES DATA FIELD
5345 7117 3321 DCA .+2
5346 7120 1327 TAD PCSAV /GET ERROR ADDRESS
5347 7121 7492 HLT /REPLACED WITH ERROR DATA FIELD
5348 7122 6272 CIF 70 /FIELD OF UVPRM
5349 7123 5726 JMP I K6520 /REPORT ERROR
5350 7124 5703 JMP I AFRRO /RETURN TO THE NORMAL REPORTING
5351 /
5352 7125 5200 PERRDR, ERRO /POINTER TO PC IN ERROR
5353 7126 6520 K6520, 6520 /POINTER TO UV PROM ADDRESS
5354 7127 0000 PCSAV, 0 /PLACE WHERE ERROR PC IS STORED
5355 /
5356 /THIS ROUTINE IS A NOP IF NOT BEING USED ON THE APT LINE.
5357 /IF APT IS ENABLED A TIMING PULSE IS GENERATED AT
5358 /APPROXIMATELY 1.5 SECOND INTERVALS
5359 /
5360 7130 0000 KTICK, 0
5361 7131 1022 TAD 22 /GET HARDWARE CONFIGURATION
5362 7132 0105 AND K4000 /TEST FOR APT EACH TIME
5363 7133 7650 SNA CLA
5364 7134 5730 SNA I KTICK /NO TIMING GENERATED
5365 7135 2362 ISZ CLKCNT /SEE IF TIMING NEEDS TO BE DONE
5366 7136 5730 JMP I KTICK /NO. RETURN TO MAIN FLOW
5367 7137 1361 TAD COUNT /INIT FIRST CLOCK
    
```

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5368 7140 3362 DCA CLKCNT
5369 7141 2175 ISZ KCNT /FOR TESTS REQUIRING LONGER TIME OUT ON APT
5370 7142 5730 JMP I KTICK /RETURN, NOT READY TO NOTIFY APT
5371 7143 6224 RIF /START SETUP FOR UV PROM
5372 7144 1121 TAD KCDF
5373 7145 3347 DCA .+2 /WILL ESTABLISH CURRENT DATA FIELD
5374 7146 6000 IOF
5375 7147 7492 HLT /CHANGED TO CURRENT DATA FIELD
5376 7150 6272 CIF 70 /LOCATION OF UVPRM
5377 7151 4763 JMS I K6500 /LET APT KNOW YOU ARE RUNNING
5378 7152 7300 CLL CLA /MAKE SURE AC AND LINK ARE CLEAR
5379 7153 1361 TAD COUNT
5380 7154 3362 DCA CLKCNT /INITIALIZE CLOCK COUNTER
5381 7155 1360 TAD CNT
5382 7156 3175 DCA KCNT
5383 7157 5730 JMP I KTICK
5384 /
5385 7160 7777 CNT, =1
5386 7161 7777 COUNT, 7777
5387 7162 0000 CLKCNT, 0
5388 7163 6500 K6500, 6500 /POINTS TO UV PROM
5389 /
5390 7177 +7177
5391 /
5392 7177 WRKRUF=.
5393 /
5394 7177 HJTRK=.
5395 7200 IOTRKE.+1
5396 /
5397 7576 ENDRUF.+377
5398 /
5399 7577 STRCHK.+400
5400 /
5401 $$$
    
```



A7577	6320	C88ETD	0613	DCLR	6742	ERMLT1	4761
ACCPM1	4442	C88ET8	0535	DCNT1	4370	ERMLT2	5576
ACCPM2	4443	C88W17	4431	DCNT2	4371	ERMLT3	6173
ACL	7701	C88W17	0745	DCNT3	4372	ERMLT4	4776
ACREG	0155	C8TYP1	1021	DCNT4	4373	ERMLT5	5161
ACSAVE	1345	C8TYVI	4426	DIN	4530	ERMLT6	4556
ADREG	0153	C8TYPE	4435	DISK0	1561	ERMLT7	4136
AERRO	7103	CAF	6007	DISK1	1562	ERMLT9	9344
AGAIN	5325	CAREG	0152	DISK2	1563	ERR1	0736
ALLBAK	4242	CCNTR1	6635	DISK3	1564	ERRA1	5217
AP41	5045	CHANG	6600	DISK4	1565	ERRME3	1320
APERR	5066	CHANGR	6612	DISK5	1566	FRRO	5200
APMLT1	5073	CHECK	6232	DISK6	1567	ERROR	4440
APR1	5024	CHKCLA	1200	DISK7	1570	ERTX1	6671
AP78	7025	CHKERR	5342	DISK8	5600	ERTX2	6704
APT0R	7051	CHKNEX	4432	DISKGO	4426	ERTX3	6720
AUTC10	0010	CHKSKP	6257	DLG	6743	ERTX4	6736
AUTPRO	5000	CMNHLT	6625	DLCA	6744	ERTX5	6746
RGN	0200	CMNPOT	6636	OLDC	6746	ERTX6	6760
BGNBUF	0067	CKCOUT	0232	DMAN	6747	ERTX7	6772
BYRETR	0506	CLASIC	4405	DOCNT	0247	ERTX8	7002
C8BY1	0230	CLASTK	5102	DONEA	0426	EACPOE	5357
C8BY2	1300	CLDR	5571	DOPACK	0212	EXIT	6145
C8BY3	1061	CLKCNT	7142	DOSET	0251	EXITA	0440
C8BY4	0515	CLRALL	4453	DOIT	5553	F10P1	0021
C8BY5	1116	CLRTRN	1315	DRIVNO	0072	F10P2	0022
C8CHAP	1075	CMREG	0150	DRST	6745	F10P3	0020
C8CKP	1022	CNGSAV	6633	DRVCNT	0071	F10P4	0020
C8CKPA	4440	CNT	7140	DRVHAV	0070	FIGURE	5654
C8CKSW	4425	CNTRLC	0551	DSK0A	6366	FILRUF	4431
C8CNTR	4427	CNTRLD	0600	DSK0B	6372	FILCNT	1040
C8CONT	1145	CNTRLE	0545	DSK1A	6367	FILLER	1037
C8CRLF	4433	CNTRLL	0537	DSK1B	6373	FLRUF	5447
C8D01	0310	CNTRLD	0500	DSK2A	6370	FLSAVE	1347
C8D010	1262	CNTRLR	0511	DSK2B	6374	PROCT	6065
C8D011	0607	CNTRLS	0521	DSK3A	6371	GRREG1	0142
C8D02	1033	CNTRLS	0252	DSK3B	6375	GRREG2	0143
C8D03	0390	COMP1	4557	DSK4D	4526	GETCH1	0703
C8D04	1006	COMP2	3600	DSKIN	4407	GETDAT	0456
C8D07	0527	CONSOL	0000	DSKON	4374	GETDRV	4345
C8FCHO	4434	CONST1	1366	DSKOUT	4406	GORAK	6312
C8ERR	4436	COUNT	7161	DSKP	6741	GOITA	0443
C8GET	0620	CRERR	3614	DSKPT	4527	GOTADD	0302
CRHANG	1122	CRIF	4462	DSKSAV	6362	GOTDA	0454
CRINQU	4437	CRREG1	0144	DSKSKP	4447	GOTSXP	6274
C8OCTA	4432	CRREG2	0145	RTERR	5743	GTF	0004
C8PAB6	4420	CRWRD1	0160	RTREG	0154	GTYREG	5527
C8PAUS	4441	CRWRD2	0161	ENDBUF	7576	HAFCHK	4427
C8PRNT	4430	CYL450	0065	ENDHLT	4122	HEDHLT	4021
C8RDP8	0666	DAREG	0151	ENDIT	0742	HEDLST	5370
C8RETR	0614	DATCNT	0162	ENDTRK	0170	HEDYAD	5367
C8RETR	0536	DRREG	0147	ENDTST	4062	HFCMK	6441

HFERR	6537	K0240	6064	LOCMD	4450	OVRROK	4435
HFR1	6472	K0260	4364	LOCR	4451	OVRERR	4254
HFR2	6510	K0277	4366	LOMAN	4455	OVRSLP	4200
HITPK	7177	K0306	0164	LOMN	4131	OVRSK	4233
HOMEHA	0156	K0331	4365	LOADCT	1355	OVRRI	4203
HRDEER	5652	K0400	0016	LOTRK	7200	OVRRE2	4206
ICNTR1	4763	K0770	6627	LPDAT	5456	OVRRE3	4221
ICNTR2	4764	K1000	0017	LPTFG	5706	OVRRO1	4403
INDEXA	0455	K1234	0102	M12	0126	OVRRO2	4406
INHIBT	5361	K2000	0103	M4	6110	OVRRO3	4421
INMODE	1076	K2525	0113	MANPRO	2706	OVRRED	4400
INTADD	4743	K3000	0104	MANUAL	4600	PASCNT	0250
INTRQ	0363	K3740	6150	MESA	0747	PCLF	6662
INWHAT	4401	K4000	0105	MESAC	1333	PCNTR1	5365
IONKT	4727	K4100	6147	MESFL	1341	PCNTR2	5366
IOD1	1001	K5000	0115	MESHAN	1146	PCSAV	7127
IOD1A1	2650	K5252	0114	MESMO	1336	PCSAVE	1304
IOD1A2	3031	K5300	0166	MESPAS	0253	PERROR	7125
IOD2	5572	K5373	0165	MESPC	1330	PNTBUF	1120
IOD2A2	3055	K5400	0364	MPERR	2771	POLERR	4427
IOD3	6167	K6000	0106	MPMLT1	2734	PRINT	6151
IOD3A1	2647	K6304	0167	MPMLTP	2776	PRN	6111
IOD3A2	3030	K6500	7163	MRR1	2735	PRNTER	4457
IOD4	4772	K6520	7126	MQA	7501	PRSFLO	0222
IOD4A1	2643	K7000	0107	MQL	7421	PSIE	6665
IOD4A2	3024	K7007	6634	MQSAVE	1346	PSKE	6663
IOD5	5155	K7156	3772	MYAC	1317	PSKF	6661
IOD5A1	2652	K7377	7100	MYLAS	5075	PSYB	6664
IOD5A2	3033	K7400	0123	NOIN	4553	PTSTOR	0336
IOD6	6552	K7501	5655	NERR0	6400	RANADD	4423
IOD6A1	2645	K7577	5525	NERROR	4437	ROAD	4140
IOD6A2	3026	K7600	0124	NEXOSK	4123	ROADD	4446
IOD7	4132	K7700	0111	NEXTST	6433	ROBF	5400
K0001	0073	K7707	4726	NL7775	7346	ROBUF	4456
K0002	0074	K7740	0122	NMES1	0760	RDCM	5412
K0003	0075	K7760	0110	NMES2	6560	RDCMD	4445
K0004	0076	K7771	0116	NMES3	4165	RDCR	6000
K0005	0077	KAERR0	0127	NOCLR	5522	RDCRC	4454
K0006	0100	KCDF	0121	NOSET	0242	ROST	5154
K0007	0101	KCNT	0175	NOTDON	4230	ROSTAT	4444
K0010	0011	KHFCMK	6631	NOTEX	5350	REALPC	1316
K0017	0117	KILBUF	4432	NSCOPE	6440	RECAL	4425
K0020	0012	KLBUF	5435	NTCLAS	1270	REDBAK	4510
K0037	0120	KNERR0	6632	NTCRC	5301	RENDA	0415
K0040	0013	KRMF	2362	NTGD	5244	REG0	0131
K0077	0112	KTICK	7130	NTSEK	4666	REG1	0132
K0100	0014	KTIME	0174	NXTOSK	4274	RESEK	0022
K0177	4367	LAS	4404	OCTEL	4460	RESTOR	6200
K0200	0015	LDAD	6164	ONLY	6215	RESTRY	0173
K0207	5356	LDADD	4452	OP1	0021	RETRN	5632
K0212	6063	LDCA	4765	OP2	0022	RETRN2	5360
K0215	6062	LOCM	6544	OVRDER	4522	RNAD	6321

RNWRD1	6363	T149E	1063	T2910A	2100	T40R	3242
RNWRD2	6364	T15E	1106	T2910B	2102	T40S	3246
RNWRD4	6365	T15T	1110	T2910C	2105	T40T	3265
ROUINS	1302	T16E	1126	T2910D	2110	T41E	3337
ROUTNP	5133	T16T	1130	T290K	2132	T41R	3272
RSTRY	6630	T17E	1171	T29R	2074	T41S	3306
SANDSK	4073	T17S	1135	T29T	2137	T41T	3361
SAVAC	5132	T17T	1173	T29W	2126	T42E	3447
SAVDAT	0163	T18E	1237	T2E	0323	T42R	3402
SAVPC	6316	T18S	1204	T30D	2200	T42S	3406
SAVPCT	2172	T18T	1241	T30E	2207	T42T	3451
SAVPOT	6361	T19E	1267	T30R	2142	T43E	3512
SAVTD	6317	T19OK	1266	T30T	2211	T43R1	3454
SAVTRK	5654	T19T	1271	T31E	2257	T43R2	3461
SBCNT1	0133	T1E	0275	T31R	2214	T43T	3514
SCOPE	5470	T20E	1317	T31T	2261	T44E	3557
SOKP	1000	T20OK	1316	T32E	2372	T44OK	3567
SEEK	4424	T20T	1321	T32R1	2271	T44R	3526
SEKER1	6314	T21E	1350	T32R2	2312	T44T	3572
SEKER2	6311	T21OK	1347	T32R3	2331	T45A1	3604
SELDK	4260	T21T	1352	T32R4	2353	T45A2	3720
SETUP1	1233	T22E	1442	T32T	2374	T45E	3765
SETUP2	0225	T22R1	1400	T33E	2507	T45R1	3634
SKPERR	5634	T22R2	1423	T33R1	2404	T45R2	3650
SKWAY	4433	T22T	1444	T33R2	2431	T45R3	3711
SKWAT	5134	T23E	1506	T33R3	2450	T45R4	3723
SOFERR	0171	T23R1	1451	T33R4	2467	T45SC	3626
STAERR	5636	T23R2	1470	T33T	2511	T45T	3767
STCON	0157	T23T	1510	T34E	2546	T4E	0404
STPCHK	7577	T24E	1554	T34T	2550	T4T	0406
STPHLY	6417	T24S	1513	T34E	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	3157	T9E	0532
T11P1	0602	T27R1	1723	T38E	3146	T9OK	0531
T11R2	0612	T27R2	1745	T38OK	3156	T9R	0507
T11R3	0616	T27T	1767	T38R	3115	T9T	0534
T11T	0641	T28E	2055	T38T	3161	TARLA	0461
T12A	0673	T2810A	2015	T390E	3235	TABLB	0471
T12E	0677	T2810B	2017	T39E	3224	TAPROT	0570
T12R	0654	T2810C	2022	T39OK	3234	TCNTR1	0134
T13A	0747	T2810D	2025	T39R	3173	TCNTR2	0135
T13E	0753	T28OK	2052	T39T	3237	TCNTR3	0136
T13R	0707	T28R	2010	T3E	0355	TCNTR4	0137
T14KE	1067	T28T	2057	T3T	0357	TCNTR5	0140
T14R	1013	T29E	2135	T40E	3263	TCNTR6	0141

TEXAD	5770	T8T37	2262	X00LPY	1112		
TEXCA	5766	T8T33	2400	X0NSW	0520		
TEXCM	5742	T8T34	2514	X0OUT	0006		
TEXCR	5754	T8T35	2551	X0SKDN	7077		
TEXDA	5764	T8T36	2622	XERR0	0040		
TEXDB	5760	T8T37	3002	XFGURE	0030		
TEXDT	5772	T8T38	3105	XFLRUF	0031		
TEXEND	7015	T8T39	3164	XFROCT	0060		
TEXGD	5752	T8T4	0400	XGTREG	5362		
TEXPC	5750	T8T40	3240	XMFCHK	0027		
TEXST	5756	T8T41	3270	XMITRK	0064		
THSFLD	0035	T8T42	3400	XIONWT	0041		
TICK	4530	T8T43	3452	XKLBUF	0032		
TIMSTP	3541	T8T44	3517	XLAP	4163		
THANE	4722	T8T45	3622	XLAS	0004		
THANOK	4721	T8T5	0411	XLNAD	0052		
THANS	4643	T8T6	0423	XLOCA	0051		
THANT	4724	T8T7	0440	XLNOM	0050		
TMPCNT	0746	T8T8	0454	XLDNM	0055		
TMPROT	2773	T8T9	0502	XLOAD	0125		
TOCT	6036	T8TCHA	0715	XLOTRK	0043		
TOTST	5526	T8TSEK	0067	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	XRNOM	0045		
TST13	0702	WTISZ	4000	XRNCR	0054		
TST14	1010	XC0CKP	1041	XRNST	0044		
TST14P	0757	XC0CNT	0400	XREG	5364		
TST15	1073	XC0CRL	1023	XREFSTR	0025		
TST16	1111	XC0ECH	1063	XRNAD	0023		
TST17	1133	XC0ERR	1207	XSNKP	0047		
TST18	1202	XC0IND	0635	XSKWAT	0033		
TST19	1242	XC0OCT	1000	XTABLA	0457		
TST2	0301	XC0PAS	0200	XTABLB	0460		
TST20	1272	XC0PAU	0337	XTEXT	5363		
TST21	1322	XC0PNT	0303	XTICK	0130		
TST22	1400	XC0PSW	0656	XTOCT	0061		
TST23	1445	XC0SW	0262	XWTISZ	0034		
TST24	1511	XC0TTY	0272				
TST25	1600	XC0TYP	1077				
TST26	1645	XCLAS	0005				
TST27	1717	XCLDR	0053				
TST28	1773	XCOMP1	0042				
TST29	2062	XCOMP2	0043				
TST3	0326	XCRLF	0062				
TST30	2140	X0IN	0007				
TST31	2212	X0ISKG	0026				









I073A1	2912#	5243																				
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I077	3722#	5241																				
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K0004	1192#	3706	3942	5045																		
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K0006	1194#	1385	2953	4065	4212																	
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	2741	2762	2782	3375																		
K0040	1137#	1393	1580	4565																		
K0077	1204#	1618	4886																			
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K1234	1196#	4553	4738	4743	5157	5160																
K2002	1197#	4227	4975																			
K2525	1205#	1863	1884	1952	1978	2018	2037	2075	2104	2200	2336	2369	2559									
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	3355	3396	3447	3506	3579	3580	4217	4258														
K3020	1198#	1701	1762	3647	3660	4626	4958															
K3740	4889	4902#																				
K4000	1199#	1914	2132	2241	2346	2417	2422	2722	2745	2815	2818	2916	2932	3059								
	3130	3190	3280	3340	3432	3533	3693	3766	3952	4012	4672	4969	4994	5283								
K4100	4891	4901#																				

K5000	1207#	1812	1834	1865	1957	1991	2023	2082	2180	2291	2394	2512	2561	2620								
	2640	2850	2907	2963	2978	4106	4222	4237														
K5252	1208#	1912	1932	1986	2004	2125	2153	2235	2260	2281	2315	2610	2664	2714								
K5300	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																			
K6502	5377	5388#																				
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K7000	1201#	1381	3223	4099	4105	4687	5289															
K7007	5212	5232#																				
K7156	3500	3605#																				
K7377	5287	5326#																				
K7400	1213#	4529	4724																			
K7521	4659	4697#																				
K7577	4571	4583	4589#																			
K7600	1214#	4544	4615	5133	5146																	
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	4157	4317	4966																			
K7760	1202#	2507	2555	2565	2573	3256	3517	3525	3561	3566	3650	3663										
K7771	1208#	4424																				
KAERRO	1223#	4353																				
KCDF	1211#	1275	5344	5372																		
KCNT	1262#	3495	3698	5369	5382																	
KHFCHK	5204	5213	5224#																			
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KLBUF	1156	4525#	4534																			
KNERRO	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	4568	4564								
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LDAD	1172	4920#	4924																			
LDADD	1102#	1387	1703	1766	2821	2852	2873	3126	3186	3428	3651	3664	4238</									





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T29T	2459	2462	2499#												
T29W	2478	2490#													
T2E	1359	1364	1371#												
T30D	2533	2536#													
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T35E	2879#														
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T36N	2931	2937#													
T36R	2924#	2926	2938												
T36T	2940#														
T37A	3061	3073#													
T37E	3070	3080	3093#												
T37R	3042#	3087	3091												
T37T	3038	3069	3076	3095#											
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T39T	3211	3216#													
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T41E	3278	3285	3291	3297	3301	3307#									
T41R	3254#	3305													
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T41T	3277	3284	3290	3296	3309#										
T42E	3336	3345	3348	3354	3358	3362#									
T42R	3325#	3360													
T42S	3329#														
T42T	3337	3344	3347	3353	3364#										
T43E	3387	3395	3399	3403#											
T43R1	3373#	3401													
T43R2	3378#	3389													
T43T	3386	3394	3405#												
T44E	3434	3447#													
T44OK	3446	3455#													
T44R	3422#	3441	3445												
T44T	3453	3458#													
T45A1	3507	3516#													
T45A2	3553	3561#													
T45E	3538	3576	3583	3598#											
T45R1	3508#	3545													
T45R2	3520#	3543													
T45R3	3554#	3591													
T45R4	3564#	3588													
T45SC	3582#	3596													
T45T	3537	3575	3600#												
T4E	1431	1437#													
T4T	1437	1435#													
T5E	1450	1452#													
T5T	1449	1454#													
T6E	1467	1470	1472#												
T6T	1466	1469	1474#												
T7E	1486	1489	1491#												
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T9R	1535#	1547	1552												
T9T	1539	1556#													
TABLA	404	406#													
TABLB	405	415#													
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	2464	2471	2480	2486	2494	2508	2514	2521	2540	2556	2563	2571	2589	2609	
	2615	2626	2632	2635	2646	2653	2658	2668	2675	2679	2688	2713	2717	2728	
	2734	2740	2751	2758	2761	2770	2777	2781	2791	3031	3046	3052	3081	3088	
	3114	3125	3133	3140	3175	3185	3193	3200	3259	3275	3288	3326	3334	3342	
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	3662	4058	4062	4063	4064	4098	4104	4109	4116	4119					
TCNTR2	1228#	1502	1505	1509	1515	1534	1535	1548	1551	1568	1571	1579	1581	1587	
	1610	1623	1654	1657	1663	1672	1686	1689	1698	1721	2415	2420	2475	2490	

	3115	3136	3137	3176	3196	3197	3261	3273	3286	3328	3331	3339	3349	3381	
	3382	3390	3418	3438	3439	3518	3542	3562	3587	3644	3645	3649	3648	3649	3808 8146
TCNTR3	3961	4077	4111	4121	4126										
	1237#	1612	1621	1659	1660	1691	1692	2389	2407	2467	3226	3231	3263	3271	
	3282	3294	3379	3384	3392	3505	3514	3523	3552	3568	3564	4088	4095	4137	
	4141														
TCNTR4	1231#	1614	1629	3228	3229	3265	3268	3279	3292	3377	3388	3583	3588	3944	
	3550	3554	3590	3769	3777	3781	3789	3793	3798	3806	3910	3918	3922	3932	
	3977	3985	4103	4123	4130										
TCNTR5	1232#	1616	1627	3224	3239	3253	3304	3324	3359	3372	3400	3501	3595	3767	
	3794	3928	3973												
TCNTR6	1233#	1620	1633	3257	3302	3519	3520	3539	3541	3563	3571	3584	3586		
TEXAO	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#													
TMSFLD	1159#														
TICK	1117#	2922	3022	3120	3180	3422	4316	4983	5076						
TIMSTP	3371	3433#													
TMANE	4114	4129	4140	4144#											
TMANOK	4115	4132	4139	4143#											
TMANS	4097#	4145	4148												
TMAINT	4113	4128	4144#												
TMPCNT	641	649	679#												
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TOCT	1179	4812#	4824	4849	4858										
TOTST	4559	4587	4590#												
TOVPT	3930	3936	3963	3990#											
TRK212	1184#	1447	1484	1530	1753	2420									
TST0	1306#	1321	3717	5328											
TST0P	5322	5328#													
TST1	1333#	1342													
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TST11	1597	1607#	1639												
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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												
TST23	2123#	2161													
TST24	2172#	2208													
TST25	2212	2233#	2268												
TST26	2279#	2323													
TST27	2334#	2377													
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TST36	2891#	2939													
TST37	2942	3031#	3094												
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TST39	3173#	3215													
TST4	1408	1429#	1434												
TST40	3223#	3243													
TST41	3252#	3308													
TST42	3311	3323#	3363												
TST43	3371#	3404													
TST44	3415#	3457													
TST45	3461	3498#	3599												
TST5	1437	1445#	1453												
TST6	1462#	1473													
TST7	1482#	1492													
TST8	1501#	1521													
TST9	1530#	1555													
TSTCHA	636	643	652#	669											
TSTSEK	3684#														
TTYLPT	441	474	476	493	855	A71#	8A7								
TWOCT	1112#	4402	4415												
TYPE	1113#	3235	3837	3845	3854	4364	4819	4823	4833	4835	4853	4861	4884	4893	
UPARDW	444	477	485	495	526	545#	551								
UPONE	1180	4830#	4836	4847	4850	4850	4857								
WATISZ	1091#	4563													
WATMES	592	598#													
WRKBUF	1067	1185	5392#												
WTISZ	1158	3611#	3620												
XCBCKP	89	200	794#	809	811										
XCBCNT	71	357#	362	387	388	389	391	433	459	464	479	488	530	595	
	807	830	885												
XCBCRL	79	145	150	386	550	672	674	752#	763	890	965	984			
XCBECH	81	635	642	826#	831	835									
XCBERR	85	939#	987	995	1001										
XCBIHQ	87	155	586#	590	596	597	891	989							
XCBOCT	77	149	631	719#	735	971	975	983							
XCBPAS	65	132#	140	156	157										
XCBAU	91	305#	310	311	313	314									
XCBPNT	73	146	256#	258	260	264	275	591	628	888	966	968	972	976	





.V5102	951	1010	1040#				
.V6064	3855	3898#					
.V6110	1655	1687	1735#	3825	3899#		
.V6600	1268	1420#					
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.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#					