

IDENTIFICATION

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 AUTHOR: JOHN VROBEL

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1. ABSTRACT

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

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

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

CONSIDERING NO ERROR CONDITIONS, THE DRIVES THAT HAVE RUN THIS TEST ARE FORMATTED. IF THE PROGRAM WAS STOPPED AT END OF PROGRAM PASS COMPLETION BY SWR951.

2. REQUIREMENTS

2.1 HARDWARE

A. PDP-8/A, 8/E, 8/F, OR 8/M COMPUTER OR OTHER FAMILY OF 8 COMPATIBLE COMPUTER WITH NECESSARY DM8E BUS ADAPTER.

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

C. ASR-33 TELETYPE OR EQUIVALENT

D. RK8E DISK CONTROL

E. RK05J OR RK05F DISK DRIVE(S)

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

2.2 STORAGE

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

3. PRELIMINARY PROGRAMS

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

4. SWITCH REGISTER SETTINGS

SWR0=1
SCOPE LOOP ON ERROR. AFTER AN ERROR
HALT AT LOCATION "ERHLT9" RAISING THIS
SWITCH AND PRESSING KEY CONTINUE
WILL RESULT IN A SCOPE LOOP ON THE
CURRENT FAILING TEST IF THE TEST CONTINUES
TO FAIL. THE ERROR 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.

SWR3=1
STOP PROGRAM OR HALT SWITCH. RAISING THIS
SWITCH WILL RESULT IN A PROGRAM STOP
UPON COMPLETION OF THE NEXT NON-FAILING
TEST. IF POSSIBLE, THIS SWITCH SHOULD
ALWAYS BE USED TO STOP THE PROGRAM.

SWR5=1
INHIBIT THE RECOVERABLE ERROR HALT AFTER
A RECOVERABLE ERROR 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 POP8/E, POP8/M, AND POP8/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:

RK05 DRIVE CONTROL TEST
TEST (Y=YES OR N=NO):
DISK0? DISK1? DISK2? DISK3?

AFTER THE QUESTIONS ARE ANSWERED THE PROGRAM WILL BEGIN TESTING THE DRIVES SPECIFIED.
- H. THE PROGRAM SHOULD PRINT THE FOLLOWING MESSAGE AT THE COMPLETION OF EACH PASS.

"RK05 DRIVE CONTROL TEST PASS COMPLETE"
- I. ALWAYS USE SWR4#1 FOR STOPPING THE TEST.

- J. IF IT IS DESIRED TO HAVE THE PROGRAM HALT OR STOP AT
END OF PROGRAM PASS COMPLETION SET SWR9#1.
 - K. ANY HALTS OR TYPEOUTS OTHER THAN THE PASS COMPLETE
TYPEOUT OR END OF TEST HALT MENTIONED ABOVE WILL BE
CONSIDERED AN ERROR CONDITION. IN ALL CASES ACCESS
"ERRORS" SECTION 6 IN THIS DOCUMENTATION.
 - L. FOR THE ABSOLUTE LOCATIONS OF ALL KNOWN HALTS ACCESS PAGE
1-22 OF THE PROGRAM LISTING.
- 5.4 CHECK WRITE PROTECT (MANUAL)

- A. RUN THE DRIVE CONTROL TEST WITH ALL DRIVES ON THE
CONTROL BEFORE RUNNING THIS "WRITE PROTECT" PORTION.
 - B. MAKE READY A DRIVE TO TEST USING THE RK05 DRIVE CARTRIDGE
MOUNTING PROCEDURE SECTION 5.2.
 - C. SET SWITCH LABELED "RUN/LOAD" TO THE "LOAD" POSITION
ON ALL OTHER DRIVES.
 - D. VERIFY THAT AC POWER TO ALL DRIVES IS ON.
 - E. VERIFY THAT THE LIGHT LABELED "WT PROT" IS "OFF" ON THE
CURRENT DRIVE UNDER TEST.
 - F. SET THE SWITCH REGISTER TO 0206 AND PRESS LOAD ADDRESS.
 - G. SET THE SWITCH REGISTER TO 0000.
 - H. SET SWR10-11 TO THE CURRENT DRIVE NUMBER UNDER TEST.
 - I. PRESS START AND THE COMPUTER SHOULD HALT AT LOCATION "MPHLT1".
 - J. PRESS SWITCH LABELED "WT PROT" TO TURN "WRITE PROTECT" AND
THE LIGHT LABELED "WT PROT" ON.
 - K. PRESS KEY CONTINUE AND THE COMPUTER SHOULD HALT AT LOCATION
"MPHLT2" INDICATING A SUCCESSFUL TEST.
 - M. IF ANY ERRORS ARE ENCOUNTERED OR IF IT IS DESIRED TO TRY
THE TEST AGAIN, REPEAT STEPS A-K.
 - N. FOR POSSIBLE ERROR TYPEOUTS ACCESS SECTION 6 IN THIS DOC-
UMENTATION. (NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS
TEST.)
 - O. THE "CHECK WRITE PROTECT PROCEDURE" AS DESCRIBED ABOVE
SHOULD BE RUN TWICE WITH ALL DRIVES ON THE CONTROL.
- 5.5 CHECK WRITE PROTECT (PROGRAM CONTROL)

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

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

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

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

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

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

G. SET THE SWITCH REGISTER TO 0000.

H. SET SW10-11 TO THE CURRENT DRIVE NUMBER UNDER TEST.

I. PRESS START AND THE COMPUTER SHOULD HALT AT LOCATION "APH11" INDICATING A SUCCESSFUL TEST.

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

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

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

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

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 PREVIOUS, THE OPERATOR SHOULD REALIZE THAT THE PROBLEM IS MOST LIKELY ADDRESSING AND SOMETIMES DATA ERRORS.

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

THE ABSOLUTE ADDRESS LOCATIONS OF THE DATA BUFFER

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"

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 "ST:")

DISK DATA ERROR
PC:1161 GD15252 ST:4010 CM:1000 DA10001 CA17000 AD:7010 DT:5250

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

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

THE FOLLOWING IS AN EXAMPLE OF AN ERROR TYPEOUT THAT COULD HAVE OCCURRED IF THE STATUS REGISTER FAILED. (NOTE: IN THIS CASE THE OPERATOR INDICATED TO THE PROGRAM TO TYPE THE ACTUAL CONTENTS OF THE REGISTERS BY SETTING SWR0=1

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

SEQ 0014

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

7. RESTRICTIONS

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

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

8. TROUBLE SHOOTING INFORMATION

IOT ---	FUNCTION -----
6741 DSKP	"SKIP" SKIP IF TRANSFER DONE FLAG OR ERROR FLAG IS SET.
6742 DCLR	"CLEAR" FUNCTION IS REGULATED BY AC BITS 10 AND 11. THE AC IS THEN CLEARED.
AC10 AC11 -----	
0 0	CLEAR THE AC AND STATUS REGISTER.
0 1	CLEAR THE AC, CONTROL, AND MAJOR REGISTERS. THIS INSTRUCTION WILL STOP THE CONTROL EVEN IF IT IS WRITING A HEADER. THIS IS THE ONLY INSTRUCTION THAT CLEARS MAINTENANCE MODE.
1 0	CLEAR AC, RECALIBRATE DISK DRIVE, AND CLEAR STATUS REGISTER.
6743 DLAG	"LOAD DISK ADDRESS AND GO" LOAD THE DISK CYLINDER, SURFACE, AND SECTOR FROM THE AC, CLEAR THE AC, AND DO THE COMMAND IN THE COMMAND REGISTER.
AC --	
0-6	CYLINDER
7	SURFACE (1=UPPER) (0=LOWER)
8-11	SECTOR

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

6744 DLCA

AC
--

CURRENT ADDRESS

0-11

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

6745 DRST

AC
--

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

0

1

2

3

4

5

6

7

8

9

10

11

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

6746 DLDC

AC
--

READ DATA

0-2#0

0-2#1

0-2#2

0-2#3

0-2#4

0-2#5

0-2#6

0-2#7

3

4

5

6

7

8

9

10

11

6747 DMAN

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

"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 RK85 DISK DRIVE(S). THE PROGRAM IS COMPOSED OF MANY INDIVIDUAL SUBTESTS WHICH ARE AUTOMATICALLY RUN IN A SEQUENTIAL FLOW. ABOVE EACH SUBTEST, IN THE LISTING, IS A BRIEF DESCRIPTION OF EACH SUBTEST.

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

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

10. CONSOLE PACKAGE ADDENDUM

10.1. DESCRIPTION

THE CONSOLE PACKAGE HAS BEEN ADDED TO THIS DIAGNOSTIC TO ALLOW THE PROGRAM TO RUN WITH NO HARDWARE SWITCH REGISTER AND TO HAVE COMMUNICATIONS WITH THE DIAGNOSTIC VIA A TERMINAL. THE DIAGNOSTIC CAN BE RUN IN TWO MODES WITH THE CONSOLE

PACKAGE . 1) RUNNING WITH THE CONSOLE PACKAGE ACTIVE -
THIS ALLOWS THE OPERATOR CONTROL OF THE DIAGNOSTIC THROUGH
THE TERMINAL. THE DIAGNOSTIC WILL ASK FOR THE VALUE OF THE PSEUDO
SWITCH REGISTER, BEFORE CONTINUING WITH EXECUTION OF THE
DIAGNOSTIC. ALL ERRORS AND PASS COMPLETES WILL BE PRINTED AT
THE TERMINAL. NO HALTS WILL BE EXECUTED.
2) CONSOLE PACKAGE NOT ACTIVE-THIS WILL RESULT IN THE
NORMAL STANDALONE OPERATION OF THE PROGRAM AS DESCRIBED IN
SECTIONS 1 THROUGH 9 OF THIS DOCUMENT.

10.2 RESTRICTIONS

- 1) RUNNING THE CONSOLE PACKAGE REQUIRES THAT THE
PSEUDO SWITCH REGISTER BE USED.
- 2) ONCE RUNNING THE CONSOLE PACKAGE NONACTIVE AND
NOW DESIRE TO RUN IT ACTIVE. ONE MUST RELOAD THE DIAGNOSTIC
AND INITILIZE FOR A ACTIVE CONSOLE PACKAGE.

10.3

INITIALIZATION

FOR A ACTIVE CONSOLE PACKAGE

- 1.) SET LOCATION 21 BIT0=0 TO INDICATE USE PSEUDO SWITCH
REGISTER.
- 2.) SET LOCATION 22 BIT3=1 TO INDICATE CONSOLE PACKAGE ACTIVE.

FOR A NON ACTIVE CONSOLE PACKAGE

- 1.) SET LOCATION 21 BIT0=1 TO INDICATE NOT TO USE PSEUDO
SWITCH REGISTER, BUT TO USE HARDWARE SWITCHES.
- 2.) SET LOCATION 22 BIT3=0 TO INDICATE CONSOLE PACKAGE NOT
ACTIVE.

10.4

CONTROL CHARACTERS

CONTROL CHARACTERS ARE USED TO GIVE THE OPERATOR THE
ABILITY TO PERFORM THE FOLLOWING FUNCTIONS.
NOTE: THE PROGRAM WILL RESPOND TO THE CONTROL
CHARACTER IN FIVE (5) SECONDS OR LESS.

CONTROL C

THIS WILL START THE LOADER THAT IS
IN LOCATION 7600.

CONTROL R

THIS WILL RESTART THE PROGRAM AND
REASK THE SWITCH REGISTER QUESTION AS
DESCRIBED IN SECTION 10.6.

CONTROL E

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

CONTROL L

THIS WILL SWITCH THE TERMINAL MESSAGES
FROM THE DISPLAY TO A LINE PRINTER.
TO RESTORE THE MESSAGES ON THE TERMINAL
CONTROL L MUST BE TYPED AGAIN. IF
NO PRINTER IS AVAILABLE AND CONTROL L
IS TYPED THE RESULT WILL BE THAT THE
CONSOLE PACKAGE WILL WAIT FOR CONTROL C OR R.
THE CONTROL L WILL OUTPUT TO THE LINE
PRINTER AND THE PROGRAM WILL
ATTEMPT TO CONTINUE AS IF A CONTROL E
WAS TYPED IN.

CONTROL O

THIS WILL ALLOW THE ABILITY TO CHANGE
THE SWITCH REGISTER DURING PROGRAM
OPERATION. TYPING THIS CHARACTER WILL RESULT
IN AN INTERIGATION OF THE SWITCH REGISTER
QUESTION AS DESCRIBED IN SECTION 10.6.

CONTROL S

THIS WILL STOP PROGRAM EXECUTION AND WAIT IN A
LOOP FOR A CONTINUE. THE ONLY WAY TO CONTINUE
WILL BE TO TYPE A CONTROL O, R OR C.
THIS IS A NONPRINTING CHARACTER.

CONTROL Q

THIS IS TO CONTINUE A PROGRAM AFTER A CONTROL
S IS TYPED. THIS IS A NONPRINTING CHARACTER.

10.5 WAITING MESSAGE

THE WAITING MESSAGE IS USED TO ALLOW THE OPERATOR TIME
TO MAKE A DECISION AS TO WHAT CONTROL CHARACTER
TO TYPE. THIS MESSAGE MAY APPEAR AT THE END
OF PASS MESSAGE IF THE HALT ON PASS BIT IS SET. THE CONTROL
CHARACTERS MAY NOW BE USED TO PERFORM THE NEEDED FUNCTION.

THE WAITING MESSAGE MAY BE PRINTED AFTER A ERROR MESSAGE
IF THE HALT ON ERROR BIT IS SET. HERE AGAIN THE CONTROL
CHARACTERS MAY BE USED.
THE WAITING MESSAGE MAY BE PRINTED IF OPERATOR INTERVENTION
IS REQUIRED.

10.6 SWITCH REGISTER MESSAGE

THIS MESSAGE IS USED TO SETUP THE PSEUDO SWITCH REGISTER
BEFORE PROGRAM EXECUTION TAKES PLACE. THE SWITCH REGISTER
IS SETUP WHEN THE FOURTH CHARACTER IS ENTERED OR A CARRIAGE
RETURN IS TYPED

 SR0000 4000

UNDER SCORING INDICATES OPERATOR RESPONSE

10.7

END OF PASS

AN INDICATION WILL BE GIVEN WHEN THE DIAGNOSTIC HAS MADE A SUCCESSFUL PASS. THE PRINT OUT WILL INDICATE THE DIAGNOSTIC MAINDEC NUMBER THE WORD PASS AND A FOUR DIGIT PASS NUMBER. A PASS WILL BE A TIME PERIOD RATHER THAN A PROGRAM PASS OF THE DIAGNOSTIC. THE TIME PERIOD WILL BE IN THE RANGE OF ONE (1) TO FIVE (5) MINUTES. IF THE DIAGNOSTIC MAKES A PROGRAM PASS IN THE 1 TO 5 MINUTE RANGE THEN THE PASS COUNT WILL BE THE SAME AS THE NUMBER OF PROGRAM PASSES. IF THE PROGRAM MAKES A PROGRAM PASS IN LESS THAN ONE MINUTE THEN THE PASS COUNT WILL NOT BE THE SAME AS THE PASS COUNTER THE PASS COUNTER WILL REFLECT MORE THEN ON PROGRAM PASS. THE NUMBER OF PROGRAM PASSES REQUIRED FOR "A PASS MESSAGE CAN BE FOUND IN FIELD 1 LOCATION 0246.

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

NAME PASS 0001

10.8

ERRORS

THE STANDARD ERROR REPORTS AS DESCRIBED IN SECTION 6 OF THIS DOCUMENT WILL BE USED.

10.9

SWITCH REGISTER SETTINGS

THE STANDARD SWITCH SETTINGS AS DESCRIBED IN SECTION 4 OF THIS DOCUMENT WILL BE USED.

10.10

PARAMETER CONTROL WORDS

THE CONSOLE PACKAGE USES THE LOCATIONS 20 21 22 FOR THE FOLLOWING PURPOSES.

LOCATION 20

PSEUDO SWITCH REGISTER

LOCATION 21
HARDWARE IDENTIFIER 1

LOCATION 22
HARDWARE IDENTIFIER 2

LOCATION 0021

BIT	OCTAL VALUE	FUNCTION WHEN 0	FUNCTION WHEN 1
---	-----	-----	-----

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

SEQ 0021

11.3.1. TIMING

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

11.3.2. ERRORS

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

11.4. LOADING PRECAUTIONS

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

```

1 /
2 /RKAE DRIVE CONTROL TEST
3 /
4 /MAINDEC=0A-DHRRB-G=L
5 /
6 /COPYRIGHT (C) 1972, 1976 DIGITAL EQUIP. CORP.
7 /
8 /MAYNARD, MASS. 01750
9 /
10 0001 FIELD 1
11 /
12 /CONSOL SRC =V2-R0-CONSOLE PACKAGE
13 /
14 /THE PROGRAM SHOULD CHECK FOR A CONTROL CHARACTER FROM THE TERMINAL
15 /EVERY FIVE(5) SECONDS OR SOONER.
16
17 /LOCATIONS THAT NEED TO BE SET UP FOR USING THE CONSOLE PACKAGE.
18
19 /CNTRL 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 XCAPERR 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 MGL= 7421
51 7501 MQA= 7501
52 /
53 0020 *20
54 /
55 0020 0000 F1SWR, 0

```

```

56 0021 4000 F1OP1, 4000
57 0022 0000 F1OP2, 0
58 /
59 /FDOFF CONSOL <
60
61
62 0024 *24
63
64 4424 CBPASS= JMS I .
65 0024 0200 XCAPAS . /CB PASS COMPLETION ROUTINE
66 4425 CACKSW= JMS I .
67 0025 0262 XCBSSW . /CHECK SW REG SETTING
68 4426 CRTTYI= JMS I .
69 0026 0272 XCBTTY . /FETCH CONSOL CHAR
70 4427 CBCNTR= JMS I .
71 0027 0400 XCBCNT . /CHECK FOR CONTROL CHAR
72 4430 CBPRNT= JMS I .
73 0030 0303 XCBPNT . /CA PRINT A BUFFER
74 4431 C8SWIT= JMS I .
75 0031 0656 XCBPSW . /SET UP PSEUDO SW. REG
76 4432 CROCTA= JMS I .
77 0032 1000 XCB0CT . /CONVERT TO ASCII AND PRINT
78 4433 CACRLF= JMS I .
79 0033 1023 XCB0CRL . /DO A CARRIAGE RETURN+LINE FEED
80 4434 CBECHO= JMS I .
81 0034 1063 XCBECH . /CHECK INPUT CHAR
82 4435 CRTYPE= JMS I .
83 0035 1077 XCBTYP . /CA PRINT ONE CHAR
84 4436 CRERR= JMS I .
85 0036 1207 XCBERR . /CA ERROR HANDLER
86 4437 C8INQU= JMS I .
87 0037 0635 XCBINQ . /LOOK FOR OPERATOR INTERVENTION
88 4440 CACKPA= JMS I .
89 0040 1041 XCBCKP . /CHECK IF CONTROL CHAR
90 4441 CRPAUS= JMS I .
91 0041 0337 XCAPAU . /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 /400=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 /CSPASS
114 /THIS IS CALLED AT THE END OF EACH PROGRAM COMPLETION
115 /THE VALUE OF ** CNTVAL** WILL BE DETERMINED BY THE TIME IT TAKES
116 /THE PROGRAM TO COMPLETE THIS MANY CSPASS TO BE IN THE 1 TO 4 MINUTE
117 /RANGE
118 / CSPASS=JMS XCBPAS
119 /EX. OF CALL CSPASS
120 / / MLT /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 MLT
125 /IF CONTINUE TO RUN THEN RETURN TO CALL PLUS2 AC=0
126 /THE LOCATION SETUP2 IS THE MASK BIT FOR THE HALT AT END OF PASS
127 /CHECK THAT IT IS CORRECT FOR THE CURRENT PROGRAM
128
129 /CALLS USED BY XCBPAS ARE CHKCLA-XCBCLRF-XCBCTA-XCBSSW-XCBPNT-XCBIND-
130
131
132 XCBPAS, 0
133 0200 0200 CLA
134 0201 7200 JMS CHKCLA /IS WORD 22 BIT 3 ACTIVE CONSOLE?
135 0202 4777 JMS DOPACK /IS CLASSIC
136 0203 5212 JMS DOPACK /GET REGISTERS.
137 0204 4776 JMS CBGET /DEACTIVE CONSOL CHECK SW SETTING
138 0205 4262 JMS XCBSSW /FOR HALT ON END OF CSPASS
139 0206 0375 AND 4000 /I= HALT 0 CONTINUE
140 0207 7647 SZA CLA /GO TO HALT
141 0217 5600 JMP I XCBPAS /CONTINUE ON RUNNING PROGRAM
142 0211 5230 JMS CBRY1 /CLASS CHECK CSPASS COUNT
143 0212 4232 DOPACK, JMS CKCOUT /CSPASS COUNT NOT DONE RECD PROGRAM
144 0213 5230 JMS CBRY1 /CSPASS COUNT DONE SET CSPASS COUNT
145 0214 2250 ISZ PASCNT /CSPRNT RUFFER
146 0215 4774 JMS XCBCLRF /
147 0216 4303 JMS XCBPNT /GET NUMBER
148 0217 0253 MESPAS /CONVERT IT TO ASCII
149 0220 1250 TAD PASCNT /DO A CARRIAGE RETURN
150 0221 4773 JMS XCBCTA /GET REGISTERS.
151 0222 4776 JMS XCBCLRF /CHECK A HALT AT END OF CSPASS
152 0223 4776 JMS CBGET /MASK BIT
153 0224 4262 JMS XCBSSW /HALT 41 NO SKIP CONTINUE =0
154 0225 0375 SETUP2, AND 4000 /STOP PROGRAM EXECUTION-LOOK FOR INPUT
155 0226 7647 SZA CLA /BUMP RETURN
156 0227 4772 JMS XCBIND
157 0230 2200 CBRY1, ISZ XCBPAS
158 0231 5600 JMP I XCBPAS
159 0232 0300 CKCOUT, 0
160 0233 1251 TAD DOSET /CHECK IF SET UP NEEDED
161 0234 7640 SZA CLA /0=SET UP CSPASS COUNT VALUE
162 0235 5242 JMP NOSET /1=CSPASS COUNT VALUE OK
163 0236 1252 TAD CNTVAL /CSPASS COUNT VALUE ON
164 0237 7640 CMA /GET COUNT VALUE FOR THIS PROG
165 0240 3247 DCA DOCNT /SET TO NEGATIVE
/STORE IN HERE

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166 0241 2251 ISZ DOSET /INDICATE VALUE SET UP
167 0242 2247 NOSET, ISZ DOCNT /COUNT THE NUMBER OF PASSES
168 0243 5230 JMS CBRY1 /EXIT FOR ANOTHER PASS
169 0244 3251 DCA DOSET /SET TO CBPRNT CSPASS
170 0245 2232 ISZ CKCOUT /RIMP RETURN FOR
171 0246 5632 JMP I CKCOUT /CSPASS CBTYPE OUT
172 0247 0000 DOCNT, 0
173 0250 0000 PASCNT, 0
174 0251 0200 DOSET, 0
175 0252 0000 CNTVAL, 0
176 0253 0410 MESPAS, TEXT "DMRKR PASS "
0254 2213
0255 0206
0256 4040
0257 2001
0260 2323
0261 4000

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199
200 0262 0000 XCBSSW, 0
201 0263 4771 JMS XCBCKPA /GO CHECK THE IF ANY CONTRL
202 0264 7200 NOP
203 0265 1021 TAD 21 /GET WD FOR INDICATOR
204 0266 7710 SPA CLA /CHECK IF FROM PANEL 4000
205 0267 7614 TAD 20 /ON LAS AND SKIP GET FROM PANEL WITH LAS
206 0270 1020 TAD 20 /PSEUDO SWITCH
207 0271 5662 JMP I XCBSSW /EXIT WITH STATUS BIT IN AC.

208
209
210
211
212
213
214

```

/*****
 /CRCKSW
 /THIS ROUTINE CAN BE USED INPLACE OF A READ THE SWITCHES LAS.
 /ROUTINE THAT WILL CHECK WHERE TO READ THE
 /CA SWITCHES FROM IE. FROM PANEL OR PSEUDO SWITCH REGISTER
 /THE SELECTION IS DETERMINED BY THE STATE OF BIT 0 IN LOCATION 21.
 /CBCKSW= JMS XCBSSW
 /EX. JMS XCBSSW /READ THE CBSWIT REGISTER
 /RETURN WITH THE CONTENTS OF SWITCH REGISTER
 /RETURN TO NEXT LOCATION FOLLOWING CALL WITH THE AC= TO VALUE OF CBSWIT SETTING
 /CALLS USED ARE-XCBCKPA-
 XCBSSW, 0
 JMS XCBCKPA /GO CHECK THE IF ANY CONTRL
 NOP
 TAD 21 /GET WD FOR INDICATOR
 SPA CLA /CHECK IF FROM PANEL 4000
 TAD 20 /ON LAS AND SKIP GET FROM PANEL WITH LAS
 TAD 20 /PSEUDO SWITCH
 JMP I XCBSSW /EXIT WITH STATUS BIT IN AC.
 /*****
 /CRTTYI
 /THIS ROUTINE WILL LOOK FOR A INPUT FROM THE TERMINAL
 /AND REMOVE ANY PARITY BITS, THEN MAKE IT A BIT ASCII.
 / CRTTYI= JMS XCRTTY

```

215 /
216 PAL10 V1424 15-APR-76 13124 PAGE 1-4
217 /EX. JMS XC8TTYI /READ CHAR FROM THE CONSOL DEVICE
218 / / /RETURN TO CALL PLUS ONE AC CONTAINS THE CHAR
219
220 /CALLS USED -NONE-BUT C8CHAR IS OFF PAGE AND IN ROUTINE CALLED XC8ECHO
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 /C8PRNT
237
238 /THIS ROUTINE WILL TYPE THE CONTENTS OF THE CA PRINT BUFFER, THE LOCATION
239 /OF THE BUFFER WILL BE IN THE ADDRS FOLLOWING THE CALL. PRINTING OF THE BUFFER
240 /WILL STOP WHEN A 00 CHAR IS DETECTED. CHARACTERS ARE PACKED 2 PER WORD.
241 /
242 CAPRNT= JMS XC8PNT
243
244
245
246 /EX. JMS XC8PNT /C8PRNT THE CONTENTS OF THE FOLLOWING BUFFER
247 / MESS77 /LOCATION OF C8PRNT BUFFER
248
249 /CAPRNT WILL USE THE LOCATION FOLLOWING THE CALL AS THE POINTER FOR THE
250 /CAPRNT 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 /
271 PAL10 V1424 15-APR-76 13124 PAGE 1-5
272 /PUT CHAR IN BITS 4-11 MAKE IT 8 BIT ASCII
273 /C8PRNT IT ON CONSOLE
274 /GET DATA WORD
275 /MASK FOR RIGHT BYTE
276 /CHECK IF 00 TERMINATOR
277 /EXIT
278 /ADD FUDGE FACTOR TO DETERMINE IF 200
279 /OR 300 IS TO BE ADD TO CHAR
280 /ADD 100
281 /ADD 200
282 /C8TYPE ONLY BITS 4-11
283 /BUMP POINTER FOR NEXT WORD
284 /DO AGAIN
285 /STOR FOR CAPRNT BUFFER
286
287 /*****
288 /C8PAUS
289 /THIS ROUTINE WILL CHECK IF THE CONSOL PACKAGE IS ACTIVE, IF ACTIVE
290 /IT WILL RETURN TO CALL PLUS ONE AC= 0. AND DO THAT INSTRUCTION.
291 /IF THE CONSOL PACKAGE IS NOT ACTIVE THE CALL WILL BE REPLACED
292 /WITH A 7402 HALT AND THEN RETURN TO THE HALT.
293 /
294 C8PAUS= JMS XC8PAU
295 /
296 /EX. JMS XC8PAUS /CHECK IF ON ACTIVE CONSOL IF NOT HALT HERE
297 / ANYTHING /RETURN HERE IF ON ACTIVE CONSOL
298 /
299 /
300
301 /CALLS USED ARE -CHKCLA-
302
303
304
305 0337 0000 XC8PAU, 0
306 0340 7300 CLA CLL
307 0341 4777 JMS CHKCLA /CHECK LOC 22 BIT 3 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 ADDRS
311 0345 3337 DCA XC8PAU /SET UP RETURN
312 0346 1357 TAD (7402 /GET CODE FOR HLT
313 0347 3737 DCA I XC8PAU /PUT HLT IN CALL LOCATION
314 0350 5737 C8003, JMP I XC8PAU /GO TO HALT OR RETURN TO NEXT LOCATION
315
316
317 0357 7402
318 0360 0240
319 0361 0100
320 0362 3740
321 0363 0077
322 0364 1077
323 0365 7700
324 0366 1075

```

```

325 0367 0200
326 0370 0177
327 0371 1041
328 0372 0634
329 0373 1000
330 0374 1023
331 0375 0400
332 0376 0624
333 0377 1000
334 0400
335
336
337
338
339
340
341
342
343
344
345
346
347
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351
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353
354
355
356
357 0400 0200
358 0401 3777
359 0402 4776
360 0403 5206
361 0404 1777
362 0405 5600
363 0406 6004
364 0407 3775
365 0410 7501
366 0411 3774
367 0412 3255
368 0413 1257
369 0414 3256
370 0415 1656
371 0416 7450
372 0417 5226
373 0420 1773
374 0421 7650
375 0422 5243
376 0423 2255
377 0424 2256
378 0425 5215

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

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

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

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

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

```

```

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

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

TARLB, CNTRLC
CNTRLL
CNTRLD
CNTRLR
CNTRLS
CNTRLE
CNTRLO

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

```

```

434 0506 3335 RYRETR, DCA C8SET5 /CLEAR THE SOFT FLAG
435 0507 4765 JMS C8GET /RESTORE REGISTERS
436 0510 5736 JMP I C8RETR /EXIT TO ADDRESS SET BY CONTROL S
437 /
438 /
439 /CONTROL R
440 /GO TO THE QUESTION C8SWIT
441 0511 3764 CNTRLR, DCA TTYLPT /CLEAR THE TYPE FLAG SET TO TTY
442 0512 3335 DCA C8SET5 /CLEAR SOFT FLAG FOR CNTRL S
443 0513 3772 DCA INMODE
444 0514 4763 JMS UPAROW /PRINT THE * AND C8CHAR
445 0515 3762 C8BY4, DCA C8SWST /CLEAR FLAG FOR CNTRL D OR R
446 0516 6203 CDF CDF 0
447 0517 5720 JMP I X00SW /GO TO ADDR5 OF C8SWIT
448 0520 0200 X00SW, RGN /00SW IS LABEL FOR C8SWIT QUESTION
449 /
450 /
451 /CONTROL S
452 /STOP SENDING CHAR. TO DISPLAY UNTIL A "Q" IS RECEIVED
453 /
454 /
455 0521 1335 CNTRL5, TAD C8SET5 /IF1 DO NOT STORF IN C8RETR
456 0522 7640 SZA CLA
457 0523 5327 JMP C8D07 /DONT SET UP C8RETR
458 0524 7001 TAC /MAKE RETURN CALL PLUS 2
459 0525 1200 TAD XC8CNT /GET RETURN FOR THIS CALL
460 0526 3336 DCA C8RETR /STORE IT HERE FOR USE BE CNTRL Q
461 0527 2335 C8D07, ISZ C8SET5 /SET FLAG TO SAVE CALL
462 0530 4761 JMS XC8TTYI /LOOK FOR THE INPUT
463 0531 4765 JMS C8GET /GET REGISTERS
464 0532 4200 JMS XC8CNTR /CHECK FOR THE CONTROL CHAR
465 0533 7200 CLA
466 0534 5321 JMP CNTRL5 /IF NOT A CNTRL Q R C REASK
467 0535 0000 C8SET5, 0
468 0536 0000 C8RETR, 0
469 /
470 /SWITCH OUTPUT FROM ONE OUTPUT DEVICE TO ANOTHER -THE TWO OUTPUTS ARE THE
471 /CONSOLE AND THE PRINTER WITH DEVICE CODE 66.
472 /
473 /
474 0537 1764 CNTRL6, 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 CDF 0 /GO TO 0 FLD
497 0555 6007 CAF /CLEAR THE WORLD
498 0556 5760 JMP I (7600) /GO TO DIAGNOSTIC MONITOR
499 /*****
500 /
501 /
502 /
503 0560 7600
504 0561 0272
505 0562 0745
506 0563 0615
507 0564 1121
508 0565 0624
509 0566 0100
510 0567 1023
511 0570 0277
512 0571 1077
513 0572 1076
514 0573 1075
515 0574 1346
516 0575 1347
517 0576 1200
518 0577 1345
519 0600
520 /
521 /CONTROL D
522 /CHANGE THE SWITCH REGISTER ANYTIME CNTRL D AND RETURN TO
523 /THE PROGRAM RUNNING.
524 /
525 /
526 0600 4215 CNTRLD, JMS UPAROW
527 0601 1213 TAD C8SETD /CHECK IF THE RETURN 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 RETURN HERE
532 0606 2213 ISZ C8SETD /INDICATE RETURN SAVED DONT DESTROY
533 0607 4256 C8D011, JMS XC8PSW /GO CHANGE THE SWITCH REGISTER
534 0610 3213 DCA C8SETD /CLEAR THE FLAG
535 0611 4224 JMS C8GET /RESTORE THE AC MQ LINK ETC
536 0612 5614 JMP I C8RETD /RETURN TO THE PROGRAM
537 /
538 0613 0000 C8SETD, 0
539 0614 0000 C8RETD, 0
540 /
541 /
542 /

```

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503 /THIS WILL TYPE A UP ARROW AND THE CHAR IN CCHAR.
504
505 UPAROW, 0
506     TAD    (336          /CSPRINT THE "" AND THE CHAR CBTYPED IN
507     JMS    XCSTYPE      /CODE FOR "
508     TAD    CCHAR       /CBTYPE THE CHAR
509     JMS    XCSTYPE
510     JMS    XCSTYPE
511     JMS    XCSTYLF
512     JMP I   UPAROW      /EXIT
513
514
515
516
517 /*****
518
519 CGET, 0
520     CLA
521     TAD    HQSAVE
522     MQL
523     TAD    FLSAVE
524     RAL
525     CLA
526     TAD    ACSAVE
527     JMP I   CGET        /RESTORE THE AC
528                               /GET THE REGISTERS
529
530
531 /*****
532
533 /CBINGU
534 /CBINGU ROUTINE WILL PRINT A WAITING
535 /AND THE PROGRAM IS EXPECTING A CONTROL CHAR INPUT
536 /IF CONTINUE FROM CONTROL CHAR RETURN IS CALL PLUS ONE
537 /IF NO CONTROL CHAR ENTERED THEN WAITING IS REPRINTED
538 /AND PROGRAM WAITS FOR A CONTROL CHAR AGAIN.
539
540 /      CBINGU =      JMS XCBIHQ
541
542 /EX.    JMS    XCBIHQ      /CB WILL PRINT A WAITINGAND WAIT FOR INPUT
543 /      DO ANYTHING      /RETURN IS CALL PLUS ONE AC #0 CONTINUE
544
545 /CALLS USED ARE -CHKCLA-XCAPNT-XCBTYI-CGET-XCBNTR-
546
547 XCBIHQ, 0
548     CLA CLL
549     JMS    CHKCLA        /CHECK LOC 22 BIT 3 CONSOLE BIT
550     SKP
551     JMP I   XCBIHQ      /ACTIVE CONSOLE PACKAGE
552     JMS    XCBIHQ      /NOT CONSOLE LEAVE
553     WATMES
554     JMS    XCBIHQ      /INQUIR WAITTING
555     JMS    XCBIHQ      /GET CHARACTER
556     JMS    CGET
557     JMS    XCBIHQ      /CHECK IF CONTROL CHARACTER
558     JMP I   XCBIHQ      /EXIT AND CONTINUE
559     JMP    XCBIHQ+1     /REASK
560
561
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597

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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 XCBIHQ, 0
620 0657 4767 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
621 0660 7410 SKP /ACTIVE CONSOLE
622 0661 5656 JMP I XCBIHQ /DEACTIVE CONSOLE PACKAGE
623
624 0662 1345 TAD CBIHQ /RETURN WITHOUT ASKING PSEUDO SWITCH
625 0663 7640 SZA CLA /IS THE SOFT FLAG SET FOR SWITCH?
626 0664 5764 JMP CBIHQ /SWIP IF ONE ENTRY AT A TIME OK
627 0665 2345 ISZ CBIHQ /SECOND ENTRY WITH OUT A EXIT GO TO SW QUESTION
628 0666 4766 CBIHQ, JMS XCBIHQ /FIRST ENTRY SET FLAG
629 0667 0747 MESA /CBIHQ SR
630 0670 1020 TAD 20
631 0671 4763 JMS XCBIHQ /GET CONTENTS OF SW
632 0672 1362 TAD (40 /CONVERT IT TO ASCII
633 0673 4775 JMS XCBIHQ /GET SPACE
634 0674 2761 ISZ INMODE /SET FLAG FOR CHAR EXECTED
635 0675 4760 JMS XCBIHQ /LOOK FOR INPUT
636 0676 4315 JMS TSTCHA /NOT CONTROL TEST IT IS LEGAL
637 0677 1774 TAD CCHAR /STORE NEW CHAR IN SW REG
638 0700 3020 DCA 20
639
640 0701 1357 TAD (-3 /GET A MINUS 3
641 0702 3346 DCA THPCNT /STORE IN TEMP COUNT
642 0703 4760 JMS XCBIHQ /GET NEXT CHAR
643 0704 4315 JMS TSTCHA /CHECK IF CR+GOOD CHAR
644 0705 1020 TAD 20 /GET CBIHQ REGISTER
645 0706 7106 RTL CLL /ROTATE IT LEFT 3 PLACES
646 0707 7004 RAL
647 0710 1774 TAD CCHAR /GET CHAR+ADD IT TO PREVIOUS CONTENTS
648 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 TAD (-260 /CHECK IF IT IS IN RANGE
659 0724 7710 SPA CLA /IF NOT POSITIVE CAERR CHAR SMALLER THEN 260
660 0725 5336 JMP EPR1 /CAERR =CHAR TOO SMALL
661 0726 1774 TAD CACHAR /GET CHAR
662 0727 1354 TAD (-270 /GET A =270+CHECK IF IT IS LARGER THEN 7
663 0731 7720 SNA CLA /SKIP IF LESS THEN 7
664 0731 5336 JMP EPR1 /CAERR ON CHAR NOT IN RANGE
665 0732 1774 TAD CACHAR /GET CHAR
666 0733 2353 AND (7 /MASK FOR RIGHT BYTE
667 0734 3774 DCA CACHAR /STORE IN CHAR
668 /GET CHAR IN AC
669 0735 5715 JMP I TSTCHA /EXIT
670 0736 1352 EPR1, TAD (277 /CAPRNT
671 0737 4775 JMS XCRTYPE /?
672 0740 4775 JMS XCRCRLF /
673 0741 5266 JMP CRRDPS /EXIT+ASK AGAIN
674 0742 4775 ENDT, JMS XCRCRLF /DO A CR LF
675 0743 1345 DCA CRSWST /CLEAR THE PSW ENTRY FLAG
676 0744 5656 JMP T XCRPSW /EXIT ROUTINE
677 0745 0000 CRSWST, 0
678
679 0746 0000 TMCNT, 0
680 0747 2322 HESA, TEXT "SR= "
681 0750 7540
682 0751 0000

681
682
683 0752 0277
684 0753 0027
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
707
708
709
710
711
712
713
714
715
716
717
718
719 1000 0000 XCRDCT, 0
720 1001 7106 CLL RTL
721 1002 7006 RTL
722 1003 3221 DCA CATMP1 /POSITION THE FIRST CHAR FOR PRINTING
723 1004 1377 TAD (=4 /SAVE CORRECT POSITIONED WORD HERE
724 1005 3222 DCA CCRKP /STORE COUNTER IN HERE
725 1006 1221 TAD CATMP1 /GET FIRST NUMBER
726 1007 0376 AND (0007 /MASK
727 1010 1375 TAD (260 /ADD THE PRINT CONSTANT
728 1011 4277 JMS XCRTYPE /TYPE THE NUMBER
729 1012 1221 TAD CATMP1 /
730 1013 7206 RTL
731 1014 7224 RAL /RIT NEXT NUMBER IN POSITION
732 1015 3221 DCA CATMP1 /STORE IT
733 1016 2222 TSZ CCRKP /DONE YET WITH FOUR NUMBERS
734 1017 5206 JMP CRRD4 /NNT YET DO MORE
735 1020 5420 JMP T XCRDCT /DONE WITH FOUR
736 1021 0222 CATMP1, 2
737 1022 0000 CCRKP, 0
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752 1023 0000 XCRCRLF, 0
753 1024 7320 CLA CLL
754 1025 1374 TAD (215 /GET CONF FOR CR
755 1026 4277 JMS XCRTYPE

```

/*****
 /XCRCRLF
 /CATYPE CR AND LF WITH FILLERS FOLLOWING EACH LF AND CR
 /
 /XCRCRLF JMS XCRCRLF
 /
 /EX. JMS XCRCRLF /CAPRNT A CR AND LF WITH FILL
 /RETURN TO CALL PLUS ONE AC #0
 /CALLS USED ARE =XCRTYPE=

```

756 1227 1237 TAD FILLER
757 1230 7240 CHA
758 1231 3240 DCA FILCNT
759 1232 1373 TAD (212 /STORE FILLER IN WFRP
760 1233 4277 CDDP, JMS XCRTYPE /GET CODE FOR LF
761 1234 2240 ISZ FILCNT /CHECK ON FILLER CHAR
762 1235 5233 JMP CDDP /TYPE A NON PRINTING CHAR
763 1236 5623 JMP T XCARL /EXIT
764 1237 0004 FILLER, 0004 /FILLER SET FOR 4 CHAR
765 1240 0000 FILCNT, 0 /COUNTER FOR FILL
766
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 XCKCP
784
785 /EX. JMS XCKCPA /CALL TO CHECK IF CONTROL CHAR SET
786 / ANYTHING(SKIP) /RETURN IF NOT FLAG OR NOT CONSOLE ACTIVE
787 / ANYTHING(JMP EXIT SKIP CHAIN) /RETURN IF NOT CONTROL OR CONTINUE CONTROL
788
789 /CALLS USED ARE -XCRTYPE-XCARL-CGET-
790
791
792
793
794 1241 0000 XCKCP, 0
795 1242 3772 DCA ACSAVE /SAVE THE AC
796 1243 6204 GTF /SAVE THE FLAGS
797 1244 3771 DCA FLSAVE /SAVE THE FLAGS
798 1245 7501 MOA /PUT MO IN AC
799 1246 3772 DCA MOSAVE /SAVE THE MO
800 1247 6231 KSF /CHECK THE KEYBOARD FLAG
801 1250 5261 JMP CARY3 /EXIT TO CALL PLUS 1
802 1251 4767 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
803 1252 7410 SKP /ACTIVE CONSOLE PACKAGE
804 1253 5261 JMP CARY3 /EXIT TO CALL PLUS 1
805 1254 4766 JMS XCRTYPE /GET THE CHAR
806 1255 4765 JMS CGET /GET THE FLAGS
807 1256 4764 JMS XCARL /CHECK IF CONTROL CHAR.
808 1257 7000 NOP /RETURN IF A CONTINUE CHAR.
809 1260 2241 ISZ XCKCP /JUMP RETURN FOR CALL PLUS 2
810 1261 4765 CARY3, JMS CGET /GET REGISTERS

```

```

811 1262 5641 JMP I XCKCP /SAY GOOD BY
812
813 //*****
814 /CARCHO
815 /THIS ROUTINE WILL LOOK FOR A CHAR FROM THE KEYBOARD, STORE IT IN LOCATION CHAR
816 /CHECK IF IT WAS A CONTROL CHARACTER -SET INMODE -PRINT CHARACTER
817
818 / CARCHO = JMS XCBCH
819 /EX. JMS XCBCH /LOOK FOR CONSOLE CHAR CAPRT IT
820 /RETURN CALL PLUS ONE AC = CHAR CAPRTED IN
821
822 /CALLS USED ARE -XCRTYPE-XCARL-CGET-XCBCH-XCRTYPE
823
824 /
825 XCRECH, 0
826 1263 0000 JMS XCRTYPE /WAIT FOR CHAR FROM KEYBOARD
827 1264 4766 JMS CGET /RESTORE THE REGISTERS
828 1265 4765 ISZ INMODE /SET INMODE IDENTIFYING THIS AS A EXPECTED CHAR
829 1266 2276 JMS XCARL /GO CHECK IF IT IS A CONTROL CHAR
830 1267 4764 JMP I XCRECH /WAS A CONTROL CHAR -CONTINUE RUNNING
831 1270 5663 JMS XCRTYPE /NOT A CONTROL CHAR CAPRT IT
832 1271 4277 DCA INMODE /CLEAR FLAG THAT CHAR EXPECTED
833 1272 3276 TAD CACHAR /GET CHAR IN AC
834 1273 1275 TAD CACHAR
835 1274 5663 JMP I XCRECH /EXIT
836 1275 0000 CACHAR, 0
837 1276 0000 INMODE, 0
838
839 //*****
840 /CBTYPE
841 /THIS ROUTINE WILL CAPRT ON THE CONSOLE OR THE LPT WITH DEVICE CODE 64.
842 /
843 / CBTYPE JMS XCRTYPE
844
845 /EX. JMS XCRTYPE /CAPRT THE CHAR IN THE AC.
846 / /RETURN CALL PLUS ONE AC 0000
847 / /DO NOT CLEAR THE LINK IN THIS ROUTINE NEEDED BYCDDCT
848
849 /CALLS USED ARE -CBCHANG-XCARL-CAPRT-XCARL-XCARL-
850
851
852
853 1277 0000 XCRTYP, 0
854 1280 3322 DCA PNTRUF /STORE CHAR
855 1281 1321 TAD TTYLPT /CHECK 0=TTY 7777=LPT
856 1282 7640 STA CLA
857 1283 5312 JMP XDLPT /DO OUT PUT ON LPT
858 1284 1320 TAD PNTRUF
859 1285 6246 TLE
860 1286 6241 TSF
861 1287 5326 JMP *-1
862 1288 6042 TCF
863 1289 5316 JMP CARY3
864 1290 1320 XDLPT, TAD PNTRUF /GET CHAR
865 1291 6666 PSTA RCLF /CAPRT IT

```

```

866 1114 4322 JMS CRHANG /CHECK KEYBOARD IF HUNG
867 1115 4662 PCLE /CLEAR THE FLAG
868 1116 7600 CARRY, 7600 /CLEAR THE AC
869 1117 5677 JMP I XCATVP /EXIT
870 1120 2220 PNTRUF, 0
871 1121 2220 TTYLPT, 0
A72
A73
874 1122 2220 CRHANG, 0
875 1123 7220 CLA /GET CONSTANT 7600
876 1124 1316 TAD CRYS /PNTRUF IS NOW A COUNTER
877 1125 3320 DCA PNTRUF /SKIP ON PRINTER DONE
878 1126 4441 PSKE /NOT DONE YET
879 1127 7410 SKP /SAW FLAG DONE
880 1132 5722 JMP I CRHANG /FIRST COUNTER FAST ONE
881 1131 2315 TS7 CRCONT /CHECK IF FLAG SET YET
882 1132 5124 LMD =4 /MAKE 4096 COUNTS ON FAST COUNTER
883 1133 2320 TS7 PNTRUF /KEEP IT UP FOR 5 SEC
884 1134 5331 JMP =3 /GET THE RETURN ADDRESS IN CONTROL
885 1135 1740 TAD XCRNTR /SAVE IT IN HANG
886 1136 3322 DCA CRHANG /ALLOW PRINTING ON TTY
887 1137 3321 DCA TTYLPT
888 1140 4763 JMS XCRPNT
889 1141 1146 MESHANG /LPT ERROR
890 1142 4223 JMS XCRCLF
891 1143 4762 JMS XCRINQU /PRINT WAITING
892 1144 5722 JMP I CRHANG /CONTINUE TO SAVE ADDRESS
893 1145 2220 CRCONT, 0 /COUNTER FOR TIME
894 1146 1420 MESHANG,TEXT "LPT ERROR"
1147 2443
1150 2522
1151 2217
1152 2220
895
896 1162 2635
897 1163 2323
898 1164 2420
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 2227
909 1177 7774

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PAGE

/*****

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

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916 /IF NOT SET THEN TO CALL PLUS ONE FOR A DEACTIVE CONSOLE PACKAGE.
917
918
919 1202 2220 CHKCLA, 0
920 1201 7220 CLA
921 1202 1222 TAD 22 /GET THE CONTENT OF LOCATION 22
922 1203 2377 AND 400 /MASK FOR BIT 3 (400)
923 1204 7650 SNA CLA /
924 1205 2220 TS7 CHKCLA /ACTIVE CONSOLE PACKAGE RETURN
925 /CALL PLUS ONE (1) FOR ACTIVE
926 1206 5600 JMP I CHKCLA /DEACTIVE CONSOLE PACKAGE RETURN
927 /CALL PLUS TWO (2)
928
929 /CBERR
930 /THIS ROUTINE WILL DETERMINE WHAT TO DO WHEN A CBERR IS ENCOUNTERED
931 /WILL CHECK IF CLASSIC SYSTEM, WILL CHECK CRRWIT REGISTERS.
932 / CBERR= JMS XCBERR
933 /EX. JMS XCBERR /GO TO CBERR CALL IF NOT CONSOLE
934 /RETURN IS CALL PLUS ONE AC =0000
935
936 /CALLS USED ARE -CHKCLA-XCRCLF-XCRSW-XCRINQU-XCRPNT-XCROCTA=
937
938
939 1207 2022 XCBERR, 0
940 1210 6022 IOF
941 1211 3345 DCA ACSAVE /SAVE AC
942 1212 6020 GTF /
943 1213 3347 DCA FLSAVE /SAVE THE FLAGS
944 1214 7521 MDA /
945 1215 3346 DCA MDSAVE /SAVE THE M0
946 1216 7342 CLA CLL CMA /SUBTRACT A 1 FOR TRUE LOCATION
947 1217 1227 TAD XCBERR /GET RETURN LOCATION
948 1223 3344 DCA PCSAVE /SAVE ADDR OF CBERR CALL
949 1221 6221 CDF
950 1222 7347 CLA CLL CMA
951 1223 1776 TAD I (CLASTK) /GET REAL PC.
952 1224 3316 DCA REALPC /SAVE IT.
953 1225 6211 CDF
954 1226 4220 JMS CHKCLA /CHECK LOC.22 BIT 3 CONSOLE BIT
955 1227 7412 SKP /ACTIVE CONSOLE PACKAGE
956 1231 5279 JMP NCLAS /NOT CLASSIC SYSTEM
957 1231 4775 JMS CRGFT /GET REGISTERS.
958 1232 4774 JMS XCRSW /CHECK SWITCH REG FOR BIT THAT INDICATES
959 /AN ERROR MESSAGE
960 1233 2373 SKTRP1, AND 0000 /MASK FOR BIT FOR NO ERROR PRINTING
961 /IF THIS ERROR MESSAGE IS TO ALWAYS
962 /BE PRINTED LEAVE AND VALUE AT 0000
963 1234 7440 S74 CLA /SKIP IF BIT IS 0 PRINT ERROR MESSAGE
964 1235 5262 JMP CADDID /DO NOT PRINT
965 1236 4772 JMS XCRCLF
966 1237 4771 JMS XCRPNT
967 1240 1322 EDWMS /PRINT THE ERROR MESSAGE
968 1241 4771 JMS XCRPNT
969 1242 1337 MERPC /PRINT THE PC STATEMENT
970 1243 1316 TAD REALPC /GET PC

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/ PAL10 VI42A 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 XCB0CTA
985 1262 4775' C00010, JMS CAGET /GET REGISTERS.
986 1263 4770' JMS XCB5W /CHECK SWITCH REGISTER
987 1264 7610 SKP CLA /SKIP IF BIT 0 SET
988 1265 5300 JMP CARYP /LEAVE
989 1266 4767' JMS XCBIND /GO TO THE INQUIRE ROUTINE
990 1267 5300 JMP CARYP /LEAVE
991 1270 4775' XTCLAS, JMS CAGET /GET REGISTERS.
992 1271 4770' JMS XCB5W /CHECK PSWIND SWITCH REGISTER
993 /CHECK THE C0SWIT REGISTER
994 1272 7610 SKP CLA /SKIP IF HALT
995 1273 5607 JMP I XCBERR /NO HALT CONTINUE
996 1274 1366 TAD (7400 /CODE FOR HLT
997 1275 3740 DCA I PCSAVE /PUT IT IN CALL LOC.
998 1276 4775' JMS CAGET
999 1277 5700 JMP I PCSAVE
1000 1300 4775' CARYP, JMS CAGET /EXIT TO CALL AND HALT
1001 1321 5607 JMP I XCBERR /GET THE REGISTERS
1002 /
1003 /
1004 1302 7400 /ROUTINE, HLT /PUT INSTRUCTION TO EXECUTE HERE.
1005 1303 7200 NOP
1006 1304 1317 DCA MYAC /SAVE AC
1007 1305 6201 CDF 0
1008 1306 1020 TAD SWR
1009 1307 3765 DCA I (SWR)
1010 1310 1776 TAD I (CLASIK)
1011 1311 3315 DCA CLRTRN
1012 1312 1317 TAD MYAC
1013 1313 6202 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 /FORMES, TEXT "DHRKRF FAILED "
1021 1321 0213
1022 1322 0206
1023 1323 4040
1024 1324 0601
1025 1325 1114

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/ PAL12 VI42A 15-APR-76 13124 PAGE 1-19
1026 1326 0500
1027 1327 4000
1028 1330 0040 MESPC, TEXT " PC:"
1029 1331 2003
1030 1332 7200
1031 1333 4040 MESAC, TEXT " AC:"
1032 1334 2103
1033 1335 7200
1034 1336 4040 MESMQ, TEXT " MQ:"
1035 1337 1521
1036 1340 7200
1037 1341 4040 MESFL, TEXT " FL:"
1038 1342 0614
1039 1343 7200
1040 1344 7777 PCSAVE, 7777
1041 1345 7777 ACSAVE, 7777
1042 1346 7777 MQSAVE, 7777
1043 1347 7777 FLSAVE, 7777
1044 /
1045 /
1046 1365 0720
1047 1366 7400
1048 1367 0635
1049 1370 1200
1050 1371 0303
1051 1372 1223
1052 1373 0700
1053 1374 0262
1054 1375 0264
1055 1376 5100
1056 1377 2400
1057 2000

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FIELD 2

0000 00000000 00000000 11111111 11111111 11000000 00000000 00000000 00000000
0100 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

0200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0300 11111111 11111111 11111111 11111111 11111111 11111111 10000001 11111111

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

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

1200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1300 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

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

1400
1500

1600
1700

2000
2100

2200
2300

2400
2500

2600
2700

3000
3100

3200
3300

3400
3500

3600
3700

4000
4100

4200
4300

4400
4500

4600
4700

5000
5100

5200
5300

5400
5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700

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1242 /
1243 /NOTE: LOCATION 0 WILL CONTAIN THE REVISION
1244 /LEVEL (IN ASCII) ON PROGRAM LOAD.
1245 /
1246 /
1247 /
1248 /ALL KNOWN HALTS
1249 /
1250 1400 4761 FRHLT1 /UNDEFINED INTERRUPT
1251 1401 5576 FRHLT2 /SKIP TRAP FOR DCLR
1252 1402 6173 FRHLT3 /SKIP TRAP FOR DLAG
1253 1403 4776 FRHLT4 /SKIP TRAP FOR DLCA
1254 1404 5161 FRHLT5 /SKIP TRAP FOR DRST
1255 1405 6556 FRHLT6 /SKIP TRAP FOR DLDC
1256 1406 4136 FRHLT7 /SKIP TRAP FOR DMAN
1257 1407 5300 FRHLT8 /THE RECOVERABLE ERROR HALT
1258 1411 6625 DMNHLT /PROGRAM STOP OR HALT FROM SWP0=1
1259 1412 2734 DMNHLT /I/O CHANGE HALT
1260 1413 2776 DMNHLT /HALT FOR "CHECK WRITE PROTECT"
1261 1414 5273 DMNHLT /HALT FOR "CHECK WRITE PROTECT"
1262 1415 4122 ENDHLT /HALT FOR "CHECK WRITE PROTECT"
1263 1416 4021 WEDHLT /END OF TEST HALT FROM SWP0=1
1264 /FROM ALIGNMENT SURTEST
1265 /
1266 /BUFFER LOCATION INFORMATION
1267 /
1268 1417 7177 WKRUF /START OF PROGRAM DATA BUFFER
1269 1420 7576 ENDRUF /END OF PROGRAM DATA BUFFER
1270 1421 7177 WTPK /DISK ADDRESS WORD IF BUFFER
1271 1422 7200 LTPK /DISK ADDRESS WORD IN BUFFER
1272 1423 7577 STPCHK /BUFFER+1 "BREAK STOP CHECK" "1234"
1273 /
1274 6741 DSKP=6741 /SKIP ON TRANSFER DONE OR ERROR
1275 6742 DCLR=6742 /CLEAR DISK CONTROL LOGIC
1276 6743 DLAG=6743 /LOAD ADDRESS AND GO
1277 6744 DLCA=6744 /LOAD CURRENT ADDRESS
1278 6745 DRST=6745 /READ STATUS REGISTER
1279 6746 DLDC=6746 /LOAD COMMAND REGISTER
1280 6747 DMAN=6747 /LOAD MAINTENANCE
1281 7346 NL7775=7346 /-3 CONSTANT
1282 /
1283 4406 DSKOUT=JMS I XDOUT
1284 4407 DSKIN=JMS I XDIN
1285 4423 RANADD=JMS I XRNAD
1286 4425 RECAL=JMS I XRESTR
1287 4424 SFFK=JMS I XONLY
1288 4426 DISKGO=JMS I XDISKG
1289 4427 HAFCHK=JMS I XHFCBK
1290 4432 KILRUF=JMS I XKLRUF
1291 4431 FILRUF=JMS I XFLRUF
1292 4434 WATISZ=JMS I XWTISZ
1293 4433 SKPWAT=JMS I XSKWAT
1294 4430 FIGURE=JMS I XFIGUR
1295 4437 NERROR=JMS I XNERRR
1296 4440 ERROR=JMS I XERRR
1297 4441 TONWAT=JMS I YIDNWT

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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 XRDCH
1101 4446 RNDAD=JMS I XRDAD
1102 4452 LDADD=JMS I XLDDA
1103 4447 DSKSKP=JMS I XSKKP
1104 4450 LDCMD=JMS I XLDCM
1105 4451 LDCUR=JMS I XLDCA
1106 4453 CLRALL=JMS I XCLOA
1107 4454 RDCRC=JMS I XRDRC
1108 4455 LDMAN=JMS I XLDMN
1109 4456 RDRUF=JMS I XRDUF
1110 4457 PRNTER=JMS I XPRN
1111 4460 OCTEL=JMS I XPROCT
1112 4461 TWOCY=JMS I XTCTY
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 2002 2002 /
1120 /
1121 0000 0307 0307 /REVISION "G"
1122 0001 5001 5001
1123 0002 0002 0002
1124 0003 0003 0003
1125 /
1126 0004 5075 XLAS, MYLAS
1127 0005 5102 XCLAS, CLASIK
1128 0006 5553 XDOUT, DOUT
1129 0007 4530 XDIN, DIN
1130 /
1131 0010 0010 *10
1132 /
1133 0010 0000 AUTO10, 0
1134 /
1135 0011 0010 K0010, 0010
1136 0012 0000 K0020, 0000
1137 0013 0000 K0040, 0000
1138 0014 0100 K0100, 0100
1139 0015 0200 K0200, 0200
1140 0016 2400 K0400, 0400
1141 0017 1000 K1000, 1000
1142 /
1143 0020 0020 *20
1144 /
1145 0020 0000 SWR, 0
1146 0021 4000 001, 4000 /SWITCH REGISTER.
1147 0022 0000 002, 0 /CONTROL WORD 1
1148 / /CONTROL WORD 2
1149 0023 6321 XPNAD, RNAD
1150 0024 6215 XONLY, ONLY
1151 0025 6200 XRESTR, RESTOR

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1152	0026	5620	XDISK, DISK
1153	0027	6441	XHFCHK, HFCHK
1154	0030	5656	XFGURE, FGURE
1155	0031	5447	XFLRUF, FLRUF
1156	0032	5435	XKLRIUF, KLRUF
1157	0033	5134	XSKWAT, SKWAT
1158	0034	4000	XWTISZ, WTISZ
1159	0035	0222	XHSFLD, PRSFLD
1160	0036	6151	XPRINT, PRINT
1161	0037	6400	XNFRRO, NFRRO
1162	0040	5200	XFRRO, FRRD
1163	0041	4727	XIONWT, IONWT
1164	0042	4557	XCOMP1, COMP1
1165	0043	1627	XCOMP2, COMP2
1166	0044	5154	XPOST, POST
1167	0045	5412	XORCM, ORCM
1168	0046	4143	XORAD, ORAD
1169	0047	1122	XORAP, ORAP
1170	0050	4544	XORCM, ORCM
1171	0051	4764	XLOCA, LOCA
1172	0052	4164	XLOAD, LOAD
1173	0053	5571	XCLOR, CLOR
1174	0054	6200	XORCB, ORCB
1175	0055	4131	XLOMN, LOMN
1176	0056	5400	XORAF, ORAF
1177	0057	6111	XPRN, PRN
1178	0060	6265	XPROCT, PROCT
1179	0061	6236	XTOCT, TOCT
1180	0062	6253	XORLF, ORLF
1181	0063	7222	XLOTRK, LOTRK
1182	0064	7177	XHITRK, HITRK
1183	0065	4520	CYL450, 4500
1184	0066	4520	TRK212, 4520
1185	0067	7177	RGNRUF, WRKRUF
1186	0070	0200	DRVHAF, 0
1187	0071	0200	DRVCNT, 0
1188	0072	0200	DRVNO, 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	SRCNT1, 0
1228	0134	0000	TNCTR1, 0
1229	0135	0000	TNCTR2, 0
1230	0136	0000	TNCTR3, 0
1231	0137	0000	TNCTR4, 0
1232	0140	0000	TNCTR5, 0
1233	0141	0000	TNCTR6, 0
1234			/
1235	0142	0000	GDREG1, 0
1236	0143	0000	GDREG2, 0
1237	0144	0000	CDREG1, 0
1238	0145	0000	CDREG2, 0
1239	0146	0000	STREG, 0
1240	0147	0000	DHREG, 0
1241	0150	0000	CMREG, 0
1242	0151	0000	CAREG, 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	BATCHNT, 0
1252	0163	0000	SAVDAI, 0
1253	0164	0306	K0306, 0306
1254	0165	5373	K5373, 5373
1255	0166	5300	K5300, 5300
1256	0167	6324	K6324, 6324
1257	0170	3240	ENDTRK, 3240
1258	0171	7777	SDFFRR, 7777
1259	0172	0000	SAVPCT, 0
1260	0173	0000	RESTRT, 0000
1261	0174	5617	XTIME, 5617

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1262 0175 7777 KCNT, =1
1263 /
1264 0200
1265 /
1266 0200 5206 AGN, 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 /RESTART AFTER PROGRAM STOP
1272 0206 6224 RTF
1273 0207 3156 DCA HOMEMA
1274 0210 1156 TAD HOMEMA
1275 0211 1121 TAD K0DF
1276 0212 3222 DCA PRSFLO /MAKE HOMEDF
1277 0213 1362 TAD KRHF
1278 0214 6201 CDF 2 /GET RMF FOR INT. RETURN
1279 0215 3473 DCA I K0001 /SWITCH FIELD B
1280 0216 1364 TAD K5403 /JMP I 3 FOR LOC. 2
1281 0217 3474 DCA I K0002
1282 0220 1363 TAD INTRD /GET ADDRESS RETURN
1283 0221 3475 DCA I K0003
1284 0222 7402 PRSFLO, /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 1072 TAD DRVHAY
1289 0227 3471 DCA DRVENT /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 6207 6007 /CLEAR FLAG
1297 /
1298 0237 3131 DCA REG0
1299 /
1300 /STATUS AND SELECT TEST
1301 /
1302 /VERIFY THAT THE DISK DRIVE IN "DRVNO" 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 G0REG2 /SETUP COMPARE REGISTER
1308 0242 1015 TAD K0200 /ENABLE SET DONE BIT
1309 0243 1072 TAD DRVNO /GET CURRENT DRIVE NUMBER
1310 0244 4450 LDCMD /LOAD COMMAND REGISTER
1311 0245 4444 ROSTAT /READ STATUS
1312 0246 4442 ACCMP1 /CHECK RESULTS
1313 0247 7610 SKP CLA /O.K. SO FAR
1314 0250 5256 JMP T0E /ERROR STATUS
1315 0251 3143 DCA G0REG2 /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 DRVNO /CURRENT DRIVE
1335 0267 4450 LDCMD /LOAD COMMAND
1336 0270 4447 DSKSKP /DSKP "DISK SKIP IOT"
1337 0271 5275 JMP T1E /ERROR, NO SKIP
1338 0272 4453 CLRALL /CLEAR SKIP FLAG OUT
1339 0273 4447 DSKSKP /DSKP "DISK SKIP INT"
1340 0274 4437 NERROR /O.K. 4096 LOOPS
1341 0275 4440 T1E, ERROR /ERROR, DSKP FAILED
1342 0276 2265 TST1 /SCOPE LOOP POINTER
1343 0277 2206 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 I92 REG0 /SET ONE TIME TEST FLAG.
1353 0301 1015 TST2, TAD K0200 /ENABLE SET DONE BIT
1354 0302 1016 TAD K0400 /ENABLE DISK INT.
1355 0303 1372 TAD DRVNO /GET CURRENT DRIVE
1356 0304 4450 LDCMD /LOAD COMMAND REGISTER
1357 0305 7240 CLA CMA /SOFTWARE FLAG
1358 0306 4441 IONWAT /WAIT FOR DISK INTERRUPT
1359 0307 5323 JMP T2E /ERROR, NO INT.
1360 0310 4453 CLRALL /CLEAR THE INT. OUT
1361 0311 7240 CLA CMA /SOFTWARE FLAG
1362 0312 4441 IONWAT /WAIT FOR DISK INTERRUPT
1363 0313 7610 SKP CLA /O.K. NO INT.
1364 0314 5323 JMP T2E /ERROR, INT.
1365 0315 1015 TAD K0200 /ENABLE SET DONE BIT
1366 0316 1072 TAD DRVNO /CURRENT DRIVE
1367 0317 4450 LDCMD /LOAD COMMAND
1368 0320 7340 CLA CLL CMA /SOFTWARE FLAG
1369 0321 4441 IONWAT /WAIT FOR DISK INTERRUPT
1370 0322 4437 NERROR /O.K. 4096 LOOPS
1371 0323 4440 T2E, ERROR /ERROR, DISK INT.

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1372 0324 0301 TST2 /SCOPE LOOP POINTER
1373 0325 0007 /TEXT POINTER
1374 /
1375 /FORCE TIMING ERROR
1376 /
1377 /VERIFY A "TIMING ERROR" DOES OCCUR IN STATUS REGISTER
1378 /IF A FLAG IS ISSUED WITH THE COMMAND REGISTER IS SET TO
1379 /A FUNCTION OF "7".
1380 /
1381 0326 1127 TST3, TAN K7000
1382 0327 1156 TAD HOMEHA
1383 0330 1272 TAD DRIVND /GET CURRENT DRIVE
1384 0331 4452 LDCMD /LOAD COMMAND REGISTER
1385 0332 1120 TAD K0006
1386 0333 3357 DCA TST /SETUP TEXT POINTER
1387 0334 4452 LDAO7 /FLAG, LOAD DISK ADDRESS
1388 0335 4433 SKPWAT /WAIT FOR ERROR SKIP
1389 0336 5355 JMP T3E /ERROR, NO SKIP OCCURRED
1390 0337 116A TAN K5300
1391 0340 3357 DCA TST /SETUP TEXT POINTER
1392 0341 7310 CLA CLL CML PAR
1393 0342 1013 TAD K0040
1394 0343 7143 DCA GDREG2 /SETUP EXPECTED STATUS
1395 0344 4404 RSTAT /READ STATUS REGISTER
1396 0345 4402 ACCMP1 /CHECK RESULTS
1397 0346 7612 SKP CLA /STATUS IS O.K.
1398 0347 5355 JMP T3E /ERROR STATUS INCORRECT
1399 0350 4453 CLRALL /CLEAR STATUS
1400 0351 3143 DCA GDREG2 /SETUP EXPECTED STATUS
1401 0352 4404 RSTAT /READ STATUS
1402 0353 4402 ACCMP1 /CHECK RESULTS
1403 0354 4437 NERRR /ALL IS O.K.
1404 0355 4440 T3E, ERROR /ERROR, TIMING SKIP OR STATUS
1405 0356 0326 TST3 /SCOPE LOOP POINTER
1406 0357 0006 TST, /TEXT POINTER
1407 0360 5761 JMP I ,+1
1408 0361 0400 TST4
1409 /
1410 0362 6244 KRMF, RMF
1411 0363 4743 INTRQ, INTAND
1412 0364 5403 K5403, 5403
1413 /
1414 0372 7160
1415 0371 7161
1416 0372 4260
1417 0373 7225
1418 0374 5000
1419 0375 2706
1420 0376 6600
1421 0377 4600
1422 /
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 0006 T4T, 0006 /TEXT POINTER
1436 0407 5610 JMP I ,+1
1437 0410 0411 TST5
1438 /
1439 /
1440 /HEAD MOTION AND STATUS TEST
1441 /
1442 /VERIFY THAT "SEEK ONLY" TRACK 312 SETS
1443 /TRANSFER DONE THEN DRIVE IS READY.
1444 /
1445 0411 7301 TST5, CLA CLL IAC /EXTENDED
1446 0412 3150 DCA CMREG /SETUP EXTENDED BIT
1447 0413 1266 TAD TRK212 /GET LOWER DISK ADDRESS
1448 0414 4424 SEEK /SEEK ONLY 312
1449 0415 7422 TST /TEXT POINTER
1450 0416 5220 JMP T5E /ERROR, SKIP OR STATUS
1451 0417 4437 NERRR /O.K. TO NEXT TEST
1452 0420 0440 T5E, ERROR /ERROR, DISK SKIP OR STATUS
1453 0421 7411 TST5 /SCOPE LOOP POINTER
1454 0422 0006 TST, 0006 /TEXT POINTER
1455 /
1456 /
1457 /VERIFY RESTORE CLEARS ADDRESS BITS
1458 /
1459 /SOMETHING IS WORKING, NOW SEEK ONLY TRACK 312
1460 /THEN RECALIBRATE AND CHECK FOR NO ERRORS IN STATUS.
1461 /
1462 0423 7321 TST6, CLA CLL IAC /SETUP EXTENDED BIT
1463 0424 3150 DCA CMREG /GET LOWER DISK ADDRESS
1464 0425 1266 TAD TRK212 /SEEK ONLY 312
1465 0426 4424 SEEK /TEXT POINTER
1466 0427 7437 T6T /ERROR, SKIP OR STATUS
1467 0430 5235 JMP T6E /"RECALIBRATE"
1468 0431 4425 RECAL /TEXT POINTER
1469 0432 7437 T6T /ERROR, SKIP OR STATUS
1470 0433 5235 JMP T6E /O.K. TO NEXT TEST
1471 0434 4437 NERRR /ERROR, STATUS
1472 0435 4440 T6E, ERROR /SCOPE LOOP POINTER
1473 0436 7423 TST6, 5300 /TEXT POINTER
1474 0437 5300
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 NERRRR /O.K. TO NEXT TEST
1492 0452 0440 ERRRR /ERROR, STATUS
1493 0453 5300 T7T, TST7 /SCOPE LOOP POINTER
1494 / TTT, 5300 /TEXT POINTER
1495 /
1496 /FIND AND SELECT ALL ADDRESSES
1497 /
1498 /VERIFY A SEEK ONLY AND FIND ALL ADDRESSES
1499 /INCREMENTAL SEEK TEST. SEEK R1, 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 3152 DCA CMREG /SETUP EXTENDED BIT
1505 0462 1135 TAD TCNTR2 /LOWER DISK ADDRESS BITS
1506 0461 4424 SEEK /SEQUENTIAL SEEK ONLY
1507 0462 0501 TBT /TEXT POINTER
1508 0463 5277 JMP TAE /ERROR, SKIP OR STATUS
1509 0464 2135 ISZ TCNTR2 /UPDATE POINTER
1510 0465 7610 SKP CLA
1511 0466 2134 ISZ TCNTR1
1512 0467 1134 TAD TCNTR1 /SET EXTENDED BIT
1513 0470 7650 SNA CLA
1514 0471 5256 JMP TAE /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 TAE /WAS IT LAST TRACK
1519 0476 4437 NERRRR /NO, CONTINUE
1520 0477 4440 TAE, ERRRR /O.K. TO NEXT TEST
1521 0500 0454 TSTA /ERROR, STATUS
1522 0501 5300 TBT, 5300 /SCOPE LOOP POINTER
1523 / TTT, 5300 /TEXT POINTER
1524 /
1525 /FIND AND SELECT ALL ADDRESSES
1526 /
1527 /VERIFY A SEEK ONLY AND FIND ALL ADDRESSES
1528 /312, 311, 310, 307, ETC. CHECK FOR
1529 /NO ERRORS IN STATUS REGISTER.
1530 /
1530 0502 1066 TST9, TAD TRK21P
1531 0503 1117 TAD K0017
1532 0504 3134 DCA TCNTR1 /SETUP LOWER DISK ADDRESS POINT
1533 0505 7301 CLA CLL IAC
1534 0506 3135 DCA TCNTR2 /SETUP EXTENDED POINTER
1535 0507 1135 T9R, TAD TCNTR2

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1536 0510 3150 DCA CMREG /SETUP EXTENDED BIT
1537 0511 1134 TAD TCNTR1
1538 0512 4424 SEEK /DECREMENTAL SEEK ONLY
1539 0513 0534 T9T /TEXT POINTER
1540 0514 5332 JMP T9F /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
1547 0523 5307 JMP T9R /FIRST TIME 0 YET
1548 0524 1135 TAD TCNTR2 /NO, CONTINUE
1549 0525 7650 SNA CLA
1550 0526 5331 JMP T90K /PAST EXTENDED BIT
1551 0527 3135 DCA TCNTR2 /YES, TEST O.K.
1552 0530 5307 JMP T9R /CLEAR EXTENDED BIT
1553 0531 4437 T90K, NERRRR /CONTINUE
1554 0532 4440 T9E, ERRRR /O.K. TO NEXT TEST
1555 0533 0502 TST9 /ERROR, SEEK ONLY
1556 0534 5300 T9T, 5300 /SCOPE LOOP POINTER
1557 / TTT, 5300 /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 7341 CIA
1566 0537 3777 TST10, DCA CNT /INITIALIZES APT TIMING FOR A LONGER VALUE
1567 0540 3134 DCA TCNTR1
1568 0541 3135 DCA TCNTR2
1569 0542 1134 TAD TCNTR1
1570 0543 3150 T10R, DCA CMREG /GET EXTENDED BIT
1571 0544 1135 TAD TCNTR2 /SETUP EXTENDED BIT
1572 0545 4424 SEEK /GET CYLINDER
1573 0546 2573 T10T /SEEK ONLY
1574 0547 5371 JMP T10F /TEXT POINTER
1575 0550 4425 RECAL /ERROR IN SEEK ONLY
1576 0551 0573 T10T /"RECALIBRATE"
1577 0552 5371 JMP T10F /TEXT POINTER
1578 0553 7300 CLA CLL /ERROR, SKIP OR STATUS
1579 0554 1135 TAD TCNTR2 /GET LAST CYLINDER
1580 0555 1213 TAD K0040 /UPDATE
1581 0556 3135 DCA TCNTR2
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 5342 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 5342 JMP T10R /NON-EXISTENT CYLINDER?

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1591 0570 4437 NERROR /O.K. TO NEXT TEST
1592 0571 4440 T10E, ERROR /STATUS ERROR
1593 0572 0540 TST10 /SCOPE LOOP POINTER
1594 0573 5300 T10T, 5300 /TEXT POINTER
1595 /
1596 0574 5775 JMP I .+1 /TO NEXT TEST
1597 0575 0600 TST11
1598 /
1599 0577 7160
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 TCNTR4 /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 TCNTR4 /UPDATE COUNTER
1634 0633 5216 JMP T11R3 /SAME LOOP
1635 0634 2134 ISZ TCNTR1 /UPDATE PASS COUNTER
1636 0635 5202 JMP T11R1 /MAKE NEW ADDRESS
1637 0636 4437 NERROR /O.K. TO NEXT
1638 0637 4440 T11E, ERROR /ERROR, SKIP OR STATUS
1639 0640 0600 TST11 /SCOPE LOOP POINTER
1640 0641 0000 T11T, 0000 /MODIFIED TEXT POINTER
1641 /
1642 /SELECT ERROR TEST
1643 /
1644 /VERIFY A "NOT READY" ON ALL

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1645 /DRIVES NOT ON THE CONTROL.
1646 /
1647 0642 4525 JMS I XLOAD
1648 0643 7000
1649 0644 3131 DCA REG0 /SETUP FOR 4096 PASSES
1650 0645 7301 TST12, CLA CLL IAC
1651 0646 4453 CLRALL
1652 0647 1157 TAD STCON /CLEAR CONTROL
1653 0650 3143 DCA GOREG2 /EXPECTED STATUS
1654 0651 3145 DCA TCNTR2 /SETUP COMPARE
1655 0652 1777 TAD M4 /TO START WITH DRIVE 0.
1656 0653 3134 DCA TCNTR1 /COUNTER FOR NO. OF DRIVES.
1657 0654 1135 T12R, TAD TCNTR2 /GET DRIVE POINTER
1658 0655 1776 TAD DSKON /POINTER TO DISK BUFFER.
1659 0656 3136 DCA TCNTR3 /SAVE POINTER TO DISK BUFFER.
1660 0657 1536 TAD I TCNTR3
1661 0660 7640 SZA CLA /DISK ON THE SYSTEM
1662 0661 5273 JMP T12A /NO UPDATE AND TRY NEXT DRIVE.
1663 0662 1135 TAD TCNTR2
1664 0663 7104 CLL RAL /SHIFT TO UNIT BITS
1665 0664 1015 TAD K0200 /ENABLE SET DONE
1666 0665 4450 LDCHD /LOAD COMMAND
1667 0666 4444 RDSTAT /READ STATUS
1668 0667 4442 ACCMP1 /CHECK RESULTS
1669 0670 7610 SKP CLA /O.K.
1670 0671 5277 JMP T12E /ERROR, STATUS
1671 0672 4453 CLRALL /CLEAR STATUS
1672 0673 2135 T12A, ISZ TCNTR2 /UPDATE DRIVE NO.
1673 0674 2134 ISZ TCNTR1 /WAS IT LAST DRIVE
1674 0675 5254 JMP T12R /NO, MORE TO TEST
1675 0676 4437 NERROR /O.K. 4096 LOOPS
1676 0677 4440 T12E, ERROR /ERROR, STATUS
1677 0700 0645 TST12 /SCOPE LOOP POINTER
1678 0721 5200 S200 /TEXT POINTER
1679 /SELECT ERROR TEST
1680 /
1681 /VERIFY A DRIVE STATUS ERROR ON ALL DRIVES
1682 /NOT ON THE CONTROL. ACTUALLY A SELECT ERROR.
1683 /
1684 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 T13R, TAD TCNTR2 /GET DRIVE POINTER
1690 0710 1776 TAD DSKON /POINTER TO DISK BUFFER.
1691 0711 3136 DCA TCNTR3 /SAVE POINTER TO DISK BUFFER.
1692 0712 1536 TAD I TCNTR3
1693 0713 7640 SZA CLA /DISK ON THE SYSTEM
1694 0714 5347 JMP T13A /NO UPDATE AND TRY NEXT DRIVE.
1695 0715 1074 TAD K0002
1696 0716 1157 TAD STCON /EXPECTED STATUS
1697 0717 3143 DCA 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 1215 TAD K0200 /ENABLE SET DONE
1701 0723 1104 TAD K3000 /FUNCTION SEEK ONLY
1702 0724 4450 LDCMD /LOAD COMMAND
1703 0725 4452 LOADD /LOAD AND GO
1704 0726 4444 ROSTAT /READ STATUS
1705 0727 4442 ACCMP1 /CHECK RESULTS
1706 0730 7610 SKP CLA /O.K.
1707 0731 5353 JMP T13E /ERROR, STATUS
1708 0732 4453 CLRALL /CLEAR STATUS
1709 0733 1157 TAD STCON /EXPECTED STATUS
1710 0734 3143 DCA GOREG2 /SETUP COMPARE
1711 0735 4444 ROSTAT /READ STATUS
1712 0736 4442 ACCMP1 /CHECK RESULTS
1713 0737 7610 SKP CLA /O.K.
1714 0740 5353 JMP T13E /ERROR, STATUS
1715 0741 7301 CLA CLL IAC
1716 0742 4453 CLRALL /CLEAR CONTROL
1717 0743 3143 DCA GOREG2 /SETUP COMPARE
1718 0744 4444 ROSTAT /READ STATUS
1719 0745 7640 SZA CLA /STATUS SHOULD BE 0000
1720 0746 5353 JMP T13E /ERROR, STATUS
1721 0747 2135 T13A, ISZ TCNTR2
1722 0750 2134 ISZ TCNTR1
1723 0751 5307 JMP T13R
1724 0752 4437 NERROR /TRY NEXT DRIVE
1725 0753 4440 T13E, ERROR /O.K. 4096 LOOPS
1726 0754 0702 TST13 /ERROR, STATUS
1727 0755 5300 /SCOPE LOOP POINTER
1728 / /TEXT POINTER
1729 0756 5757 JMP I .+1 /TO NEXT TEST
1730 0757 1005 TST14P, TST14=3
1731 /
1732 0760 2213 NMES1, TEXT "RK0E DRIVE CONTROL TEST"
0761 7005
0762 4004
0763 2211
0764 2605
0765 4003
0766 1716
0767 2422
0770 1714
0771 4024
0772 0523
0773 2400

1733 /
1734 0776 4374
1735 0777 6110
1736 1000 PAGE
1737 / /SURROUTINE TO ISSUE DSKP DISK SKIP TOT
1738 /
1739 1000 0000 SSKP, 0
1740 1001 6741 TOT1, DSKP /DISK SKIP TOT
1741 1002 7410 SKP /NO FLAGI
1742 1003 2200 ISZ SSKP /UPDATE NO FLAG POINTER.

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1743 1004 5600 JMP I SSKP /RETURN.
1744 /
1745 /
1746 /SELECT ERROR TEST
1747 /
1748 /VERIFY THAT DISK CAPACITY EXCEEDED DOES OCCUR
1749 /
1750 1005 2131 ISZ REG0 /SETUP FOR ONE PAS
1751 1006 7346 NL775 /-3 CONSTANT
1752 1007 3777 DCA CNT
1753 1010 1066 TST14, TAD TRK212
1754 1011 1012 TAD K0200
1755 1012 3134 DCA TCNTR1
1756 1013 7301 T14R, CLA CLL IAC /ADDRESS POINTER
1757 1014 4453 CLRALL /ENABLE CLEAR CONTROL BIT
1758 1015 7330 CLA CLL CML RAR /CLEAR CONTROL
1759 1016 1074 TAD K0002 /EXPECTED STATUS
1760 1017 3143 DCA GOREG2 /SETUP COMPARE REGISTER
1761 1020 7301 CLA CLL IAC /EXTENDED TRACK BIT
1762 1021 1104 TAD K3000 /FUNCTION SEEK ONLY
1763 1022 1072 TAD DRIVNO /CURRENT DRIVE
1764 1023 4450 LDCMD /LOAD COMMAND
1765 1024 1134 TAD TCNTR1
1766 1025 4452 LOADD /LOAD AND GO
1767 1026 4433 SKPWAT /WAIT FOR SKIP
1768 1027 5267 JMP T14KE /ERROR, NO SKIP
1769 1030 4444 ROSTAT /READ STATUS
1770 1031 4442 ACCMP1 /CHECK RESULTS
1771 1032 7610 SKP CLA /STATUS O.K.
1772 1033 5263 JMP T14SE /ERROR, STATUS
1773 1034 7301 CLA CLL IAC /ENABLE CLEAR CONTROL BIT
1774 1035 4453 CLRALL /CLEAR CONTROL
1775 1036 1150 TAD CMREG /GET LAST COMMAND
1776 1037 1015 TAD K0200 /GET ENABLE SEEK DONE BIT
1777 1040 4450 LDCMD /LOAD COMMAND
1778 1041 4433 SKPWAT /WAIT FOR DISK SKIP
1779 1042 5267 JMP T14KE /ERROR, SKIP
1780 1043 7330 CLA CLL CML RAR /EXPECTED STATUS
1781 1044 3143 DCA GOREG2
1782 1045 4444 ROSTAT /READ STATUS
1783 1046 4442 ACCMP1 /CHECK RESULTS
1784 1047 7610 SKP CLA /STATUS O.K.
1785 1050 5263 JMP T14SE /ERROR, STATUS
1786 1051 1072 TAD DRIVNO /CURRENT DRIVE
1787 1052 4450 LDCMD /LOAD COMMAND
1788 1053 3143 DCA GOREG2 /SETUP COMPARE REGISTER
1789 1054 4444 ROSTAT /READ STATUS
1790 1055 4442 ACCMP1 /CHECK RESULTS
1791 1056 7610 SKP CLA /STATUS O.K.
1792 1057 5263 JMP T14SE /ERROR
1793 1060 2134 ISZ TCNTR1
1794 1061 5213 JMP T14R /LOOP
1795 1062 4437 NERROR /O.K. TO NEXT TEST
1796 1063 4440 T14SE, ERROR /ERROR, DISK CAPACITY EXCEEDED
1797 1064 1010 TST14 /SCOPE LOOP POINTER

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1798 1065 5300 5300 /MODIFIED TEXT POINTER
1799 1066 5272 JMP .+4 /TO NEXT TEST
1800 1067 4440 T14KE, ERROR /ERROR, DISK SKIP
1801 1070 1010 TST14 /SCOPE LOOP POINTER
1802 1071 0006 0006 /TEXT POINTER
1803
1804 /STATUS TEST
1805 /
1806 /VERIFY THAT SKIP AND STATUS DOES OCCUR
1807 /AFTER 256 WRITE ALL AND READ ALL BREAKS.
1808 /THIS SHOULD WRITE ALL ZEROS ON AND
1809 /READ ALL ZEROS OFF THE DISK SECTOR 00000.
1810 /
1811 1072 4432 KILBUF /ZERO WRITE BUFFER
1812 1073 1115 TST15, TAD K5000 /WRITE ALL FUNCTION
1813 1074 3150 DCA CMREG /SETUP COMMAND
1814 1075 4426 DISKGO /DISK WRITE ALL
1815 1076 1110 T15T /TEXT POINTER
1816 1077 5306 JMP T15E /ERROR, SKIP OR STATUS
1817 1100 1017 TAD K1000 /FUNCTION READ ALL
1818 1101 3150 DCA CMREG /SETUP COMMAND REGISTER
1819 1102 4426 DISKGO /DISK READ ALL
1820 1103 1110 T15T /TEXT POINTER
1821 1104 5306 JMP T15E /ERROR, SKIP OR STATUS
1822 1105 4437 NERROR /O.K. TO NEXT TEST
1823 1106 4440 T15E, ERROR /ERROR, WRITE ALL
1824 1107 1075 TST15 /SCOPE LOOP POINTER
1825 1110 5300 T15T, 5300 /MODIFIED TEXT POINTER
1826 /
1827 /STATUS TEST
1828 /
1829 /VERIFY THAT SKIP AND STATUS DOES OCCUR AFTER
1830 /128 WRITE ALL AND READ ALL BREAKS.
1831 /THIS SHOULD WRITE ALL ZEROS ON AND READ ALL
1832 /ALL ZEROS OFF THE DISK SECTOR 00000.
1833 /
1834 1111 1115 TST16, TAD K5000 /FUNCTION WRITE ALL
1835 1112 1014 TAD K0100 /HALF BIT
1836 1113 3150 DCA CMREG /SETUP COMMAND
1837 1114 4426 DISKGO /DISK WRITE ALL
1838 1115 1130 T16T /TEXT POINTER
1839 1116 5306 JMP T16E /ERROR, DISK SKIP OR STATUS
1840 1117 1017 TAD K1000 /FUNCTION READ ALL
1841 1120 1014 TAD K0100 /HALF BIT
1842 1121 3150 DCA CMREG /SETUP COMMAND
1843 1122 4426 DISKGO /DISK READ ALL
1844 1123 1130 T16T /TEXT POINTER
1845 1124 5306 JMP T16E /ERROR, SKIP OR STATUS
1846 1125 4437 NERROR /O.K. TO NEXT TEST
1847 1126 4440 T16E, ERROR /ERROR, WRITE ALL
1848 1127 1111 TST16 /SCOPE LOOP POINTER
1849 1130 5300 T16T, 5300 /MODIFIED TEXT POINTER
1850 /
1851 /VERIFY ALL SECTORS CAN BE ACCESSED.
1852 /

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1853 /VERIFY A WRITE ALL TO ALL OF CYLINDER 0
1854 /AND USE DATA PATTERN 2525+5252.
1855 /MAKE THE FIRST TWO WORDS IN THE BUFFER
1856 /EQUAL THE DISK ADDRESS. CHECK THE DATA WITH
1857 /READ ALL.
1858 /
1859 1131 4525 JMS I XLOAD /WILL SET UP COUNTERS FOR NEXT TESTS
1860 1132 7771 7771
1861 1133 1122 TST17, TAD K7740 /SETUP SECTOR COUNTER
1862 1134 3134 DCA TCNTR1
1863 1135 1113 T17S, TAD K2525
1864 1136 4431 FILBUF /FILL OUTBOUND BUFFER
1865 1137 1115 TAD K5000 /FUNCTION WRITE ALL
1866 1140 3150 DCA CMREG /SETUP COMMAND
1867 1141 1134 TAD TCNTR1
1868 1142 0120 AND K0037 /MASK OFF SECTORS
1869 1143 3463 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
1870 1144 1072 TAD DRIVNO /GET DRIVE NUMBER
1871 1145 3464 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
1872 1146 1463 TAD I XLOTRK
1873 1147 4426 DISKGO /DISK WRITE ALL
1874 1150 1173 T17T /TEXT POINTER
1875 1151 5371 JMP T17E /ERROR, SKIP OR STATUS
1876 1152 4432 KILBUF /KILL DATA BUFFER
1877 1153 1017 TAD K1000 /FUNCTION READ ALL
1878 1154 3150 DCA CMREG /SETUP COMMAND
1879 1155 1134 TAD TCNTR1
1880 1156 0120 AND K0037 /MASK OF SECTORS
1881 1157 4426 DISKGO /DISK READ ALL
1882 1160 1173 T17T /TEXT POINTER
1883 1161 5371 JMP T17E /ERROR, STATUS OR SKIP
1884 1162 1113 TAD K2525
1885 1163 4430 FIGURE /WORD BY WORD COMPARE OF DATA
1886 1164 7610 SKP CLA /THIS SECTOR O.K.
1887 1165 5371 JMP T17E /ERROR, DATA
1888 1166 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
1889 1167 5335 JMP T17S /TRY NEXT SECTOR
1890 1170 4437 NERROR /O.K. TO NEXT TEST
1891 1171 4440 T17E, ERROR /ERROR, READ ALL
1892 1172 1133 TST17 /SCOPE LOOP POINTER
1893 1173 5373 T17T, 5373 /TEXT POINTER
1894 /
1895 1174 5775 JMP I .+1 /TO NEXT TEST
1896 1175 1202 TST18
1897 /
1898 /
1899 PAGE
1900 /
1901 /VERIFY ALL SECTORS CAN BE ACCESSED.
1902 /
1903 /VERIFY A WRITE DATA TO ALL OF CYLINDER 2
1904 /AND USE DATA PATTERN 5252+2525.
1905 /MAKE THE FIRST TWO WORDS OF THE BUFFER
1906 /EQUAL THE DISK ADDRESS. CHECK THE
/ 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      DCA TCNTR1
1912      1204 1114      T18S, TAD K5252      /SECTOR COUNTER
1913      1205 4431      FILBUF      /FILL OUTROUND BUFFER
1914      1206 1105      TAD K4000      /FUNCTION WRITE DATA
1915      1207 3150      DCA CMREG      /SETUP COMMAND
1916      1210 1134      TAD TCNTR1
1917      1211 0120      AND K0037
1918      1212 3463      DCA I XL0TRK      /MASK OF SECTORS
1919      1213 1072      TAD DRIVNO      /SETUP ADDRESS WORD IN BUFFER
1920      1214 3464      DCA I XHITRK      /GET DRIVE NUMBER
1921      1215 1463      TAD I XL0TRK      /SETUP ADDRESS WORD IN BUFFER
1922      1216 4426      DISKGO      /GET ADDRESS
1923      1217 1241      T18T      /DISK WRITE DATA
1924      1220 5237      JMP T18E      /TEXT POINTER
1925      1221 4432      KILBUF      /ERROR, STATUS OR SKIP
1926      1222 3150      DCA CMREG      /CLEAR DATA BUFFER
1927      1223 1134      TAD TCNTR1      /SETUP COMMAND
1928      1224 2120      AND K0037
1929      1225 4426      DISKGO      /MASK OFF SECTORS
1930      1226 1241      T18T      /DISK READ DATA
1931      1227 5237      JMP T18E      /TEXT POINTER
1932      1230 1114      TAD K5252      /ERROR, STATUS OR SKIP
1933      1231 4430      FIGURE
1934      1232 7610      SKP CLA      /WORD BY WORD COMPARE OF DATA
1935      1233 5237      JMP T18E      /THIS SECTOR O.K.
1936      1234 2134      ISZ TCNTR1      /ERROR, DATA
1937      1235 5204      JMP T18S      /UPDATE SECTOR COUNTER
1938      1236 4437      NERROR      /TRY NEXT SECTOR
1939      1237 4440      T18E, ERROR      /O.K. TO NEXT TEST
1940      1240 1202      TST18      /ERROR, DATA BREAK
1941      1241 5373      T18T, 5373      /SCOPE LOOP POINTER
1942      /
1943      /VERIFY HALF BLOCK TRANSFERS.
1944      /
1945      /VERIFY THAT DISK STOPS BREAK AFTER 128
1946      /IF THE HALF BIT IS SET. THE REMAINDER OF THE
1947      /THE BUFFER SHOULD BE 0000.
1948      /THE FIRST TWO WORDS OF THE BUFFER SHOULD
1949      /EQUAL THE ABSOLUTE DISK ADDRESS.
1950      /THE DATA PATTERN USED IS 2525+5252.
1951      /
1952      1242 1113      TST19, TAD K2525
1953      1243 4431      FILBUF      /FILL BUFFER WITH DATA
1954      1244 1072      TAD DRIVNO
1955      1245 3464      DCA I XHITRK      /MAKE DISK ADDRESS WORD
1956      1246 3463      DCA I XL0TRK      /MAKE DISK ADDRESS WORD
1957      1247 1115      TAD K5000      /FUNCTION WRITE ALL
1958      1250 1014      TAD K0100      /HALF BIT
1959      1251 3150      DCA CMREG      /SETUP COMMAND
1960      1252 4426      DISKGO      /DISK WRITE ALL
1961      1253 1271      T19T      /TEXT POINTER

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1962      1254 5267      JMP T19E      /ERROR, SKIP OR STATUS
1963      1255 4453      CLRALL      /CLEAR STATUS
1964      1256 4432      KILBUF      /ZERO BUFFER
1965      1257 1017      TAD K1000      /FUNCTION READ ALL
1966      1260 3150      DCA CMREG      /SETUP COMMAND
1967      1261 4426      DISKGO      /DISK READ ALL
1968      1262 1271      T19T      /TEXT POINTER
1969      1263 5267      JMP T19E      /ERROR, SKIP OR STATUS
1970      1264 1113      TAD K2525
1971      1265 4427      HAFCHK
1972      1266 4437      T190K, NERROR      /WORD BY WORD COMPARE DATA
1973      1267 4440      T19E, ERROR      /O.K. TO NEXT TEST
1974      1270 1242      TST19      /ERROR, DATA BREAK
1975      1271 5373      T19T, 5373      /SCOPE LOOP POINTER
1976      /
1977      /VERIFY HALF BLOCK TRANSFERS.
1978      /
1979      /VERIFY THAT DISK STOPS BREAK AFTER 128
1980      /IF THE HALF BIT IS SET. THE REMAINDER OF THE
1981      /THE BUFFER SHOULD BE 0000.
1982      /THE FIRST TWO WORDS OF THE BUFFER SHOULD
1983      /EQUAL THE ABSOLUTE DISK ADDRESS.
1984      /THE DATA PATTERN USED IS 5252+2525.
1985      /
1986      1272 1114      TST20, TAD K5252
1987      1273 4431      FILBUF      /FILL BUFFER WITH DATA
1988      1274 1072      TAD DRIVNO
1989      1275 3464      DCA I XHITRK      /MAKE DISK ADDRESS WORD
1990      1276 3463      DCA I XL0TRK      /MAKE DISK ADDRESS WORD
1991      1277 1115      TAD K5000      /FUNCTION WRITE ALL
1992      1300 3150      DCA CMREG      /SETUP COMMAND
1993      1301 4426      DISKGO      /DISK WRITE ALL
1994      1302 1321      T20T      /TEXT POINTER
1995      1303 5317      JMP T20E      /ERROR, SKIP OR STATUS
1996      1304 4453      CLRALL      /CLEAR STATUS
1997      1305 4432      KILBUF      /CLEAR BUFFER
1998      1306 1017      TAD K1000      /FUNCTION READ ALL
1999      1307 1014      TAD K0100      /HALF BIT
2000      1310 3150      DCA CMREG      /SETUP COMMAND
2001      1311 4426      DISKGO      /DISK READ ALL
2002      1312 1321      T20T      /TEXT POINTER
2003      1313 5317      JMP T20E      /ERROR, SKIP OR STATUS
2004      1314 1114      TAD K5252
2005      1315 4427      HAFCHK
2006      1316 4437      T200K, NERROR      /WORD BY WORD COMPARE DATA
2007      1317 4440      T20E, ERROR      /O.K. TO NEXT TEST
2008      1320 1272      TST20      /ERROR, DATA BREAK
2009      1321 5373      T20T, 5373      /SCOPE LOOP POINTER
2010      /
2011      /VERIFY HALF BLOCK TRANSFERS.
2012      /
2013      /VERIFY A WRITE ALL THEN READ ALL 128 WORDS.
2014      /THE FIRST TWO WORDS OF THE BUFFER SHOULD
2015      /EQUAL THE ABSOLUTE DISK ADDRESS.
2016      /THE DATA PATTERN USED IS 2525+5252.

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2017 /
2018 1322 1113 TST21, TAD K2525
2019 1323 4431 FILBUF /FILL BUFFER WITH DATA
2020 1324 1472 TAD DRIVNO /MAKE DISK ADDRESS WORD
2021 1325 3464 DCA I XHTRK /MAKE DISK ADDRESS WORD
2022 1326 3463 DCA I XLOTRK /FUNCTION WRITE ALL
2023 1327 1115 TAD K5000 /HALF BIT
2024 1330 1014 TAD K0100 /SETUP COMMAND
2025 1331 3150 DCA CMREG /DISK WRITE ALL
2026 1332 4426 DISKRD /TEXT POINTER
2027 1333 1352 T21T /ERROR, SKIP OR STATUS
2028 1334 5354 JMP T21F /CLEAR STATUS
2029 1335 4453 CLRALL /ZERO BUFFER
2030 1336 4432 KILBUF /FUNCTION READ ALL
2031 1337 1017 TAD K1000 /HALF BIT
2032 1340 1014 TAD K0100 /SETUP COMMAND
2033 1341 3150 DCA CMREG /DISK READ ALL
2034 1342 4426 DISKRD /TEXT POINTER
2035 1343 1352 T21T /ERROR, SKIP OR STATUS
2036 1344 5354 JMP T21F
2037 1345 1113 TAD K2525
2038 1346 4427 HAFCHK /WORD BY WORD COMPARE DATA
2039 1347 4437 T21OK, NEWRRR /O.K. TO NEXT TEST
2040 1350 4440 T21E, ERROR /ERROR, DATA BREAK
2041 1351 1322 TST21 /SCOPE LOOP POINTER
2042 1352 5373 T21T, 5373 /TEXT POINTER
2043 /
2044 1353 5754 JMP I .+1 /TO NEXT TEST
2045 1354 1420 TST22
2046 /
2047 /
2048 /
2049 /
2050 1355 2222 LOADCT, 0
2051 1356 1755 TAD I LOADCT /GET VALUE
2052 1357 3366 DCA CONST1 /STORE FOR FUTURE USE
2053 1360 1366 TAD CONST1
2054 1361 3777 DCA COUNT
2055 1362 1366 TAD CONST1
2056 1363 3776 DCA CLKCNT
2057 1364 2355 ISZ LOADCT
2058 1365 5755 JMP I LOADCT
2059 /
2060 1366 2000 CONST1, 0
2061 /
2062 1376 7162
2063 1377 7161
2064 PAGE
2065 /
2066 /
2067 /
2068 /
2069 /
2070 /

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2071 /
2072 /
2073 1400 1122 TST22, TAD K7740
2074 1401 3134 DCA TONTR1 /SETUP SECTOR COUNTER
2075 1402 1113 TAD K2525
2076 1403 4431 FILBUF /FILL BUFFER WITH DATA
2077 1404 1134 T22R1, TAD TONTR1
2078 1405 0120 AND K0037 /MASK SECTOR BITS
2079 1406 3463 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
2080 1407 1072 TAD DRIVNO /GET DRIVE NUMBER
2081 1410 3464 DCA I XHTRK /SETUP ADDRESS WORD IN BUFFER
2082 1411 1115 TAD K5000 /FUNCTION WRITE ALL
2083 1412 3150 DCA CMREG /SETUP COMMAND
2084 1413 1463 TAD I XLOTRK /GET TRACK AND SECTOR
2085 1414 4426 DISKRD /DISK WRITE ALL
2086 1415 1444 T22T /TEXT POINTER
2087 1416 5242 JMP T22E /ERROR, STATUS OR SKIP
2088 1417 2134 ISZ TONTR1 /UPDATE SECTOR COUNTER
2089 1420 5204 JMP T22R1 /MORE SECTORS TO GO
2090 /
2091 /
2092 /
2093 /
2094 1421 1122 TAD K7740
2095 1422 3134 DCA TONTR1 /COUNTER FOR 37 SECTORS
2096 1423 4432 KILBUF /CLEAR DATA BUFFER
2097 1424 1017 TAD K1000 /READ ALL FUNCTION
2098 1425 3150 DCA CMREG /SETUP COMMAND
2099 1426 1134 TAD TONTR1
2100 1427 2122 AND K0037
2101 1430 4426 DISKRD /DISK READ ALL
2102 1431 1444 T22T /TEXT POINTER
2103 1432 5242 JMP T22E /ERROR, STATUS OR SKIP
2104 1433 1113 TAD K2525
2105 1434 4432 FIGURE /WORD BY WORD COMPARE OF DATA
2106 1435 7610 SKP CLA /BUFFER O.K.
2107 1436 5242 JMP T22E /ERROR, DATA
2108 1437 2134 ISZ TONTR1 /UPDATE SECTOR COUNTER
2109 1440 5223 JMP T22R2 /MORE SECTORS TO CHECK
2110 1441 4437 NEWRRR /O.K. TO NEXT TEST
2111 1442 4440 T22E, ERROR /ERROR, STATUS
2112 1443 1422 TST22 /SCOPE LOOP POINTER
2113 1444 5373 T22T, 5373 /TEXT POINTER
2114 /
2115 /
2116 /
2117 /
2118 /
2119 /
2120 /
2121 /
2122 /
2123 1445 1122 TST23, TAD K7740
2124 1446 3134 DCA TONTR1 /SETUP SECTOR COUNTER
2125 1447 1113 TAD K2525

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2126 1450 4431 FILBUF /FILL BUFFER WITH DATA
2127 1451 1134 T23R1, TAD TCNTR1
2128 1452 0120 AND K0037 /MASK SECTOR BITS
2129 1453 3463 DCA I XL0TRK /SETUP ADDRESS WORD IN BUFFER
2130 1454 1072 TAD DRIVNO /GET DRIVE NUMBER
2131 1455 3464 DCA I XMITRK /SETUP ADDRESS WORD IN BUFFER
2132 1456 1105 TAD K4000 /FUNCTION WRITE DATA
2133 1457 3150 DCA CMREG /SETUP COMMAND
2134 1460 1463 TAD I 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 DCA TCNTR1 /COUNTER FOR 37 SECTORS
2146 1470 4432 T23R2, KILBUF /CLEAR DATA BUFFER
2147 1471 3150 DCA CMREG /SETUP COMMAND
2148 1472 1134 TAD TCNTR1
2149 1473 0120 AND K0037
2150 1474 4426 DISKGO /DISK READ DATA
2151 1475 1510 T23T /TEXT POINTER
2152 1476 5306 JMP T23E /ERROR, STATUS OR SKIP
2153 1477 1114 TAD K5252
2154 1500 4430 FIGURE /WORD BY WORD COMPARE OF DATA
2155 1501 7610 SKP CLA /DATA O.K.
2156 1502 5306 JMP T23E /ERROR, DATA
2157 1503 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2158 1504 5270 JMP T23R2 /MORE SECTORS TO CHECK
2159 1505 4437 NERROR /O.K. TO NEXT TEST
2160 1506 4440 T23E, ERROR /ERROR, WRITE ALL
2161 1507 1445 TST23 /SCOPE LOOP POINTER
2162 1510 5373 T23T, 5373 /TEXT POINTER
2163
2164 /
2165 /VERIFY ALL SECTORS CAN BE ACCESSED
2166
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 DCA TCNTR1 /SETUP SECTOR COUNTER
2174 1513 1117 T24S, TAD K5252
2175 1514 4431 FILBUF /FILL OUTROUND BUFFER
2176 1515 7301 CLA CLL IAC
2177 1516 1272 TAD DRIVNO /GET DRIVE NUMBER
2178 1517 3464 DCA I XMITRK /SETUP ADDRESS WORD IN BUFFER
2179 1520 7301 CLA CLL IAC /EXTENDED BIT
2180 1521 1115 TAD K5000 /FUNCTION WRITE ALL

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2181 1522 3150 DCA CMREG /SETUP COMMAND
2182 1523 1134 TAD TCNTR1 /SECTOR COUNTER
2183 1524 0120 AND K0037 /MASK OFF SECTOR BITS
2184 1525 1065 TAD CYL450 /ADD IN CYLINDER
2185 1526 3463 DCA I 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 DCA CMREG /SETUP COMMAND
2194 1537 1134 TAD TCNTR1 /SECTOR COUNTER
2195 1540 0120 AND K0037 /MASK OFF SECTORS
2196 1541 1065 TAD CYL450
2197 1542 4426 DISKGO /DISK READ ALL
2198 1543 1556 T24T /TEXT POINTER
2199 1544 5354 JMP T24E /ERROR, STATUS OR SKIP
2200 1545 1113 TAD K2525
2201 1546 4430 FIGURE /WORD BY WORD COMPARE OF DATA
2202 1547 7610 SKP CLA /THIS SECTOR O.K.
2203 1550 5354 JMP T24E /ERROR, DATA
2204 1551 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2205 1552 5313 JMB T24S /TRY NEXT SECTOR
2206 1553 4437 NERROR /O.K. TO NEXT TEST
2207 1554 4440 T24E, ERROR /ERROR, READ ALL
2208 1555 1511 TST24 /SCOPE LOOP POINTER
2209 1556 5373 T24T, 5373 /TEXT POINTER
2210
2211 /
2212 1557 5760 JMP I .+1 /TO NEXT TEST
2213 1560 1600 TST25
2214
2214 1561 0000 DISK0, 0
2215 1562 0000 DISK1, 0
2216 1563 0000 DISK2, 0
2217 1564 0000 DISK3, 0
2218 1565 0000 DISK4, 0
2219 1566 0000 DISK5, 0
2220 1567 0000 DISK6, 0
2221 1570 0000 DISK7, 0
2222
2223 1600 PAGE
2224
2225 /
2226 /VERIFY ALL SECTORS CAN BE ACCESSED
2227
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 DCA TCNTR1 /SETUP SECTOR COUNTER
2235 1602 1114 T25S, TAD K5252

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2236 1603 4431 FILBUF /FILL OUTROUND BUFFER
2237 1604 7301 CLA CLL IAC
2238 1605 1072 TAD DRIVNO /GET DRIVE NUMBER
2239 1606 3464 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
2240 1607 7301 CLA CLL IAC /EXTENDED BIT
2241 1610 1105 TAD K4000 /FUNCTION WRITE DATA
2242 1611 3150 DCA CMREG /SETUP COMMAND
2243 1612 1134 TAD TCNTR1 /SECTOR COUNTER
2244 1613 0127 AND K0037 /MASK OFF SECTOR BITS
2245 1614 1065 TAD CYL450 /ADD IN CYLINDER
2246 1615 3463 DCA I XLOTRK /SETUP ADDRESS WORD IN BUFFER
2247 1616 1463 TAD I XLOTRK
2248 1617 4426 DISKGO /DISK WRITE DATA
2249 1620 1644 T25T /TEXT POINTER
2250 1621 5242 JMP T25E /ERROR, SKIP OR STATUS
2251 1622 4432 KILBUF /CLEAR DATA BUFFER
2252 1623 7301 CLA CLL IAC /EXTENDED BIT
2253 1624 3150 DCA CMREG /SETUP COMMAND
2254 1625 1134 TAD TCNTR1 /SECTOR COUNTER
2255 1626 0127 AND K0037 /MASK OFF SECTORS
2256 1627 1065 TAD CYL450
2257 1630 4426 DISKGO /DISK READ DATA
2258 1631 1644 T25T /TEXT POINTER
2259 1632 5242 JMP T25E /ERROR, STATUS OR SKIP
2260 1633 1114 TAD K5252
2261 1634 4430 FIGURE /WORD BY WORD COMPARE OF DATA
2262 1635 7610 SKP CLA /THIS SECTOR O.K.
2263 1636 5242 JMP T25E /ERROR, DATA
2264 1637 0134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2265 1640 5272 JMP T25S /TRY NEXT SECTOR
2266 1641 4437 NERROR /O.K. TO NEXT TEST
2267 1642 4440 T25E, ERROR /ERROR, DATA BREAK
2268 1643 1600 T25T /SCOPE LOOP POINTER
2269 1644 5373 T25T, 5373 /TEXT POINTER
2270 /
2271 /
2272 /
2273 /
2274 /VERIFY A WRITE ALL TO ALL OF CYLINDER 1450
2275 /USE DATA PATTERN 5252+2525
2276 /CHECK FOR NO ERRORS IN STATUS.
2277 /MAKE FIRST TWO WORDS OF EVERY SECTOR
2278 /EQUAL TO ADDRESS OF SECTOR.
2279 1645 1122 T25T, TAD K7740
2280 1646 3134 DCA TCNTR1 /SETUP SECTOR COUNTER
2281 1647 1114 TAD K5252
2282 1648 4431 FILBUF /FILL BUFFER WITH DATA
2283 1651 1134 T26R1, TAD TCNTR1 /SECTOR COUNTER
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 0134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2298 1670 5251 JMP T26R1 /MORE SECTORS TO GO
2299 /
2300 /VERIFY THAT THE DATA WRITTEN ABOVE
2301 /ON CYLINDER 1450 WAS O.K. CHECK WITH READ ALL.
2302 /
2303 1671 1122 TAD K7740
2304 1672 3134 DCA TCNTR1 /COUNTER FOR 37 SECTORS
2305 1673 4432 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 0134 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 T25T /SCOPE LOOP POINTER
2324 1696 5373 T26T, 5373 /TEXT POINTER
2325 /
2326 /VERIFY ALL SECTORS CAN BE ACCESSED INDIVIDUALLY.
2327 /
2328 /
2329 /VERIFY A WRITE DATA TO ALL OF CYLINDER 1450
2330 /USE DATA PATTERN 2525+5252
2331 /CHECK FOR NO ERRORS IN STATUS.
2332 /MAKE FIRST TWO WORDS OF EVERY SECTOR
2333 /EQUAL TO ADDRESS OF SECTOR.
2334 1697 1122 T25T, TAD K7740
2335 1698 3134 DCA TCNTR1 /SETUP SECTOR COUNTER
2336 1699 1113 TAD K5252
2337 1699 4431 FILBUF /FILL BUFFER WITH DATA
2338 1699 1134 T25R1, TAD TCNTR1 /SECTOR COUNTER
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 /VERIFY THAT THE DATA WRITTEN ABOVE
2356 /ON CYLINDER 1450 WAS O.K. CHECK WITH READ DATA.
2357
2358 1743 1122 TAD K7740
2359 1744 3134 DCA TCNTR1 /COUNTER FOR 37 SECTORS
2360 1745 4432 T27R2, KILBUF /CLEAR DATA BUFFER
2361 1746 7301 CLA CLL IAC /FUNCTION READ DATA
2362 1747 3150 DCA CMREG /SETUP COMMAND
2363 1750 1134 TAD TCNTR1
2364 1751 0120 AND K0037
2365 1752 1065 TAD CYL450
2366 1753 4426 DISKGO /DISK READ DATA
2367 1754 1767 T27T /TEXT POINTER
2368 1755 5365 JMP T27E /ERROR, STATUS OR SKIP
2369 1756 1113 TAD K2525
2370 1757 4430 FIGURE
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 5365 JMP T27R2 /UPDATE SECTOR COUNTER
2375 1764 4437 NERRNR /MORE SECTORS TO CHECK
2376 1765 4440 T27E, ERROR /O.K. TO NEXT TEST
2377 1766 1717 T27T, T27T /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 HOMEWA
2388 1771 1072 TAD DRIVNO
2389 1772 3136 DCA TCNTR3 /SAVE FIELD+DRIVE
2390 1773 4525 TST28, JMS I XLOAD
2391 1774 7700 T27R2
2392 1775 1122 TAD K7740
2393 1776 3134 DCA TCNTR1 /SETUP SECTOR COUNTER
2394 1777 1115 TAD K5000 /FUNCTION WRITE ALL
2395 2000 3150 DCA CMREG /SETUP COMMAND
2396 2001 7340 CLA CLL CNA
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 /MODIFY TEXT POINTER
2403 2010 1134 T28R, TAD TCNTR1
2404 2011 0073 AND K0001
2405 2012 7112 CLL RTR
2406 2013 1017 TAD K1000 /MAKE READ ALL OR WRITE ALL
2407 2014 1136 TAD TCNTR3 /GET FIELD+DRIVE
2408 2015 6746 T2810A, DLDC /LOAD COMMAND REGISTER
2409 2016 1067 TAD AGNBUF /GET BEGINNING OF BUFFER POINTER
2410 2017 6744 T2810B, DLCA /LOAD CURRENT ADDRESS
2411 2020 1134 TAD TCNTR1
2412 2021 0120 AND K0037
2413 2022 6743 T2810C, DLAG /MASK SECTOR BITS
2414 2023 1174 TAD KTIME /LOAD AND GO
2415 2024 3135 DCA TCNTR2 /TIME COUNTER
2416 2025 6745 T2810D, DRST /READ STATUS REGISTER
2417 2026 1105 TAD K4000
2418 2027 7450 SNA
2419 2030 5252 JMP T280K /WAS STATUS 4000
2420 2031 2135 ISZ TCNTR2 /YES, GOT TRANSFER DONE
2421 2032 5255 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 /MAKE READ ALL OR WRITE ALL
2428 2041 3150 DCA CMREG /SAVE FOR ERROR PRINTER
2429 2042 1067 TAD BGNBUF /GET START OF BUFFER
2430 2043 3152 DCA CAREG /SAVE FOR PRINTER
2431 2044 1134 TAD TCNTR1
2432 2045 0120 AND K0037
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 NERRNR /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 TST29, TAD K7740
2454 2062 1122 DCA TCNTR1 /SECTOR COUNTER
2455 2063 3134

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2456	2064	3150	DCA	CMREG	/SETUP COMMAND
2457	2065	1120	TAD	K0037	
2458	2066	4426	DISKGO		/DISK READ DATA
2459	2067	2137	T30T		/TEXT POINTER
2460	2070	5335	JMP	T30E	/ERROR, SKIP OR STATUS
2461	2071	1166	TAD	K5300	
2462	2072	3337	DCA	T29T	/MODIFY TEXT POINTER
2463	2073	3143	DCA	G0RFG2	/EXPECTED STATUS
2464	2074	1134	T29R,	TAD	TCNTR1
2465	2075	2073	AND	K2001	
2466	2076	7112	CLL RTR		/MAKE READ OR WRITE
2467	2077	1136	TAD	TCNTR1	/GET FIELD+DRIVE
2468	2127	6746	T2910A,	DLDC	/LOAD COMMAND REGISTER
2469	2121	1967	TAD	RGNRUF	
2477	2122	6744	T2910B,	DLCA	/LOAD CURRENT ADDRESS
2471	2123	1134	TAD	TCNTR1	
2472	2124	2120	AND	K0037	
2473	2125	6743	T2910C,	DLAC	/MASK SECTOR BITS
2474	2126	1174	TAD	KTIME	/LOAD AND GO
2475	2127	3135	T2910D,	DCA	TCNTR2
2476	2110	6745	DNST		/TIME COUNTER
2477	2111	7452	SNA		/READ STATUS REGISTER
2478	2112	5326	JMP	T29W	/STATUS O.K.?
2479	2113	3146	DCA	STREG	/WAIT FOR CORRECT RESPONSE (0000)
2480	2114	1134	TAD	TCNTR1	/NO, SAVE STATUS FOR PRINTER
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	DARFG	/SAVE FOR ERROR PRINTER
2489	2125	5335	JMP	T29E	/ERROR, SECTOR RESPONSE NOT FOUND
2492	2126	2115	T29A,	ISZ	TCNTR2
2491	2127	5317	JMP	T2910D	/UPDATE TIME COUNTER
2492	2130	4447	DSKSKP		/WAIT FOR GOOD STATUS
2493	2131	5337	JMP	.-1	/ERROR, HAVE TO WAIT FOR FLAG
2494	2132	2134	T290K,	ISZ	TCNTR1
2495	2133	5274	JMP	T29R	/HANG IF NO SKIP
2496	2134	4437	NERROR		/UPDATE SECTOR COUNTER
2497	2135	4440	T29F,	ERROR	/MORE TO TEST
2498	2136	2062	TST29		/O.K. TO NEXT TEST
2499	2137	5302	T29T,	S302	/ERROR, STATUS
2500					/SCOPE LOOP POINTER
2501					/MODIFIED TEXT POINTER
2502					
2503					/CRC TEST
2504					/DATA TRANSFER IS WORKING, NOW CHECK CRC WORD IN
2505					/THE CRC REGISTER AFTER A READ ALL. THE CRC SHOULD BE
2506					/ALL 2'S FOR ALL 2'S DATA PATTERN.
2507	2140	1112	TST30,	TAD	K77A0
2508	2141	3134	DCA	TCNTR1	/SETUP SECTOR COUNTER
2509	2142	7321	T30R,	CLA CLL IAC	
2510	2143	4453	CLLALL		/CLEAR CONTROL

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2511	2144	4432	KILRUF		/CLEAR BUFFER AREA
2512	2145	1115	TAD	K5000	/FUNCTION WRITE ALL
2513	2146	3150	DCA	CMREG	/SETUP COMMAND
2514	2147	1134	TAD	TCNTR1	
2515	2150	0117	AND	K0017	/MASK SECTOR BITS
2516	2151	4426	DISKGO		/DISK WRITE ALL
2517	2152	2211	T30T		/TEXT POINTER
2518	2153	5777	JMP	T30E	/ERROR, STATUS OR SKIP
2519	2154	1017	TAD	K1000	/FUNCTION READ ALL
2520	2155	3152	DCA	CMREG	/SETUP COMMAND
2521	2156	1134	TAD	TCNTR1	
2522	2157	2117	AND	K0017	/MASK SECTOR BITS
2523	2160	4426	DISKGO		/DISK READ ALL
2524	2161	2211	T30T		/TEXT POINTER
2525	2162	5777	JMP	T30E	/ERROR, STATUS OR SKIP
2526	2163	1167	TAD	K6304	
2527	2164	3776	DCA	T30T	/MODIFY TEXT POINTER
2528	2165	7301	CLA CLL IAC		/ENABLE CLEAR CONTROL
2529	2166	4453	CLLALL		/AND CLEAR MARK ENABLE FLOP
2530	2167	3142	DCA	G0REG1	/STORE IN COMPARE REGISTER
2531	2170	3143	DCA	G0REG2	/STORE IN COMPARE REGISTER
2532	2171	5772	JMP I	.-1	
2533	2172	2200	T30D		
2534	2176	2211			
2535	2177	2207			
2536	2202	4454	PAGE		
2537	2201	4443	T30D,	RDRC	/READ CRC REGISTER
2538	2202	7612	ACCM2		/CHECK RESULTS
2539	2223	5227	SKP CLA		/O.K.
2542	2274	2134	JMP	T30E	/ERROR, CRC
2541	2205	5777	ISZ	TCNTR1	/UPDATE SECTOR COUNTER
2542	2276	4437	JMP	T30R	/MORE SECTORS TO TEST
2543	2207	4440	NERROR		/O.K. TO NEXT TEST
2544	2210	2147	T30F,	ERROR	/ERROR, CRC
2545	2211	6304	TST30		/SCOPE LOOP POINTER
2546			T30T,	6304	/TEXT POINTER
2547					
2548					/CRC TEST
2549					
2550					/VERIFY THAT THE CRC WORD WRITTEN
2551					/ON DISK IS CORRECT, COMPARE IT TO
2552					/KNOWN VALUE IN CORE. ON A READ ALL THE
2553					/CRC READ FROM DISK IS LEFT IN THE CRC BUFFER.
2554					/THE CRC SHOULD BE 11A047 FOR DATA 2525-5252.
2555	2212	1112	TST31,	TAD	K7760
2556	2213	3134	DCA	TCNTR1	/SETUP SECTOR COUNTER
2557	2214	7301	T31R,	CLA CLL IAC	
2558	2215	4453	CLLALL		/CLEAR CONTROL
2559	2216	1113	TAD	K2525	
2560	2217	4431	FILRUF		/FILL DATA BUFFER
2561	2220	1115	TAD	K5000	/FUNCTION WRITE ALL
2562	2221	3150	DCA	CMREG	/SETUP COMMAND
2563	2222	1134	TAD	TCNTR1	
2564	2223	2117	AND	K0017	/MASK SECTOR BITS

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2565 2224 1110 TAD K7760
2566 2225 4426 DISKGO
2567 2226 2261 T31T
2568 2227 5257 JMP T31E
2569 2230 1017 TAD K1000
2570 2231 3150 DCA CMREG
2571 2232 1134 TAD TCNTR1
2572 2233 0117 AND K0017
2573 2234 1110 TAD K7760
2574 2235 4426 DISKGO
2575 2236 2261 T31T
2576 2237 5257 JMP T31E
2577 2240 1167 TAD K6304
2578 2241 3261 DCA T31T
2579 2242 7301 CLA CLL IAC
2580 2243 4453 CLRALL
2581 2244 1160 TAD CRWRD1
2582 2245 3142 DCA GOREG1
2583 2246 1161 TAD CRWRD2
2584 2247 3143 DCA GOREG2
2585 2250 4454 RDCRC
2586 2251 4443 ACCMP2
2587 2252 7610 SKP CLA
2588 2253 5257 JMP T31E
2589 2254 2134 ISZ TCNTR1
2590 2255 5214 JMP T31R
2591 2256 4437 ERRORR
2592 2257 4440 T31E,
2593 2260 2212 ERRORR
2594 2261 4324 TST31
2595 T31T, 6304
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 TWO 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 2262 1122 TST32, TAD K7740
2610 2263 3134 DCA TCNTR1
2611 2264 1114 TAD K2525
2612 2265 4431 FILBUF
2613 2266 7301 CLA CLL IAC
2614 2267 1072 TAD DRIVNO
2615 2270 3464 DCA I XMITRK
2616 2271 1134 T32R1, TAD TCNTR1
2617 2272 0120 AND K0037
2618 2273 1065 TAD CYL450
2619 2274 3463 DCA I XLOTRK
2620 2275 7321 CLA CLL IAC

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

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2675 2352 3134 OCA 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 K2525
2685 2364 4430 FIGURE
2686 2365 7610 SKP CLA
2687 2366 5372 JMP T32E
2688 2367 2134 ISZ TCNTR1
2689 2370 5353 JMP T32R4
2690 2371 4437 NERROR
2691 2372 4440 ERROR
2692 2373 2262 T32T, T32T,
2693 2374 5373 T32T,
2694
2695 2375 5776 JMP I .+1
2696 2376 2400 TST33
2697
2698 2377 2142 PAGE
2699 2400
2700 /
2701 /VERIFY HEAD MOTION AND CAPABILITY
2702 /OF SELECTING TWO TRACKS INDIVIDUALLY.
2703 /
2704 /VERIFY A WRITE DATA TO ALL OF CYLINDER 0
2705 /THEN CYLINDER 1450. USE DATA PATTERN 2525+5252 ON
2706 /CYLINDER 1450 AND 5252+2525 ON CYLINDER 0.
2707 /CHECK FOR NO ERRORS IN STATUS.
2708 /MAKE FIRST TWO WORDS OF EVERY SECTOR
2709 /EQUAL TO ADDRESS OF SECTOR.
2710 /
2711 /FIRST WRITE DATA TO CYLINDER 0.
2712 2400 1122 TST33, TAD K7740
2713 2401 3134 DCA TCNTR1
2714 2402 1114 TAD K2525
2715 2403 4431 FILBUF
2716 2404 7300 T33R1, CLA CLL
2717 2405 1134 TAD TCNTR1
2718 2406 0120 AND K0037
2719 2407 3463 DCA I XLOTRK
2720 2410 1072 TAD DRIVNO
2721 2411 3464 DCA I XMITRK
2722 2412 1105 TAD K4000
2723 2413 3150 DCA CMREG
2724 2414 1463 TAD I XLOTRK
2725 2415 4426 DISKGO
2726 2416 2511 T33T
2727 2417 5307 JMP T33E
2728 2420 2134 ISZ TCNTR1

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/COUNTER FOR 37 SECTORS
 /CLEAR DATA BUFFER
 /READ ALL FUNCTION
 /SETUP COMMAND

/DISK READ ALL
 /TEXT POINTER
 /ERROR, STATUS OR SKIP

/WORD BY WORD COMPARE OF DATA
 /DATA O.K.
 /ERROR, DATA
 /UPDATE SECTOR COUNTER
 /MORE SECTORS TO CHECK
 /O.K. TO NEXT TEST
 /ERROR, WRITE ALL
 /SCOPE LOOP POINTER
 /TEXT POINTER
 /TO NEXT TEST

/SETUP SECTOR COUNTER

/FILL BUFFER WITH DATA

/MASK OFF SECTOR BITS
 /SETUP ADDRESS WORD IN BUFFER
 /GET DRIVE NUMBER
 /SETUP ADDRESS WORD IN BUFFER
 /FUNCTION WRITE DATA
 /SETUP COMMAND
 /SECTOR TO LOAD
 /DISK WRITE DATA
 /TEXT POINTER
 /ERROR, STATUS OR SKIP
 /UPDATE SECTOR COUNTER

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2729 2421 5204 JMP T33R1
2730
2731 /
2732 /WRITE DATA TO ALL OF CYLINDER 1450
2733 /
2734 2422 1122 TAD K7740
2735 2423 3134 DCA TCNTR1
2736 2424 1113 TAD K2525
2737 2425 4431 FILBUF
2738 2426 7301 CLA CLL IAC
2739 2427 1072 TAD DRIVNO
2740 2430 3464 DCA I XMITRK
2741 2431 1134 T33R2, TAD TCNTR1
2742 2432 0120 AND K0037
2743 2433 1065 TAD CYL450
2744 2434 3463 DCA I XLOTRK
2745 2435 7301 CLA CLL IAC
2746 2436 1105 TAD K4000
2747 2437 3150 DCA CMREG
2748 2440 1463 TAD I XLOTRK
2749 2441 4426 DISKGO
2750 2442 2511 T33T
2751 2443 5307 JMP T33E
2752 2444 2134 ISZ TCNTR1
2753 2445 5231 JMP T33R2
2754
2755 /
2756 /VERIFY THAT THE DATA WRITTEN ABOVE
2757 /ON CYLINDER 0 WAS O.K. CHECK WITH READ DATA.
2758 /
2759 2446 1122 TAD K7740
2760 2447 3134 DCA TCNTR1
2761 2450 4432 T33R3, KILBUF
2762 2451 3150 DCA CMREG
2763 2452 1134 TAD TCNTR1
2764 2453 0120 AND K0037
2765 2454 4426 DISKGO
2766 2455 2511 T33T
2767 2456 5307 JMP T33E
2768 2457 1114 TAD K2525
2769 2460 4430 FIGURE
2770 2461 7610 SKP CLA
2771 2462 5307 JMP T33E
2772 2463 2134 ISZ TCNTR1
2773 2464 5250 JMP T33R3
2774
2775 /
2776 /VERIFY THAT THE DATA WRITTEN ABOVE
2777 /ON CYLINDER 1450 WAS O.K. CHECK WITH READ DATA.
2778 /
2779 2465 1122 TAD K7740
2780 2466 3134 DCA TCNTR1
2781 2467 4432 T33R4, KILBUF
2782 2470 7301 CLA CLL IAC
2783 2471 3150 DCA CMREG
2784 2472 1134 TAD TCNTR1
2785 2473 0120 AND K0037
2786 2474 1065 TAD CYL450

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/MORE SECTORS TO GO

/SETUP SECTOR COUNTER
 /FILL BUFFER WITH DATA

/GET DRIVE NUMBER
 /SETUP ADDRESS WORD IN BUFFER

/MASK OFF SECTOR BITS
 /ADD IN CYLINDER
 /SETUP ADDRESS WORD IN BUFFER
 /EXTENDED TRACK BIT
 /FUNCTION WRITE DATA
 /SETUP COMMAND
 /SECTOR TO LOAD
 /DISK WRITE DATA
 /TEXT POINTER
 /ERROR, STATUS OR SKIP
 /UPDATE SECTOR COUNTER
 /MORE SECTORS TO GO

/COUNTER FOR 37 SECTORS
 /CLEAR DATA BUFFER
 /SETUP COMMAND

/DISK READ DATA
 /TEXT POINTER
 /ERROR, STATUS OR SKIP

/WORD BY WORD COMPARE OF DATA
 /DATA O.K.
 /ERROR, DATA
 /UPDATE SECTOR COUNTER
 /MORE SECTORS TO CHECK

/SECTOR COUNTER
 /CLEAR DATA BUFFER

/SETUP COMMAND

/ADD IN CYLINDER

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2784 2475 4426 DISKGO /DISK READ DATA
2785 2476 2511 T33T /TEXT POINTER
2786 2477 5307 JMP T33E /ERROR, STATUS OR SKIP
2787 2500 1113 TAD K2525
2788 2501 4430 FIGURE /WORD BY WORD COMPARE OF DATA
2789 2502 7610 SKP CLA /DATA O.K.
2790 2503 5307 JMP T33E /ERROR, DATA
2791 2504 2134 ISZ TCNTR1 /UPDATE SECTOR COUNTER
2792 2505 5267 JMP T33R4 /MORE SECTORS TO CHECK
2793 2506 4437 NERROR /O.K. TO NEXT TEST
2794 2507 4440 T33E, ERROR /ERROR, WRITE DATA
2795 2510 2400 TST33 /SCOPE LOOP POINTER
2796 2511 5373 T337, 5373 /TEXT POINTER
2797 /
2798 /FORCE CYLINDER ADDRESS ERROR
2799 /
2800 /VERIFY A CYLINDER ADDRESS ERROR IN
2801 /STATUS REGISTER. CAN BE CAUSED BY ISSUING
2802 /MAINTENANCE SHIFT CRC AFTER DISK
2803 /HAS ACCEPTED THE ADDRESS.
2804 /
2805 2512 4525 JMS I XLOAD
2806 2513 0001 1
2807 2514 7301 TST34, CLA CLL IAC
2808 2515 4453 CLRALL /CLEAR CONTROL
2809 2516 4424 SEEK /SEEK ONLY TRACK 0
2810 2517 2550 T34T /TEXT POINTER
2811 2520 5346 JMP T34E /ERROR, SKIP OR STATUS
2812 2521 7301 CLA CLL IAC
2813 2522 1156 TAD HOME4
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 DR4 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 ROSTAT /READ STATUS REGISTER
2831 2544 4442 ACCMP1 /CHECK RESULTS
2832 2545 4437 NERROR /O.K. TO NEXT TEST
2833 2546 4440 T34E, ERROR /ERROR, CYLINDER ADDRESS
2834 2547 2514 TST34 /SCOPE LOOP POINTER
2835 2550 5300 T34T, 5300 /TEXT POINTER
2836 /
2837 /
2838 /FORCE CRC ERROR

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2839 /
2840 /VERIFY A CRC ERROR BY ENTERING MAINTENANCE
2841 /AND SHIFTING CRC IN WRITE ALL MOOF.
2842 /
2843 2551 7301 TST35, CLA CLL IAC
2844 2552 4453 CLRALL /CLEAR CONTROL
2845 2553 4432 KLRBUF /CLEAR BUFFER AREA
2846 2554 1067 TAD BGNRUF
2847 2555 4451 LDCUR /LOAD CURRENT ADDRESS
2848 2556 1156 TAD HOME4
2849 2557 1072 TAD DRIVNO
2850 2560 1115 TAD K5000 /TOTAL WRITE COMMAND
2851 2561 4450 LDCMD /LOAD COMMAND
2852 2562 4452 LDADD /LOAD AND GO WRITE ALL
2853 2563 7330 CLA CLL CML RAR
2854 2564 4455 LDMAN /ENTER MAINTENANCE
2855 2565 7010 RAR
2856 2566 4455 LDMAN /SET DR4 TO ENARLE SHIFT
2857 2567 7010 RAR
2858 2570 1074 TAD K0002 /SET AC BIT 10 DATA
2859 2571 4455 LDMAN /SHIFT CRC
2860 2572 4447 DSKSKP /SKIP ON ERROR FLAG1
2861 2573 5371 JMP -2 /KEEP SHIFTING CRC TILL ERROR
2862 2574 7301 CLA CLL IAC
2863 2575 4453 CLRALL /CLEAR CONTROL
2864 2576 7330 CLA CLL CML RAR
2865 2577 1011 TAD K0010
2866 2600 3143 DCA GOREG2 /EXPECTED STATUS REGISTER
2867 2601 1067 TAD BGNRUF
2868 2602 4451 LDCUR /LOAD CURRENT ADDRESS
2869 2603 1156 TAD HOME4
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 ROSTAT /READ STATUS REGISTER
2877 2613 4442 ACCMP1 /CHECK RESULTS
2878 2614 4437 NERROR /O.K. TO NEXT TEST
2879 2615 4440 T35E, ERROR /ERROR, CRC ERROR
2880 2616 2551 TST35 /SCOPE POINTER
2881 2617 5300 T3500 /TEXT POINTER
2882 /
2883 /BIG ADDRESSING TEST
2884 /FORMAT THE COMPLETE DISK SURFACE WITH
2885 /WRITE ALL. USE DATA PATTERN 2525+5252
2886 /MAKE FIRST TWO WORDS OF EVERY SECTOR
2887 /EQUAL TO ABSOLUTE ADDRESS OF SECTOR.
2888 /
2889 2620 4525 JMS I XLOAD
2890 2621 7700 7700
2891 2622 7301 TST36, CLA CLL IAC
2892 2623 4453 CLRALL /CLEAR CONTROL
2893 2624 1113 TAD K2525

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2894 2625 4431 FILRUF /FILL BUFFER WITH DATA
2895 2626 3463 DCA I XLOTRK /COUNTER+TRACK WORD
2896 2627 1072 TAD DRIVNO /GET DRIVE NUMBER
2897 2630 3464 DCA I XMITRK /COUNTER+TRACK WORD
2898 2631 1072 TAD DRIVNO /CURRENT DRIVE
2899 2632 1156 TAD HOMEMA /CURRENT FIELD
2900 2633 1115 TAD K5000 /FUNCTION WRITE ALL
2901 2634 3150 DCA CMREG /SETUP COMMAND
2902 2635 1767 TAD RGNRUF /GET START OF BUFFER
2903 2636 3152 DCA CAREG /FOR ERROR PRINTER
2904 2637 4530 T36R, TICK /APT TIMING
2905 2640 7330 CLA CLL CML RAR
2906 2641 3143 DCA GOREG2 /SETUP EXPECTED STATUS COMPARE
2907 2642 1767 TAD RGNRUF /START OF BUFFER
2908 2643 6744 IOT441, DLCA /LOAD CURRENT ADDRESS
2909 2644 1150 TAD CMREG /LAST COMMAND
2910 2645 6746 IOT641, DLOC /LOAD COMMAND REGISTER
2911 2646 1463 TAD I XLOTRK /SECTOR TO LOAD
2912 2647 6743 IOT3A1, DLAG /LOAD AND GO
2913 2650 6741 IOT1A1, DSKP /DISK SKIP IOT
2914 2651 5250 JMP .-1 /WAIT FOR FLAG
2915 2652 6745 IOT5A1, DRST /READ STATUS
2916 2653 1105 TAD K4000 /ADD IN FUDGE FACTOR
2917 2654 7440 SZ4 /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 /HAS 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 SZ4 CLA /DONE WITH DISK
2930 2671 5237 JMP T36R /NO, MORE TO GO
2931 2672 5300 JMP T36N /DONE
2932 2673 1105 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 4417 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
2943 /
2944 /THE FOLLOWING IS A ROUTINE TO CHECK THE WRITE PROTECT
2945 /FUNCTION WHEN IT IS MANUALLY SET BY THE OPERATOR.
2946 /NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS TEST.
2947 /
2948 2706 4405 HANPRO, CLASIC /CHECK FOR CLASSIC.

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2949 2707 4431 C8SWIT /ROUTINE TO EXECUTE.
2950 2710 7000 NOP
2951 2711 4404 LAB /GET THE SWITCHES
2952 2712 7104 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 4405 CLASIC
2969 2733 4436 CAERR
2970 2734 7402 MPMLT1, HLT /HALT AND WAIT FOR OPERATOR
2971 /
2972 /IF ON CLASSIC CONSOLE PACKAGE
2973 /HIT CONTROL E. IF NOT THEN
2974 /PRESS KEY CONTINUE.
2975 2735 4432 HPR1, 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
2988 2752 1146 TAD STREG
2989 2753 4402 ACCMP1 /SETUP TEXT POINTER
2990 2754 7612 SKP CLA /GET STATUS READ
2991 2755 5371 JMP MPERR /CHECK RESULTS
2992 2756 7301 CLA CLL IAC /STATUS O.K.
2993 2757 4453 CLRALL /ERROR, WRITE PROTECT
2994 2760 4432 KILBUF /ENABLE CLEAR CONTROL
2995 2761 1017 TAD K1000 /CLEAR CONTROL
2996 2762 3150 DCA CMREG /CLEAR DATA BUFFER
2997 2763 4426 DISKGO /FUNCTION READ ALL
2998 2764 2773 TMPROT /SETUP COMMAND
2999 2765 5371 JMP MPERR /READ ALL SECTOR 0
3000 2766 1113 TAD K2525 /TEXT POINTER
3001 2767 4430 FIGURE /ERROR
3002 2770 4437 NERROR /EXPECTED PATTERN
3003 2771 4440 MPERR, ERROR /CHECK DATA READ

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3004 2772 2735 MPR1
3005 2773 0000 TMPROT, 0000 /TEXT POINTER
3006 2774 4405 CLASIC
3007 2775 4436 CERR
3008 2776 7402 MPMLT2, WLT
3009 /SUCCESSFUL WRITE PROTECT
3010 /TO REPEAT TEST: IF ON
3011 /CLASSIC CONSOLE PACKAGE
3012 /HIT CONTROL E. IF NOT THEN
3013 2777 5306 JMP MANPRO /PRESS KEY CONTINUE.
3014 3000 /REPEAT
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 KTLBUF /CLEAR DATA BUFFER
3046 3021 1134 TAD TCNTR1 /LOWER DISK ADDRESS
3047 3022 3151 DCA DAREG /SAVE FOR PRINTER
3048 3023 1067 TAD BGNRUF /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 CHL RAR /EXPECTED STATUS
3063 3042 3143 DCA GOREG2 /SETUP COMPARE REGISTER
3064 3043 1146 TAD STREG /GET STATUS READ
3065 3044 0011 AND K0010 /MASK FOR CRC
3066 3045 7640 SZA CLA /WAS IT CRC ERROR
3067 3046 5252 JMP .+4 /YES CRC ERROR
3068 3047 1166 TAD K5300 /GET TEXT POINTER
3069 3050 3302 DCA T37T /SAVE IT
3070 3051 5300 JMP T37E /STATUS ERROR NOT CRC
3071 3052 3171 DCA 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 FIGURE /CHECK DATA READ
3079 3062 7610 SKP CLA /THIS ONE O.K.
3080 3063 5300 JMP T37E /ERROR, DATA
3081 3064 2134 ISZ TCNTR1 /UPDATE LOWER DISK ADDRESS
3082 3065 7610 SKP CLA
3083 3066 2150 ISZ CMREG /SET EXTENDED BIT
3084 3067 1150 TAD CMREG
3085 3070 0073 AND K0001
3086 3071 7650 SNA CLA /IS EXTENDED SET
3087 3072 5215 JMP T37R /NO, CONTINUE
3088 3073 1134 TAD TCNTR1
3089 3074 1170 TAD 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 /DATA ERROR
3150 3153 1166 TAD K5300 /STATUS TEXT POINTER
3151 3154 3361 DCA T38T /SETUP
3152 3155 7610 SKP CLA /STATUS ERROR
3153 3156 4437 T380K, NERROR /O.K. TO NEXT TEST
3154 3157 4440 T38DE, ERROR /ERROR, READ DATA
3155 3160 3105 TST3A /SCOPE LOOP POINTER
3156 3161 5300 T38T, 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 OCCURS THEN CHECK DATA.
3167 /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3168 /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR

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3169 /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3170 /
3171 3162 4525 JMS I XLOAD
3172 3163 7776 7776
3173 3164 7340 T3739, 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 T38T /SETUP
3212 3233 7610 SKP CLA
3213 3234 4437 T390K, NERROR /O.K. TO NEXT TEST
3214 3235 4440 T39DE, ERROR /ERROR, READ DATA
3215 3236 3164 TST3A /SCOPE LOOP POINTER
3216 3237 5300 T39T, 5300 /TEXT POINTER
3217 /
3218 /DO A RANDOM READ DATA
3219 /THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.
3220 /HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR
3221 /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3222 /
3223 3240 1107 TST40, TAD K7000

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3224 3241 3140 DCA TCNTR5 /LENGTH OF TIME FOR THIS TEST
3225 3242 4423 T40R, RANADD /GET AN ADDRESS FOR SEEK/READ
3226 3243 3136 DCA TCNTR3 /SAVE IT
3227 3244 7004 RAL /LINK IS EXTENDED
3228 3245 3137 DCA TCNTR4 /SAVE IT
3229 3246 1137 T40S, TAD TCNTR4
3230 3247 3150 DCA CMREG /SETUP COMMAND
3231 3250 1136 TAD TCNTR3
3232 3251 4426 DISKGO /DISK READ DATA
3233 3252 3265 T40T /TEXT POINTER
3234 3253 5263 JMP T40E /ERROR, SKIP OR STATUS
3235 3254 1113 TAD K2525
3236 3255 4430 FIGURE /WORD BY WORD COMPARE OF DATA
3237 3256 7610 SKP CLA /DATA O.K.
3238 3257 5263 JMP T40E /DATA ERROR
3239 3260 2140 ISZ TCNTR5
3240 3261 5242 JMP T40R /LOOP
3241 3262 4437 NERROR /O.K. TO NEXT TEST
3242 3263 4440 T40E, ERROR /ERROR, READ
3243 3264 3240 TST40 /SCOPE LOOP POINTER
3244 3265 0000 T40T, 0000 /TEXT POINTER
3245 /
3246 /RANDOM SEEK THEN WRITE THEN SEEK THEN READ TEST
3247 /THE DATA WRITTEN IS 2525+5252 AND THE TWO
3248 /FIRST WORDS OF THE SECTOR ARE SET TO THE DISK ADDRESS.
3249 /
3250 3266 4525 JMS I XLOAD
3251 3267 3777 3777
3252 3270 1111 TST41, TAD K7700
3253 3271 3140 DCA TCNTR5 /PASS COUNTER
3254 3272 4423 T41R, RANADD /GENERATE RANDOM NUMBER
3255 3273 0117 AND K0017
3256 3274 1110 TAD K7760
3257 3275 3141 DCA TCNTR6 /SAVE COUNTER
3258 3276 4423 RANADD /RANDOM SEEK DISK ADDRESS
3259 3277 3134 DCA TCNTR1 /SAVE
3260 3300 7004 RAL /LINK IS EXTENDED BIT
3261 3301 3135 DCA TCNTR2 /SAVE
3262 3302 4423 RANADD /RANDOM SEEK/WRITE DISK ADDRESS
3263 3303 3136 DCA TCNTR3 /SAVE
3264 3304 7004 RAL /LINK IS EXTENDED BIT
3265 3305 3137 DCA TCNTR4 /SAVE IT
3266 3306 1113 T41S, TAD K2525
3267 3307 4431 FILBUF /FILL BUFFER
3268 3310 1137 TAD TCNTR4 /GET EXTENDED BIT
3269 3311 1072 TAD DRIVNO /GET DRIVE NUMBER
3270 3312 3464 DCA I XWTRK /DISK ADDRESS WORD IN BUFFER
3271 3313 1136 TAD TCNTR3 /LOWER DISK ADDRESS
3272 3314 3463 DCA I XLOTRK /DISK ADDRESS WORD IN BUFFER
3273 3315 1135 TAD TCNTR2 /GET EXTENDED BIT
3274 3316 3150 DCA CMREG /SETUP COMMAND
3275 3317 1134 TAD TCNTR1 /DISK ADDRESS
3276 3320 4424 SEEK /SEEK ONLY
3277 3321 3361 T41T /TEXT POINTER
3278 3322 5357 JMP T41E /ERROR SKIP OR STATUS

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3279 3323 1137 TAD TCNTR4 /EXTENDED BIT
3280 3324 1105 TAD K4000 /FUNCTION WRITE DATA
3281 3325 3150 DCA CMREG /SETUP COMMAND
3282 3326 1136 TAD TCNTR3 /DISK ADDRESS
3283 3327 4426 DISKGO /DISK WRITE DATA
3284 3330 3361 T41T /TEXT POINTER
3285 3331 5357 JMP T41E /ERROR SKIP OR STATUS
3286 3332 1135 TAD TCNTR2 /GET EXTENDED BIT
3287 3333 3150 DCA CMREG /SETUP COMMAND REGISTER
3288 3334 1134 TAD TCNTR1 /GET DISK ADDRESS
3289 3335 4424 SEEK /GO SEEK ONLY
3290 3336 3361 T41T /TEXT POINTER
3291 3337 5357 JMP T41E /ERROR, SEEK SKIP OR STATUS
3292 3340 1137 TAD TCNTR4 /GET EXTENDED BIT
3293 3341 3150 DCA CMREG /SETUP READ DATA COMMAND
3294 3342 1136 TAD TCNTR3 /DISK ADDRESS
3295 3343 4426 DISKGO /DISK READ DATA
3296 3344 3361 T41T /TEXT POINTER
3297 3345 5357 JMP T41E /ERROR, SKIP OR STATUS
3298 3346 1113 TAD K2525
3299 3347 4430 FIGURE /WORD BY WORD COMPARE OF DATA
3300 3350 7610 SKP CLA /DATA O.K.
3301 3351 5357 JMP T41E /DATA ERROR
3302 3352 2141 ISZ TCNTR6 /COUNT TO SAME TRACKS
3303 3353 5306 JMP T41S /REPEAT
3304 3354 2140 ISZ TCNTR5 /PASS COUNTER
3305 3355 5272 JMP T41R /LOOP
3306 3356 4437 NERROR /O.K. TO NEXT TEST
3307 3357 4440 T41E, ERROR /ERROR
3308 3360 3270 TST41 /SCOPE LOOP POINTER
3309 3361 5373 T41T, 5373 /TEXT POINTER
3310 3362 5763 JMP I .+1
3311 3363 3400 TST42
3312 /
3313 /
3314 /VERIFY A RECALIBRATE THEN A RANDOM WRITE DATA,
3315 /THEN A RECALIBRATE THEN RANDOM READ DATA.
3316 /THE DATA PATTERN WRITTEN IS 2525+5252 AND
3317 /THE FIRST TWO WORDS OF EVERY SECTOR
3318 /SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.
3319 /
3320 /
3321 3377 3173 PAGE
3322 3400 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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/	PAL10	VI42A	15-APR-76	13124	PAGE 1-64	
3333	3412	3464	DCA I	XWITRK		/DISK ADDRESS WORD IN BUFFER
3334	3413	1134	TAD	TCNTR1		/LOWER DISK ADDRESS
3335	3414	3463	DCA I	XLOTRK		/DISK ADDRESS WORD IN BUFFER
3336	3415	4425	RECAL			/RESTORE DRIVE
3337	3416	3451	T42T			/TEXT POINTER
3338	3417	5247	JMP	T42E		/ERROR SKIP OR STATUS
3339	3427	1135	TAD	TCNTR2		/EXTENDED BIT
3340	3421	1125	TAD	K4000		/FUNCTION WRITE DATA
3341	3422	3153	DCA	CMREG		/SETUP COMMAND
3342	3423	1134	TAD	TCNTR1		/DISK ADDRESS
3343	3424	4426	DISKGO			/DISK WRITE DATA
3344	3425	3451	T42T			/TEXT POINTER
3345	3426	5247	JMP	T42E		/ERROR SKIP OR STATUS
3346	3427	4425	RECAL			/RESTORE DRIVE
3347	3430	3451	T42T			/TEXT POINTER
3348	3431	5247	JMP	T42E		/ERROR, SKIP OR STATUS
3349	3432	1135	TAD	TCNTR2		/RET EXTENDED BIT
3350	3433	3153	DCA	CMREG		/SETUP READ DATA COMMAND
3351	3434	1134	TAD	TCNTR1		/DISK ADDRESS
3352	3435	4426	DISKGO			/DISK READ DATA
3353	3436	3451	T42T			/TEXT POINTER
3354	3437	5247	JMP	T42E		/ERROR, SKIP OR STATUS
3355	3440	1113	TAD	K2525		
3356	3441	4430	FIGURE			/WORD BY WORD COMPARE OF DATA
3357	3442	7610	SKP CLA			/DATA O.K.
3358	3443	5247	JMP	T42E		/DATA ERROR
3359	3444	2140	ISZ	TCNTR5		/PASS COUNTER
3360	3445	5202	JMP	T42R		/LOOP
3361	3446	4437	NERROR			/O.K. TO NEXT TEST
3362	3447	4440	T42F, ERROR			/ERROR
3363	3450	3400	TSY42			/SCOPE LOOP POINTER
3364	3451	5373	T42T, 5373			/TEXT POINTER
3365			/			
3366			/SINGLE DRIVE VARIATION TEST			
3367			/			
3368			/TRY TO CAUSE CYLINDER ADDRESS ERRORS BY			
3369			DOING A FEW RANDOM SEES THEN A READ DATA.			
3370			/			
3371	3452	1341	TST43, TAD	TIMSTP		
3372	3453	3140	DCA	TCNTR5		/SETUP PASS COUNTER
3373	3454	4432	T43R1, KILBUF			/CLEAR BUFFER
3374	3455	4423	RANADD			/GET RANDOM NUMBER
3375	3456	0120	AND	K0037		
3376	3457	1122	TAD	K7700		
3377	3460	3137	DCA	TCNTR4		/SETUP COUNTER FOR SEES
3378	3461	4423	T43R2, RANAND			/GET RANDOM SEEK ADDRESS
3379	3462	3136	DCA	TCNTR3		/SAVE IT
3380	3463	7004	RAL			/LINK IS EXTENDED BIT
3381	3464	3135	DCA	TCNTR2		/SAVE IT
3382	3465	1135	TAD	TCNTR2		
3383	3466	3150	DCA	CMREG		/SETUP COMMAND
3384	3467	1136	TAD	TCNTR3		
3385	3470	4424	SEFK			/SEEK ONLY A RANDOM TRACK
3386	3471	3514	T43T			/TEXT POINTER
3387	3472	5312	JMP	T43E		/ERROR, SKIP OR STATUS

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3388	3473	2137	ISZ	TCNTR4		/COUNT NUMBER TO DO
3389	3474	5261	JMP	T43R2		
3390	3475	1135	TAD	TCNTR2		
3391	3476	3150	DCA	CMREG		/SETUP FOR READ DATA
3392	3477	1136	TAD	TCNTR3		
3393	3500	4426	DISKGO			/LOAD AND GO READ DATA
3394	3501	3514	T43T			/TEXT POINTER
3395	3502	5312	JMP	T43E		/ERROR SKIP OR STATUS
3396	3503	1113	TAD	K2525		
3397	3504	4430	FIGURE			/CHECK DATA READ
3398	3505	7610	SKP CLA			/ALL O.K.
3399	3506	5312	JMP	T43E		/ERROR, DATA
3400	3507	2140	ISZ	TCNTR5		
3401	3510	5254	JMP	T43R1		/MORE TO TEST
3402	3511	4437	NERROR			/P.K. TO NEXT TEST
3403	3512	4440	T43E, ERROR			/ERROR, SKIP, STATUS, OR DATA
3404	3513	3452	TST43			/SCOPE LOOP POINTER
3405	3514	0000	T43T, 0000			/TEXT POINTER
3406			/			
3407			/CHECK DISK HEADER WORDS WITH READ DATA			
3408			/IF STATUS ERROR OCCURS THEN CHECK DATA.			
3409			/THE DATA ON THE COMPLETE DISK SHOULD BE 2525+5252.			
3410			/HOWEVER, THE TWO FIRST WORDS OF EVERY SECTOR			
3411			/SHOULD EQUAL THE ABSOLUTE DISK ADDRESS.			
3412			/			
3413	3515	4525	JMS I	XLOAD		
3414	3516	7775	7775			
3415	3517	7340	TST44, CLA CLL	CMA		/SETUP CRC ERROR POINTER
3416	3520	3171	DCA	SOFFER		/SETUP LOWER ADDRESS
3417	3521	3134	DCA	TCNTR1		/SETUP EXTENDED
3418	3522	3135	DCA	TCNTR2		/CURRENT DRIVE
3419	3523	1072	TAD	DRIVNO		/CURRENT FIELD
3420	3524	1156	TAD	HOMEMA		/SETUP COMMAND
3421	3525	3150	DCA	CMREG		
3422	3526	4530	T44R, TICK			
3423	3527	1067	TAD	RGNBUR		/START OF BUFFER
3424	3530	4451	LOCUR			/LOAD CURRENT ADDRESS
3425	3531	1150	TAD	CMREG		/LAST COMMAND ISSUED
3426	3532	4450	LOCMD			/LOAD COMMAND
3427	3533	1134	TAD	TCNTR1		/LOWER ADDRESS
3428	3534	4452	LOADD			/LOAD AND GO
3429	3535	4447	DSKSKP			/DISK SKIP IOT
3430	3536	5335	JMP	.-1		/HANG IF NO SKIP
3431	3537	4444	R0STAT			/READ STATUS
3432	3540	1105	TAD	K4000		/SHOULD ONLY BE DONE
3433	3541	7640	TIMSTP, SZA CLA			/JUST DONE FLAG ?
3434	3542	5357	JMP	T44E		/STATUS ERROR
3435	3543	2134	ISZ	TCNTR1		/UPDATE ADDRESS
3436	3544	5347	JMP	.-3		/DON'T SET EXTENDED TRACK
3437	3545	2150	ISZ	CMREG		/YES, SET IT
3438	3546	2135	ISZ	TCNTR2		
3439	3547	1135	TAD	TCNTR2		
3440	3550	7650	SNA CLA			/IS EXTENDED SET
3441	3551	5326	JMP	T44R		/NO, CONTINUE
3442	3552	1134	TAD	TCNTR1		

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3443 3553 1170 TAD ENDTRK /ADD IN FUDGE FACTOR
3444 3554 7440 SZA CLA /DONE WITH DISK
3445 3555 5326 JMP T44R /NO, MORE TO GO
3446 3556 5367 JMP T44OK /ALL O.K.
3447 3557 1113 T44E, TAD K2525
3448 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 T44OK, NERROR /O.K. TO NEXT TEST
3456 3570 4440 ERROR /ERROR, READ DATA
3457 3571 3517 T44T, T574 /SCOPE LOOP POINTER
3458 3572 5300 /TEXT POINTER
3459 /
3460 3573 5774 JMP I .+1
3461 3574 3616 T5745=4 /NEXT TEST
3462 3600
3463 PAGE
3464 /
3465 /ROUTINE TO COMPARE CRREG1 AND CRREG2 TO
3466 /GDREG1 AND GDREG2.
3467 /
3468 COMP2, 0
3469 CLA CLL
3470 TAD GDREG1
3471 AND K0017
3472 CIA
3473 TAD CRREG1
3474 SZA CLA
3475 JMP CRERR /NOT THE SAME
3476 TAD CRREG2
3477 CIA
3478 TAD GDREG2
3479 SZA CLA
3480 CRERR, ISZ COMP2 /ERROR, NOT THE SAME
3481 JMP I COMP2
3482 /
3483 /
3484 /VERIFY THAT WRITING ON A TRACK DOES NOT AFFECT
3485 /AN ADJACENT TRACK. THE TEST SEQUENCE IS AS FOLLOWS:
3486 /WRITE TRACKS 00000-00100-00040 THEN READ AND CHECK
3487 /TRACKS 00040-00000-00100, WRITE TRACKS 00020-00120-00060
3488 /THEN READ AND CHECK TRACKS 00060-00020-00120, ETC.
3489 /THE CENTER TRACK IS SET TO A DATA PATTERN OF
3490 /2525+5252. THE LOWER AND UPPER TRACKS ARE
3491 /SET TO A DATA PATTERN OF 5252+2525. THE FIRST TWO
3492 /WORDS OF EVERY SECTOR ARE SET TO THE ABSOLUTE
3493 /DISK ADDRESS.
3494 /
3495 CLL CLA CMA RTL
3496 DCA KCNT
3497 JMS I XLOAD /ESTABLISH PROPER COUNT
3498 7750

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3498 3622 1012 T5745, 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 K7740 /WRITE UPPER OR LOWER????
3512 3640 1012 TAD K0020 /DO LOWER
3513 3641 1134 TAD TCNTR1
3514 3642 3136 DCA TCNTR3 /REDUCE OR UPDATE
3515 3643 1114 TAD K5252 /SAVE TRACK TO DO
3516 3644 4431 T45A1, FILBUF /USE COMPLEMENT OF CENTER TRACK
3517 3645 1110 TAD K7760 /FILL BUFFER WITH DATA
3518 3646 3135 DCA TCNTR2 /GET SECTOR COUNTER POINTER
3519 3647 3141 DCA TCNTR4 /GET SECTOR COUNTER
3520 3650 1141 T45R2, TAD TCNTR6 /START WITH 0
3521 3651 0117 AND K0017 /GET SECTOR POINTER
3522 3652 3463 DCA I XLOTRK /MASK SECTORS
3523 3653 1136 TAD TCNTR3 /SETUP ADDRESS WORD IN BUFFER
3524 3654 7100 CLL RAL /GET DISK ADDRESS
3525 3655 0110 AND K7760 /PUT EXTENDED BIT IN LINK
3526 3656 1463 TAD I XLOTRK
3527 3657 3463 DCA I XLOTRK /ADD IN SECTORS
3528 3660 7630 SZL CLA /SETUP ADDRESS WORD IN BUFFER
3529 3661 7001 IAC /SET EXTENDED BIT????
3530 3662 1072 TAD DRIVNO /YES!!!
3531 3663 3464 DCA I XHITRK /ADD IN CURRENT DRIVE
3532 3664 1464 TAD I XHITRK /SETUP ADDRESS WORD IN BUFFER
3533 3665 1105 TAD K4000 /GET EXTENDED BIT
3534 3666 3150 DCA CMREG /FUNCTION WRITE DATA
3535 3667 1463 TAD I XLOTRK /SETUP COMMAND REGISTER POINTER
3536 3670 4426 DISKGO /GET CYL., SURFACE, AND SECTOR
3537 3671 3767 T45T /WRITE ALL
3538 3672 5365 JMP T45E /TEXT POINTER
3539 3673 1141 TAD TCNTR6 /ERROR, WRITE SKIP OR STATUS
3540 3674 1075 TAD K0003
3541 3675 3141 DCA TCNTR6 /UPDATE SECTOR POINTER
3542 3676 2135 ISZ TCNTR2
3543 3677 5250 JMP T45R2 /UPDATE SECTOR COUNTER
3544 3700 2137 ISZ TCNTR4 /DO REST OF TRACK
3545 3701 5234 JMP T45R1 /UPDATE TRACK COUNTER
3546 / /DO OTHERS
3547 3702 7340 CLA CLL CMA
3548 3703 3144 DCA CRREG1 /SETUP FIRST TIME POINTER
3549 3704 7346 CLA CLL CMA RTL
3550 3705 3137 DCA TCNTR4 /TRACK COUNTER POINTER
3551 3706 1134 TAD TCNTR1
3552 3707 3136 DCA TCNTR3 /SETUP FOR READ CENTER FIRST

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3553 3710 5320 JMP T45A2 /READ AND CHECK CENTER TRACK
3554 3711 1137 TAD TCNTR4 /POINTER
3555 3712 7110 T45A3, CLL RAR
3556 3713 7630 SZL CLA /CHECK UPPER OR LOWER
3557 3714 1122 TAD K77A0 /CHECK LOWER
3558 3715 1012 TAD K0020
3559 3716 1134 TAD TCNTR1
3560 3717 3136 DCA TCNTR3 /REDUCE OR UPDATE
3561 3720 1110 TAD K7760 /SAVE THE TRACK TO READ
3562 3721 3135 DCA TCNTR2 /AMOUNT OF SURFACE SECTIONS
3563 3722 3141 DCA TCNTR6 /SETUP SECTOR COUNTER
3564 3723 1136 T45A4, TAD TCNTR3 /START WITH 0
3565 3724 7104 CLL RAL /GET DISK ADDRESS
3566 3725 0110 AND K77A0 /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 DISKGO /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 SNA 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 TCNTR4
3587 3752 2135 ISZ TCNTR2
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 4437 NEAROP /MORE TO DO
3598 3765 4440 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 4062 ENDTST
3604 /
3605 3772 7156 K7156, 7156
3606 /
3607 4000 PAGE

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3608 /
3609 /ROUTINE TO WAIT FOR 500 MS.
3610 /
3611 4000 0000 WTISZ, 0
3612 4001 7320 CLA CLL
3613 4002 1122 TAD K77A0 /GET TIME CONSTANT
3614 4003 3340 DCA ROAD
3615 4004 3331 DCA LDMN
3616 4005 2531 ISZ LDMN
3617 4006 5205 JMP .-1
3618 4007 2340 ISZ ROAD
3619 4010 5205 JMP .-3
3620 4011 5600 JMP I WTISZ /EXIT
3621 /
3622 /
3623 /
3624 /PROGRAM TO AID IN HEAD ALIGNMENT.
3625 /GET TWO SEPARATE SEEK ADDRESS FROM
3626 /THE SWITCH REGISTER AND SEEK ONLY BETWEEN
3627 /THEM. SECOND ADDRESS MAY BE CHANGED AT ANY TIME.
3628 /
3629 4012 4405 SWSEK, CLASIC /CHECK FOR CLASSIC.
3630 4013 4431 C0SWIT /ROUTINE TO EXECUTE.
3631 4014 7000 NOP
3632 4015 4404 LAS
3633 4016 3134 DCA TCNTR1 /GET FIRST ADDRESS
3634 4017 4405 DCA TCNTR1 /SAVE IT
3635 4020 4436 CBERR /CHECK FOR CLASSIC ACTIVE
3636 4021 7402 HEDWLT, HLT /ROUTINE TO EXECUTE.
3637 /WAIT FOR SECOND ADDRESS. IF ON
3638 /CLASSIC CONSOLE PACKAGE HIT
3639 /CONTROL E, IF NOT THEN PRESS
3640 4022 4405 RESEK, CLASIC /CHECK FOR CLASSIC
3641 4023 4431 C0SWIT /ROUTINE TO EXECUTE.
3642 4024 7000 NOP
3643 4025 4404 LAS
3644 4026 3135 DCA TCNTR2 /GET SECOND ADDRESS
3645 4027 1135 TAD TCNTR2 /SAVE IT
3646 4030 0101 AND K0007
3647 4031 1104 TAD K3000 /MASK DRIVE+EXT. BIT
3648 4032 4450 LDCMD /GET SEEK FUNCTION
3649 4033 1135 TAD TCNTR2 /LOAD COMMAND REGISTER
3650 4034 0110 AND K7760
3651 4035 4452 LOADD /MASK OFF CYLINDER+SURFACE
3652 4036 4447 DSKSKP /GO SEEK ONLY
3653 4037 5236 JMP .-1 /SKIP ON DONE
3654 4040 4453 CLRALL
3655 4041 4444 R0STAT /CLEAR STATUS
3656 4042 7640 SZL CLA /READ STATUS
3657 4043 5240 JMP .-3 /DRIVE DONE?
3658 4044 1134 TAD TCNTR1 /NO, WAIT
3659 4045 0101 AND K0007 /GET FIRST ADDRESS
3660 4046 1104 TAD K3000 /MASK DRIVE+EXT. BIT
3661 4047 4450 LDCMD /GET SEEK FUNCTION
3662 4050 1134 TAD TCNTR1 /LOAD COMMAND REGISTER

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3663 4051 0110 AND K7760 /MASK OFF CYLINDER AND SURFACE
3664 4052 4452 LOADD /LOAD AND GO SEEK
3665 4053 4447 DSKSKP /WAIT FOR DONE
3666 4054 5253 JMP -1
3667 4055 4453 CLRALL /CLEAR STATUS
3668 4056 4440 RDSTAT /READ STATUS
3669 4057 7640 SZA CLA /DRIVE DONE?
3670 4060 5255 JMP -3 /NO, WAIT
3671 4061 5225 JMP RESEK+3 /CHECK FOR NEW ADDRESS
3672
3673 /
3674 /IF ALL DRIVES HAVE BEEN TESTED INDIVIDUALLY
3675 /THEN RUN OVERLAP SEEKS AND OVERLAP SEEKS, WRITES,
3676 /AND READS ON ALL DRIVES SELECTED. ALSO CHECK FOR HALT AT PASS
3677 /COMPLETION. AFTER OVERLAP TESTS START AT FIRST
3678 /DISK DRIVE ON SYSTEM.
3679
3680 4062 4777 ENDST, JMS I (GETDRV /GET NEXT DRIVE.
3681 4063 2071 ISZ DRVCNT /UPDATE NO. OF DRIVES COUNTER.
3682 4064 5323 JMP NEXOSK /TEST NEXT DRIVE.
3683 4065 1070 TAD DRVHAY
3684 4066 3071 DCA DRVCNT
3685 4067 4763 TSTSEK, JMS I XLAP /SETUP NO. OF DRIVES COUNTER.
3686 4070 4764 JMS I XOVRRD /PERFORM OVERLAP SEEKS
3687 4071 3776 DCA DCNT2 /OVERLAP SEEKS+WRITES+READS
3688 4072 4777 JMS I (GETDRV /START OVER AT 0.
3689 4073 4405 SAMDSK, CLASIC /SELECT FIRST DRIVE.
3690 4074 4424 CAPASS /CHECK FOR CLASSIC ACTIVE
3691 4075 7610 SKP CLA /PASS COMPLETE
3692 4076 5302 JMP -4
3693 4077 1022 TAD 22
3694 4100 0105 AND K0000 /SFF IF ON APT
3695 4101 7650 SNA CLA /APT??
3696 4102 5307 JMP -5 /NO
3697 4103 3775 DCA I (CLKCNT /CLEAR APT TIMING COUNTER
3698 4104 7340 CLL CLA CMA
3699 4105 3175 DCA KCNT
3700 4106 5323 JMP NEXOSK /LOOP PROGRAM
3701 4107 4462 CLRF
3702 4110 4457 PRINTER /PRINT PASS COMPLETE
3703 4111 0760 NMES1
3704 4112 4457 PRINTER
3705 4113 7315 TEXEND
3706 4114 4424 LAB
3707 4115 2076 AND K0000
3708 4116 7650 SNA CLA /SWITCH 9 SFT?
3709 4117 5323 JMP -4
3710 4120 4405 CLASIC
3711 4121 4437 C0INQU
3712 4122 7402 ENOHLT, WLT /YES, STOP PROGRAM
3713 4123 7301 NEXOSK, CLA CLL IAC
3714 4124 4453 CLRALL /DCLR
3715 4125 3131 DCA REG0
3716 4126 3132 DCA REG1
3717 4127 5730 JMP I -41 /LOOP ON PROGRAM
3718 4130 0240 TST0

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3718 /
3719 /SUBROUTINE TO ISSUE "DMAN" MAINTENANCE IOT
3720 /
3721 4131 0000 LDMN, 0
3722 4132 6747 IOT7, DMAN /"DMAN" MAINTENANCE IOT
3723 4133 5731 JMP I LDMN /EXIT
3724 4134 4405 CLASIC
3725 4135 4436 C0ERR
3726 4136 7402 ERHLT7, WLT /SKIP TRAP ERROR
3727 4137 5334 JMP -3
3728 /
3729 /SUBROUTINE TO SHIFT, THEN READ DISK ADDRESS
3730 /INTO DATA BUFFER, 12 SHIFTS
3731 /
3732 4140 0000 R0AD, 0
3733 4141 7300 CLA CLL
3734 4142 1126 TAD M12
3735 4143 3133 DCA SRCNT1
3736 4144 7330 CLA CLL CML RAR /SET MAIN(1) ENARLE BIT
3737 4145 4455 LDMAN /LOAD MAINTENANCE
3738 4146 7010 RAR
3739 4147 4455 LDMAN /LOAD MAINTENANCE
3740 4150 7300 CLA CLL
3741 4151 1015 TAD K0200 /SHIFT TRACK ADDRESS BIT
3742 4152 4455 LDMAN /LOAD MAINTENANCE IOT
3743 4153 2133 ISZ SRCNT1
3744 4154 5352 JMP -2 /SHIFT 12 BITS
3745 4155 7300 CLA CLL
3746 4156 1012 TAD K0020
3747 4157 4455 LDMAN
3748 4160 3151 DCA DAREG /READ DATA BUFFER
3749 4161 1151 TAD DAREG /SAVE RESULTS
3750 4162 5740 JMP I R0AD /EXIT
3751 /
3752 4163 4200 XLAP, OVRLAP
3753 4164 4400 XOVRRD, OVRRD
3754 /
3755 4165 0411 NMES3, TEXT "DISK"
3756 4166 2313
3757 4167 0000
3758 /
3759 4175 7162
3760 4176 4371
3761 4177 4345
3762 4200
3763 PAGE
3764 /
3765 /ROUTINE TO DO OVERLAP SEEKS ON EXISTING DRIVES
3766 /AFTER ALL HAVE RUN THE COMPLETE DIAGNOSTIC
3767 /
3768 4200 0000 OVRLAP, 0
3769 4201 1105 TAD K0000
3770 4202 3140 DCA TCNTR5 /PASS COUNTER
3771 4203 1070 OVRR1, TAD
3772 4204 3137 DCA TCNTR4 /SET COUNTER FOR NO. OF DRIVES.

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3772 4205 3371 DCA DCNT2 /START WITH DRIVE 0
3771 4206 4777 OVRP2, JMS I (GETDRV /GET NEXT DRIVE.
3772 4207 1072 TAD DRIVNO /GET DRIVE NO.
3773 4210 7110 CLL RAR
3774 4211 4423 RANAND /SELECT A RANDOM ADDRESS
3775 4212 4406 DSKOUT /SEND DISK OUT
3776 4213 4453 CLRALL /CLEAR STATUS
3777 4214 2137 ISZ TCNTR4 /UPDATE DISK COUNTER
3778 4215 5206 JMP OVRP2 /DO ALL EXISTING DISKS
3779 4216 3371 DCA DCNT2 /CLEAR FOR 0
3780 4217 1270 TAD DRVHAV /NO. OF DRIVES.
3781 4220 3137 DCA TCNTR4 /SETUP COUNTER
3782 4221 4777 OVRP3, JMS I (GETDRV /GET NEXT DRIVES.
3783 4222 1072 TAD DRIVNO /GET SELECTED DRIVE.
3784 4223 7110 CLL RAR
3785 4224 4407 DSKIN /CHECK FOR DRIVE DONE
3786 4225 5230 JMP NOTDON /DRIVE NOT DONE
3787 4226 5233 JMP OVR0K /DRIVE DONE AND NO ERRORS
3788 4227 5254 JMP OVRERR /DRIVE ERRORS
3789 4230 2137 NOTDON, ISZ TCNTR4 /UPDATE NO. OF DRIVE COUNTER.
3790 4231 5221 JMP OVRP3 /NO. NO REST
3791 4232 5217 JMP OVRP3-2 /YES, RESET
3792 4233 7340 OVR0K, CLA CLL CMA
3793 4234 3137 DCA TCNTR4
3794 4235 2142 ISZ TCNTR5 /UPDATE PASS COUNTER, DONE ?
3795 4236 5227 JMP OVRP2+1 /NO, SEND OUT
3796 4237 3371 DCA DCNT2 /SET FOR 0
3797 4240 1270 TAD DRVHAV /NO. OF DRIVES ON SYSTEM.
3798 4241 3137 DCA TCNTR4
3799 4242 4777 ALLBAK, JMS I (GETDRV /GET NEXT DRIVE.
3800 4243 1072 TAD DRIVNO /GET SELECTED DRIVE.
3801 4244 7110 CLL RAR
3802 4245 4407 DSKIN /CHECK FOR DRIVE DONE
3803 4246 5242 JMP ALLBAK /WAIT FOR THIS DRIVE
3804 4247 7610 SKP CLA /WAIT FOR NEXT
3805 4250 5254 JMP OVRERR /DRIVE ERRORS
3806 4251 2137 ISZ TCNTR4 /LAST DRIVE HOME YET
3807 4252 5242 JMP ALLBAK /WAIT FOR ALL
3808 4253 4437 NERROR /O.K. TO NEXT
3809 4254 4400 OVRERR, ERROR /ERROR, OVERLAP SEEKS
3810 4255 4201 OVRP4+1 /SCOPE LOOP POINTER
3811 4256 5300 /TEXT POINTER
3812 4257 5600 JMP I OVRP4 /TO NEXT TEST
3813
3814 /ROUTINE TO GET DRIVES FROM OPERATOR.
3815 /
3816
3817 4260 0000 /
3818 4261 4462 CRLF
3819 4262 4457 PRNTER /PRINT MESSAGE "RK0-E DRIVE"
3820 4263 2760 NMES1 /MESSAGE POINTER
3821 4264 4462 CRLF
3822 4265 4457 PRNTER /PRINT MESSAGE "TEST"
3823 4266 6560 NMES2 /MESSAGE POINTER
3824 4267 3370 DCA DCNT1
3825 4270 3070 DCA DRVHAV /COUNTER FOR NO. OF DRIVES.

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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 /MESSAGE POINTER
3830 4276 1370 TAD DCNT1
3831 4277 1374 TAD DSKON /COMPUTE WAY TO DISK BUFFER.
3832 4300 3372 DCA DCNT3 /SAVE POINTER.
3833 4301 1370 TAD DCNT1 /GET DRIVE NO.
3834 4302 1364 TAD K0260
3835 4303 4436 TYPE /TYPE DRIVE NO.
3836 4304 1366 TAD K0277
3837 4305 4436 TYPE /TYPE ?
3838 4306 6031 KSF /SKIP ON KEY.
3839 4307 5376 JMP
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 SELOSK+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 SELOSK /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
/
/ROUTINE TO PERFORM RANDOM OVERLAP SEEKS, WRITES AND,
/READS ON ALL EXISTING DRIVES AFTER THEY HAVE RUN THE
/COMPLETE DIAGNOSTIC.
/
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 K5300
3930 4430 3324 DCA TOVRDT /SETUP TEXT POINTER
3931 4431 5322 JMP OVRDER /ERRORS
3932 4432 2137 CHKNEX, ISZ TCNTR4 /UPDATE NO. COUNTER.
3933 4433 5221 JMP OVRRD3 /NO, DO REST

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3934 4434 5217 JMP OVRRD3-2 /YES, RESET
3935 4435 1072 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 K0004 /ADD IN FUDDG 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 XLDTRK /SETUP ADDRESS WORD IN BUFFER
3951 4455 1464 TAD I XHITRK /GET EXTENDED BIT
3952 4456 1105 TAD K4000 /ADD IN WRITE FUNCTION
3953 4457 7150 DCA CMREG /SETUP COMMAND POINTER
3954 4460 1463 TAD I XLDTRK /GET ADDRESS
3955 4461 4426 DSKGO /DISK WRITE DATA
3956 4462 4524 TOVRDT /TEXT POINTER
3957 4463 5322 JMP OVRDER /ERROR, WRITE SKIP OR STATUS
3958 4464 4432 KILBUF /CLEAR DATA BUFFER
3959 4465 1726 TAD I DSKADD /GET EXTENDED BIT
3960 4466 3150 DCA CMREG /SETUP COMMAND REGISTER
3961 4467 1135 TAD TCNTR2 /GET DISK ADDRESS
3962 4470 4426 DSKGO /GO, READ DATA
3963 4471 4524 TOVRDT /TEXT POINTER
3964 4472 5322 JMP OVRDER /ERROR
3965 4473 1114 TAD K5252
3966 4474 4430 FIGURE /WORD BY WORD COMPARE DATA
3967 4475 7610 SKP CLA /DATA O.K., CONTINUE
3968 4476 5322 JMP OVRDER /DATA ERROR
3969 4477 1072 TAD DRIVNO /GET DRIVE NO. SELECTED
3970 4500 7110 CLL RAR
3971 4501 4423 RANADD /GENERATE RANDOM ADDRESS
3972 4502 4406 DSKOUT /SEND DRIVE BACK OUT
3973 4503 2140 ISZ TCNTR5 /UPDATE PASS COUNTER, DONE ?
3974 4504 5232 JMP CHKNEX /CHECK FOR NEXT DRIVE
3975 4505 3777 DCA DCNT2 /SET FOR 0
3976 4506 1070 TAD DRVHAV /GET NO. OF DRIVES ON SYSTEM.
3977 4507 3137 DCA TCNTR4
3978 4510 4776 REDBAK, JMS I (GETDRV /SELECT DRIVE
3979 4511 1072 TAD DRIVNO /GET DRIVE SELECTED.
3980 4512 7110 CLL RAR
3981 4513 4407 DSKIN /CHECK THIS DRIVE
3982 4514 5310 JMP REDBAK /WAIT FOR DRIVE
3983 4515 7610 SKP CLA /CHECK FOR NEXT
3984 4516 5227 JMP POLERR /ERROR
3985 4517 2137 ISZ TCNTR4 /LAST DRIVE HOME YET
3986 4520 5310 JMP REDBAK /WAIT FOR ALL
3987 4521 4437 NERROR /O.K. TO NEXT
3988 4522 4440 OVRDER, ERROR /OVERLAP SEEKS=READ DATA

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3989 4523 4401 OVRRED+1 /SCOPE LOOP POINTER
3990 4524 5300 TOVRDT, 5300 /TEXT POINTER
3991 4525 5600 JMP I OVRRED /TO NEXT TEST
3992 /
3993 4526 0000 OSKADD, 0
3994 4527 6366 OSKPOT, OSK0A
3995 /
3996 /ROUTINE TO CHECK DRIVE IN AC
3997 /
3998 4530 0000 DIN, 0
3999 4531 7104 CLL RAL /MAKE DRIVE NO.
4000 4532 4450 LOCMO /FIRST SELECT DRIVE
4001 4533 1150 TAD CHREG
4002 4534 1015 TAD K0200
4003 4535 4450 LOCMO /ENABLE SET DONE BIT
4004 4536 7332 CLA CLL CML RTR /LOAD COMMAND
4005 4537 3143 DCA GOREG2 /MAYBE EXPECTED STATUS
4006 4540 4444 ROSTAT /SETUP COMPARE REGISTER
4007 4541 4447 OSKAMP /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 GOREG2 /EXPECTED STATUS
4011 4545 4444 ROSTAT /SETUP COMPARE REGISTER
4012 4546 1105 TAD K4000 /READ STATUS
4013 4547 7640 SZL 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 SZL CLA /SKIP IF NO ERROR
4019 4555 5350 JMP _5 /ERROR EXIT
4020 4556 5730 JMP I DIN /EXIT
4021 /
4022 /ROUTINE TO COMPARE AC TO GOREG2
4023 /
4024 4557 0000 COMPI, 0
4025 4560 3155 DCA ACREG
4026 4561 1155 TAD ACREG /SAVE AC
4027 4562 7041 CIA
4028 4563 1143 TAD GOREG2
4029 4564 7640 SZL 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 PAGE
4035 4577 4371
4036 4600
4037 /
4038 /MANUAL FUNCTION TEST
4039 /LOAD ADDRESS 0201 OR "MANUAL".
4040 /SET SWITCHES TO FUNCTION
4041 /PRESS START
4042 /MACHINE SHOULD HALT
4043 /SET SWITCHES TO DISK ADDRESS

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4043 /PRESS START
4044 /MACHINE SHOULD HALT
4045 /SET SWITCHES TO COMPLEMENT DATA PATTERN
4046 /PRESS START
4047 /MACHINE SHOULD HALT
4048 /SET SWITCHES TO 0000
4049 /PRESS START
4050 /IN CASE OF FAILURES USE NORMAL SCOPE SWITCHES
4051 /IF LOOP IS DESIRED USE NORMAL SCOPE SWITCHES
4052 /
4053 4600 4405 MANUAL, CLASIC /CHECK FOR CLASIC.
4054 4601 4431 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 /SETUP FOR ONE PASS
4061 4610 6224 RIF /USE CURRENT FIELD
4062 4611 1134 TAD TCNTR1
4063 4612 3134 DCA TCNTR1 /ACTUAL FUNCTION
4064 4613 1134 TAD TCNTR1
4065 4614 0100 AND K0006 /MASK DISK DRIVE
4066 4615 3072 DCA DRIVNO /ACTUAL DRIVE
4067 4616 4405 CLASIC /CHECK FOR CLASSIC.
4068 4617 4436 CRERR /ROUTINE TO EXECUTE.
4069 4620 7402 HLT /WAIT FOR DISK ADDR. IN SWITCHES.
4070 /
4071 /IF ON CLASSIC CONSOLE PACKAGE
4072 /HIT CONTROL E, IF NOT THEN
4073 4621 4405 CLASIC /PRESS KEY CONTINUE.
4074 4622 4431 C0SWIT /CHECK FOR CLASSIC
4075 4623 7000 NOP /ROUTINE TO EXECUTE.
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 /
4082 /IF ON CLASSIC CONSOLE PACKAGE
4083 /HIT CONTROL E, IF NOT THEN
4084 4631 4405 CLASIC /PRESS KEY CONTINUE.
4085 4632 4431 C0SWIT /CHECK FOR CLASSIC
4086 4633 7000 NOP /ROUTINE TO EXECUTE.
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 /
4093 /IF ON CLASSIC CONSOLE PACKAGE
4094 /HIT CONTROL E, IF NOT THEN
4095 4641 1136 TAD TCNTR3 /PRESS KEY CONTINUE.
4096 4642 4431 FILBUF
4097 4643 7300 TMANS, CLA CLL /FILL BUFFER WITH DATA

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4098 4644 1134 TAD TCNTR1 /GET FUNCTION
4099 4645 0107 AND K7000 /MASK
4100 4646 1106 TAD K6000
4101 4647 7630 SZL CLA /WAS IT A READ
4102 4650 7340 CLA CLL CMA /NO, SET A FLAG
4103 4651 3137 DCA TCNTR4 /READ FLAG
4104 4652 1134 TAD TCNTR1 /GET FUNCTION
4105 4653 0107 AND K7000 /MASK
4106 4654 1115 TAD K5000
4107 4655 7640 SZA CLA /WAS IT A SEEK
4108 4656 5266 JMP NTSEK /NOT A SEEK
4109 4657 1134 TAD TCNTR1 /YES
4110 4660 3150 DCA CMREG /SETUP COMMAND
4111 4661 1135 TAD TCNTR2 /DISK ADDRESS
4112 4662 4424 SEEK /SEEK ONLY
4113 4663 4724 THANT /TEXT POINTER
4114 4664 5322 JMP THANE /ERROR, SKIP OR STATUS
4115 4665 5321 JMP THANOK /TO HANDLER
4116 4666 1134 TAD TCNTR1 /GET FUNCTION
4117 4667 0101 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 XLOTRK /SETUP ADDRESS WORD IN BUFFER
4123 4675 1137 TAD TCNTR4 /GET READ FLAG
4124 4676 7650 SNA CLA /WAS IT A READ
4125 4677 4432 KILBUF /YES, CLEAR BUFFER
4126 4700 1135 TAD TCNTR2 /GET DISK ADDRESS
4127 4701 4426 DISKGO /DISK GO
4128 4702 4724 THANT /TEXT POINTER
4129 4703 5322 JMP THANE /ERROR
4130 4704 1137 TAD TCNTR4 /GET READ FLAG
4131 4705 7640 SZA CLA /WAS IT A READ
4132 4706 5321 JMP THANOK /WAS A WRITE, TO HANDLER
4133 4707 1150 TAD CMREG /GET LAST COMMAND
4134 4710 0014 AND K0100 /MASK OUT HALF BIT
4135 4711 7650 SNA CLA /WAS IT HALF BLOCK TRANSFERS
4136 4712 5317 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 THANS / LOOP
4149 /
4150 4726 7707 K7707, 7707
4151 /
4152 /SUBROUTINE TO WAIT FOR INTERRUPTS

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4153 /IF INTERRUPT OCCURS GO BACK+1
4154 /
4155 4727 0000 IONWT, 0
4156 4730 7450 SNA /FAST OR SLOW
4157 4731 1122 TAD K7740 /GET SLOW CONSTANT
4158 4732 3364 DCA ICNTR2 /SETUP COUNTER
4159 4733 3363 DCA ICNTR1 /SETUP COUNTER
4160 4734 6001 ION /TURN IT ON
4161 4735 2363 ISZ ICNTR1
4162 4736 5335 JMP ,+1
4163 4737 2364 ISZ ICNTR2
4164 4740 5335 JMP ,+3
4165 4741 6002 IOF /TURN IT OFF
4166 4742 5727 JMP I IONWT /NO INT OCCURED
4167 4743 1022 INTADD, TAD 22
4168 4744 0016 AND K0400
4169 4745 7640 SZA CLA /ON CLASSIC?
4170 4746 6031 KSF
4171 4747 5353 JMP ,+4 /NO FLAG OR CLASSIC.
4172 4750 6032 KCC
4173 4751 6001 ION
4174 4752 5400 JMP I 0 /RETURN TO LOOP.
4175 4753 2327 ISZ IONWT /UPDATE GOT AN INTERRUPT RETURN.
4176 4754 4447 DSKSKP /CHECK DISK FLAG.
4177 4755 7610 SKP CLA /WASN'T SO ERROR.
4178 4756 5727 JMP I IONWT /EXIT AND INDICATE AN INTERRUPT.
4179 4757 4405 CLASIC
4180 4760 4436 CREERR
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 ILOCA, 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 LOCA
4196 4774 4405 CLASIC
4197 4775 4436 CREERR
4198 4776 7402 ERHLT4, HLT /SKIP TRAP ERROR.
4199 4777 5374 JMP ,+3
4200 /
4201 5000 PAGE
4202 /
4203 /ROUTINE TO CHECK THE WRITE PROTECT FUNCTION
4204 /WHEN IT IS SET UNDER PROGRAM CONTROL
4205 /NOTE: NO SCOPE LOOPS ARE AVAILABLE FOR THIS TEST
4206 /
4207 5000 4405 AUTPRO, CLASIC /CHECK FOR CLASSIC.

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4208 5001 4431 CASWT /ROUTINE TO EXECUTE.
4209 5002 7700 NOP
4210 5003 4404 LAS /GET THE SWITCHES
4211 5004 7124 CLL RAL
4212 5005 0100 AND K0006
4213 5006 3072 DCA DRVND /MASK DRIVE NUMBER
4214 5007 7344 CLA CLL CMA RAL /SAVE DRIVE NUMBER
4215 5010 3132 DCA REG1 /SETUP REPEAT POINTER
4216 5011 3131 DCA REG2
4217 5012 1113 TAD K2525
4218 5013 4431 FILRHF /DATA PATTERN TO WRITE
4219 5014 1272 TAD DRVND /FILL OUTROUND BUFFER
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 1772 TAD DRVND /CURRENT DRIVE
4229 5026 4450 LDCMD /LOAD COMMAND REGISTER
4230 5027 4452 LDRD /LOAD AND GO
4231 5030 4444 ROSTAT /READ STATUS REGISTER
4232 5031 7647 SZA CLA /SHOULD BE 0000 ???
4233 5032 5245 JMP APA1 /ERROR, STATUS
4234 5033 4432 KILRHF /CLEAR OUTROUND BUFFER
4235 5034 1272 TAD DRVND
4236 5035 3464 DCA I XHITRK /SETUP ADDRESS WORD IN BUFFER
4237 5036 1115 TAD K5000 /WRITE ALL FUNCTION
4238 5037 3152 DCA CMREG /SETUP COMMAND REGISTER
4239 5040 4426 DISKGO /WRITE ALL TO SECTOR 0
4240 5041 5072 TAPROT /TEXT POINTER
4241 5042 7700 NOP
4242 5043 7326 CLA CLL CML RTL
4243 5044 1012 TAD K0000 /MAKE EXPECTED STATUS
4244 5045 3143 DCA GOREG2 /SETUP COMPARE REGISTER
4245 5046 1166 TAD K5300
4246 5047 3270 DCA TAPROT
4247 5050 1166 TAD STREG
4248 5051 4442 ACCMP1 /SETUP TEXT POINTER
4249 5052 7610 SKP CLA /GET STATUS READ
4250 5053 5266 JMP APERR /CHECK RESULTS
4251 5054 7301 CLA CLL IAC /STATUS O.K.
4252 5055 4453 CLRALL /ERROR, WRITE PROTECT
4253 5056 1717 TAD K1000 /ENABLE CLEAR CONTROL
4254 5057 3150 DCA CMREG /CLEAR CONTROL
4255 5060 4426 DISKGO /FUNCTION READ ALL
4256 5061 5070 TAPROT /SETUP COMMAND
4257 5062 5266 JMP APERR /READ ALL SECTOR 0
4258 5063 1113 TAD K2525 /TEXT POINTER
4259 5064 4430 FIGURE /ERROR
4260 5065 4437 NERROR /EXPECTED PATTERN
4261 5066 4442 APERR, ERROR /CHECK DATA READ
4262 5067 5724 APR1 /ALL O.K. DO ONE MORE TIME
/ERROR, WRITE PROTECT

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4263 5071 2000 TAPROT, 0000 /TEXT POINTER
4264 5071 4425 CLASIC
4265 5072 4436 CAERR
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 SKIP INSTRUCTION WITHOUT
4281 /CLASSIC, OTHERWISE IT WILL EXECUTE NEXT INSTRUCTION
4282 /IN FIELD 0 AND THEN SKIP THE INSTRUCTION AFTER THAT ONE.
4283 /
4284 5102 2000 CLASIC, 0
4285 5103 3332 DCA SAVAC /SAVE CURRENT AC
4286 5104 1722 TAD I CLASIC
4287 5105 3333 DCA ROUTMP /SAVE THE CLASSIC ROUTINE
4288 5106 2302 ISZ CLASIC
4289 5107 1222 TAD OP2
4290 5110 0377 AND 000
4291 5111 7640 SZA CLA
4292 5112 5315 JMP +3
4293 5113 1332 TAD SAVAC /NO RETURN TO PROGRAM
4294 5114 5722 JMP I CLASIC
4295 5115 2322 ISZ CLASIC
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 ROUTMP
4304 5126 3773 DCA I (ROUTMP) /SAVE ROUTINE IN FIELD 1
4305 5127 1332 TAD SAVAC
4306 5130 6212 CIF 10
4307 5131 5773 JMP I (ROUTINS) /GO TO FIELD 1
4308 /
4309 5132 2000 SAVAC, 0
4310 5133 2000 ROUTMP, 0
4311 /
4312 /ROUTINE TO WAIT FOR DISK SKIPS
4313 /
4314 5134 2000 SKWAT, 0
4315 5135 7300 CLA CLL
4316 5136 4530 TICK
4317 5137 1122 TAD K7740 /TIMING FOR APT
/GET TIME CONSTANT

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4318 5140 3275 DCA MYLAB
4319 5141 3302 DCA CLASIK
4320 5142 4447 DSKSKP
4321 5143 7610 SKP CLA
4322 5144 5352 JMP .+6
4323 5145 2302 ISZ CLASIK
4324 5146 5342 JMP .+4
4325 5147 2275 ISZ MYLAB
4326 5150 5342 JMP .+6
4327 5151 7610 SKP CLA
4328 5152 2334 ISZ SKWAY
4329 5153 5734 JMP I SKWAY
4330
4331 /SUBROUTINE TO READ STATUS REGISTER
4332 /
4333 5154 0000 RDST, 0
4334 5155 6745 IOTS, RDST
4335 5156 5343 JMP .+5
4336 5157 4405 CLASIK
4337 5160 4436 CRERR
4338 5161 7402 FRHLT5, HLT
4339 5162 5357 JMP .+3
4340 5163 3146 DCA STREG
4341 5164 1146 YAD STREG
4342 5165 5754 JMP I RDST
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
4355 5202 1600 TAD I ERRO
4356 5203 3173 DCA RESTRY
4357 5204 4404 LAS
4358 5205 7700 SMA CLA
4359 5206 5217 JMP ERRA1
4360 5207 4404 LAS
4361 5210 7006 RTL
4362 5211 7710 SPA CLA
4363 5212 5215 JMP .+3
4364 5213 1356 TAD K0207
4365 5214 4436 TYPE
4366 5215 1600 YAD I ERRO
4367 5216 5757 JMP I ESCOPE
4368 5217 1600 TAD I ERRO
4369 5220 3367 DCA RETRNP
4370 5221 2207 ISZ ERRO
4371 5222 7301 CLA CLL IAC
4372 5223 1200 TAD ERRO

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/DISK "DISK SKIP IOT"
/NO SKIP OCCURRED YET
/GET THE SKIP

```

```

/NO SKIP OCCURRED
/EXIT

```

/READ STATUS IOT

/SKIP TRAP ERROR

/SAVE RESULTS

/EXIT

```

/REPORT ERROR TO APT
/GET RESTART ADDRESS
/STORE
/GET SWITCH 0
/IS IT SCOPE LOOP
/NO, CONTINUE
/GET SWR2

```

```

/INHIT BELL????
/YES

```

```

/CHECK FOR BELL
/STORE FOR RETURN
/ISZ ERRO
/CLA CLL IAC
/ERR0
/NEXT TEST POINTER

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4372 5224 3361 DCA INHINT
4373 5225 4462 CRLF
4374 5226 4462 CRLF
4375 5227 1600 TAD I ERRO
4376 5230 0101 AND K0007
4377 5231 1367 TAD MEDTAD
4378 5232 3233 DCA .+1
4379 5233 7402 HLT
4380 5234 3236 DCA .+2
4381 5235 4457 PRINTER
4382 5236 7402 HLT
4383 5237 4462 CRLF
4384 5240 4457 PRINTER
4385 5241 5750 TEXPC
4386 5242 7340 CLA CLL CNA
4387 5243 1200 TAD ERRO
4388 5244 4460 OCTEL
4389 5245 1600 TAD I ERRO
4390 5246 7104 CLL RAL
4391 5247 7420 SNL
4392 5250 5264 JMP NTGD
4393
4394
4395 5251 3200 DCA ERRO
4396 5252 4457 PRINTER
4397 5253 5752 TEXGD
4398 5254 1200 TAD ERRO
4399 5255 7700 SMA CLA
4400 5256 5261 JMP .+3
4401 5257 1142 TAD GDREG1
4402 5260 4461 TWOCT
4403 5261 1143 TAD GDREG2
4404 5262 4460 OCTEL
4405 5263 7610 SKP CLA
4406 5264 3200 NTGD, DCA ERRO
4407 5265 1200 TAD ERRO
4408 5266 7104 CLL RAL
4409 5267 7420 SNL
4410 5270 5301 JMP NTCRC
4411 5271 3200 DCA ERRO
4412 5272 4457 PRINTER
4413 5273 5754 TEXCR
4414 5274 1144 TAD CRREG1
4415 5275 4461 TWOCT
4416 5276 1145 TAD CRREG2
4417 5277 4460 OCTEL
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 AUTD10
4424 5306 1116 TAD K7771
4425 5307 3365 DCA PCNTR1
4426 5310 1200 STRAUT, TAD ERRO

```

/STORE FOR SPECIAL RETURN

```

/GET TEXT POINTER
/MASK 9-11
/MAKE ERROR HEADER TAD

```

```

/MODIFIED HEADER TAD
/MODIFIED HEADER PRINTER

```

/PRINT PC:

```

/GET PC POINTER
/PRINT PC STORED
/GET TEXT POINTER

```

/NOT GD: REGISTER

/PRINT GD:

```

/WAS IT A 6 BIT OCTAL BYTE
/NO
/GET DATA
/PRINT TWO OCTAL

```

/PRINT FOUR OCTAL

/GET TEXT POINTER

/PRINT CR:

/PRINT

/PRINT FOUR OCTAL

```

/COUNTER FOR # OF HEADS
/GET TEXT POINTER

```

```

4427 5311 7500 SMA
4428 5312 5350 JMP NOTEX
4429 5313 7104 CLL RAL /NOT THIS ONE
4430 5314 3200 DCA ERRO
4431 5315 1366 TAD PCNTR2
4432 5316 2366 ISZ PCNTR2 /GET TEXT MESSAGE POINTER
4433 5317 2366 ISZ PCNTR2
4434 5320 3322 DCA .+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
4440 5326 5312 JMP STRAUT /PRINT FOUR OCTAL
4441 5327 4474 LAS
4442 5327 7224 HLT
4443 5331 2216 AND K0400
4444 5332 7652 SMA CLA
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 ESCAPE /GET RETURN
4450 5347 1360 TAD RETRN2 /CHECK FOR BELL
4451 5341 5757 JMP I ESCAPE /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
4456 5346 5760 JMP I RETRN2
4457 5347 5264 JMP NTRD
4458 5350 7104 NOTEX, CLL RAL
4459 5351 3200 DCA ERRO
4460 5352 2366 ISZ PCNTR2
4461 5353 2366 ISZ PCNTR2
4462 5354 2010 ISZ AUTO10
4463 5355 5325 JMP AGAIN
4464
4465 5356 0207 K0207, 0207
4466 5357 5470 ESCAPE, 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, CREG2
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 6762 ERTX6
4481 5376 6772 ERTX7

```

```

4482 5377 7002 ERTXA
4483
4484
4485 5400
4486
4487
4488
4489 5400 0000 RDRF, 0
4490 5401 7330 CLA CLL CML RAR
4491 5402 4455 LDMAN
4492 5403 1012 TAD K0020
4493 5404 4455 LDMAN /LOAD MAINTENANCE
4494 5405 3147 DCA DRREG
4495 5406 1147 TAD DRREG
4496 5407 3154 DCA DTREG
4497 5410 1154 TAD DTREG
4498 5411 5600 JMP I RDRF /EXIT
4499
4500 /ROUTINE TO SHIFT COMMAND REGISTER TO
4501 /DATA BUFFER THEN READ DATA BUFFER
4502
4503 5412 0200 RDEM, 0
4504 5413 7320 CLA CLL
4505 5414 1126 TAD M12
4506 5415 3133 DCA SRCNT1
4507 5416 7330 CLA CLL CML RAR /12 BIT SHIFT
4508 5417 4455 LDMAN
4509 5420 7010 RAR /LOAD MAINTENANCE
4510 5421 4455 LDMAN
4511 5422 7300 CLA CLL /LOAD MAINTENANCE
4512 5423 1216 TAD K0400
4513 5424 4455 LDMAN /ENABLE BIT FOR SHIFT COMMAND
4514 5425 2133 ISZ SRCNT1 /LOAD AND GO
4515 5426 5224 JMP .+2
4516 5427 7320 CLA CLL /SHIFT 12
4517 5430 1012 TAD K0020
4518 5431 4455 LDMAN /ENABLE READ BUFFER
4519 5432 3150 DCA CMREG /LOAD AND GO
4520 5433 1150 TAD CMREG /SAVE IT
4521 5434 5612 JMP I RDEM /EXIT
4522
4523 /ROUTINE TO ZERO WORK BUFFER
4524
4525 5435 0000 KLRUF, 0
4526 5436 7340 CLA CLL CMA
4527 5437 1067 TAD RGNRUF
4528 5440 3010 DCA AUTO10
4529 5441 1123 TAD K7400
4530 5442 3162 DCA DATCNT
4531 5443 3410 DCA I AUTO10
4532 5444 2162 ISZ DATCNT /SETUP COUNTER
4533 5445 5243 JMP .+2 /CLEAR BUFFER
4534 5446 5635 JMP I KLRUF /UPDATE COUNTER
4535
4536 /ROUTINE TO FILL THE WORK BUFFER WITH

```

```

4537 /THE COMPLEMENT DATA THATS IN THE AC.
4538 /
4539 FLBUF, 0
4540 DCA SAVDAT /SAVE DATA WORD
4541 CLA CLL CNA /START OF BUFFER=1
4542 TAD RGNRUF /SETUP AUTO INDEX
4543 DCA AUTO10
4544 TAD K7600
4545 DCA DATCNT /SETUP COUNTER
4546 LPDAT, TAD SAVDAT /GET FIRST WORD
4547 DCA I AUTO10 /STORE IN BUFFER
4548 TAD SAVDAT /GET SECOND WORD
4549 CNA /COMPLEMENT IT
4550 DCA I AUTO10 /STORE IN BUFFER
4551 ISZ DATCNT /UPDATE COUNTER
4552 JMP LPDAT /MORE WORDS TO GO
4553 TAD K1234
4554 DCA I AUTO10 /MAKE WORD IN BUFFER=1
4555 JMP I FLBUF /BUFFER FULL
4556 /
4557 /ROUTINE TO CHECK FOR WAIT AND RECALIBRATE
4558 /
4559 SCOPE, DCA TOTST /SAVE SCOPE LOOP POINTER
4560 LAS /GET SWITCH 7
4561 AND K0020 /MASK
4562 STA CLA /WAIT LOOP?
4563 WATISZ /YES
4564 LAS /GET SWITCH 6
4565 AND K0040 /MASK
4566 SNA CLA /IS IT CLEAR DISK
4567 JMP NOCLR /NO, DON'T
4568 CLA CLL IAC /ENABLE CLEAR CONTROL
4569 CLRALL /CLEAR CONTROL
4570 TAD CMREG /GET LAST COMMAND
4571 AND K7577 /MASK OUT SFT DONE
4572 LDCMD /LOAD COMMAND
4573 CLA CLL CML RTL /ENABLE RECALIBRATE
4574 CLRALL /RECALIBRATE
4575 SKPWAT /WAIT FOR FIRST DONE
4576 NOP
4577 TAD CMREG /LAST COMMAND
4578 TAD K0200
4579 LDCMD /LOAD COMMAND
4580 SKPWAT /WAIT FOR SECOND DONE
4581 NOP
4582 TAD CMREG
4583 AND K7577 /MASK SET DONE
4584 DCA CMREG
4585 NOCLR, CLA CLL IAC /ENABLE CLEAR CONTROL
4586 CLRALL /CLEAR CONTROL
4587 JMP I TOTST /GO TO TEST
4588 /
4589 K7577, 7577
4590 TOTST, 0
4591 /

```

```

4592 /ROUTINE TO GET ALL REGISTERS
4593 / (NOTE: THIS ROUTINE WILL CAUSE ONE MAINTENANCE
4594 / DATA BREAK TO LOCATION 0 IF THE LAST PREVIOUS
4595 / FUNCTION EXECUTED WAS A READ DATA BREAK.)
4596 /
4597 GTREG, 0
4598 LAS /GET SWITCH A
4599 AND K0010 /MASK
4600 SNA CLA /WAS IT GET ALL REGISTERS
4601 JMP I GTREG /NO, GO BACK
4602 ISZ GTREG /YES, UPDATE POINTER
4603 ROSTAT /READ STATUS
4604 ROBUF /READ LOWER BUFFER
4605 CLA CLL
4606 LOCUR /SET CA TO 0 FOR BREAK
4607 CLA CLL CML RTR /ENABLE SHIFT TO LOWER BUFFER
4608 LDMAN /BREAK IF LAST BREAK WAS A READ
4609 RDCRC /READ CRC
4610 RDOAD /READ TRACK
4611 RDCMD /READ COMMAND
4612 CRLF
4613 CLA CLL IAC /ENABLE CLEAR CONTROL
4614 CLRALL /CLEAR CONTROL
4615 TAD K7600
4616 JMP I GTREG /EXIT
4617 /
4618 /ROUTINE TO SEND DRIVES ON AN OVERLAP SEEK
4619 /
4620 DOUT, 0
4621 DCA GTREG /SAVE ADDRESS
4622 RAL
4623 TAD DRIVNO /GET CURRENT DRIVE
4624 LDCMD /LOAD COMMAND REGISTER
4625 TAD CMREG /GET LAST COMMAND ISSUED
4626 TAD K3000 /ADD IN SEEK ONLY FUNCTION
4627 TAD HOMEMA /ADD IN CURRENT FIELD
4628 LDCMD /LOAD COMMAND REGISTER
4629 TAD GTREG /GET SAVED ADDRESS
4630 LDAO /LOAD AND GO
4631 DSKSKP /WAIT FOR FIRST DONE FLAG
4632 JMP -1 /HANG IF NO SKIP
4633 JMP I DOUT /DISK IS OUT
4634 /
4635 /SUBROUTINE TO ISSUE "DCLR" CLEAR IOT
4636 /
4637 CLDR, 0
4638 IOT?, DCLR /DCLR "CLEAR IOT"
4639 JMP I CLDR /EXIT
4640 CLASIC
4641 COERR
4642 FRHLT2, HLT
4643 JMP -3 /SKIP TRAP ERROR
4644 /
4645 PAGE
4646 /

```

```

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 OCA SAVTRK /SAVE TRACK ADDRESS
4653 5602 7340 CLA CLL CMA /SET CRC ERROR FLAG
4654 5603 3171 OCA SOFERR /GET TEXT POINTER
4655 5604 1600 TAD I DISK /SAVE IT
4656 5605 3172 OCA SAVPCT /UPDATE POINTER
4657 5606 2207 ISZ DISK /GET COMMAND
4658 5607 1150 TAD CMREG /MASK OFF
4659 5610 0255 AND K7501 /CURRENT FIELD
4660 5611 1156 TAD HOMEHA /CURRENT DRIVE
4661 5612 1272 TAD DRIVNN /LOAD COMMAND
4662 5613 4450 LDCMD /GET BEGINNING OF BUFFER
4663 5614 1267 TAD RGNRUF /LOAD CURRENT ADDRESS
4664 5615 4451 LDCUR /GET TRACK+SECTOR
4665 5616 1254 TAD SAVTRK /LOAD AND GO
4666 5617 4452 LOADD /WAIT FOR DISK SKIP
4667 5620 4433 SKPWAT /ERROR, NO SKIP
4668 5621 5234 JMP SKPERR /EXPECTED STATUS
4669 5622 7330 CLA CLL CML RAR /SETUP COMPARE REGISTER
4670 5623 3143 OCA GOREG2 /READ STATUS
4671 5624 4440 ROSTAT
4672 5625 1125 TAD K4000
4673 5626 7640 STA CLA /WAS STATUS 4000
4674 5627 5236 JMP STAFRR /ERROR, STATUS
4675 5630 1165 TAD K5373 /TEXT POINTER
4676 5631 2200 ISZ DISK /UPDATE FOR GOOD RETURN
4677 5632 3572 RETRN, OCA I SAVPCT /STORE IN TEXT POINTER
4678 5633 5600 JMP I DISK /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 5648 3171 OCA SOFERR /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 /

```

```

4702 5656 0000 FIGURE, 0
4703 5657 3143 OCA GOREG2 /SAVE FOR ERROR PRINTER
4704 5660 1067 TAD RGNRUF /GET START OF BUFFER
4705 5661 3153 OCA 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 /GET FIRST TRACK WORD
4710 5666 7650 SNA CLA /WAS IT O.K. ?
4711 5667 5273 JMP ,+4 /YES, CHECK NEXT TRACK WORD
4712 5670 1150 TAD CMREG /GET DISK NO. AND EXT. BIT
4713 5671 0101 AND K0007 /MASK THEM
4714 5672 5343 JMP OTERR /DATA ERROR
4715 5673 2153 ISZ ADREG /UPDATE ADDRESS
4716 5674 1553 TAD I ADREG /GET SECOND WORD
4717 5675 7041 CIA
4718 5676 1151 TAD DAREG /COMPARE TO ADDRESS
4719 5677 7650 SNA CLA /WAS SECOND TRACK WORD O.K.
4720 5700 5303 JMP ,+3 /YES, NOW CHECK DATA
4721 5701 1151 TAD DAREG /GET GOOD INFO
4722 5702 5343 JMP OTERR /DATA ERROR
4723 5703 7326 CLA CLL CML RTL
4724 5704 1123 TAD K7400
4725 5705 3162 OCA 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 /COMPARE TO GOOD ONE
4730 5712 7640 STA CLA /WAS WORD O.K.?
4731 5713 5344 JMP OTERR+1 /NO, DATA ERROR
4732 5714 1143 TAD GOREG2 /GET GOOD DATA
4733 5715 7040 CMA
4734 5716 3143 OCA GOREG2 /IT IS A COMPLEMENT DATA PATTERN
4735 5717 2162 ISZ DATCNT /UPDATE BUFFER COUNTER
4736 5720 5306 JMP LPFIG /MORE TO CHECK
4737 5721 2153 ISZ ADREG /UPDATE ADDRESS
4738 5722 1122 TAD K1234
4739 5723 7041 CIA
4740 5724 1553 TAD I ADREG /GET WORD IN BUFFER+1
4741 5725 7650 SNA CLA /WAS IT O.K.
4742 5726 5331 JMP ,+3 /YES ALL DATA O.K.
4743 5727 1102 TAD K1234
4744 5730 5343 JMP OTERR /WORD LOST IN BUFFER+1
4745 5731 7330 CLA CLL CML RAR /EXPECTED STATUS
4746 5732 3143 OCA GOREG2 /SETUP COMPARE REGISTER
4747 5733 1171 TAD SOFERR /GET CRC ERROR FLAG
4748 5734 7640 STA CLA /WAS IT SET
4749 5735 5656 JMP I FIGURE /NO THE BUFFER IS O.K.
4750 5736 7340 CLA CLL CMA /SETUP CRC FLAG
4751 5737 3171 OCA SOFERR /RESET FLAG
4752 5740 1166 TAD K5300 /TEXT MESS
4753 5741 3572 OCA I SAVPCT /SETUP TEXT POINTER
4754 5742 7330 CLA CLL CML RAR /EXPECTED STATUS
4755 5743 3143 OCA GOREG2 /SETUP COMPARE
4756 5744 1553 TAD I ADREG /GET BAD WORD

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4757 5745 3154 DCA DTREG /SAVE FOR PRINTER
4758 5746 2256 ISZ FGURE /UPDATE FOR ERROR RETURN
4759 5747 5656 JMP I FGURE
4760
4761 5750 2003 /
      5751 7200 TEXT, TEXT "PC:"
4762 5752 0704 TEXTD, TEXT "GD:"
      5753 7200
4763 5754 0322 TEXTC, TEXT "CR:"
      5755 7200
4764 5756 2324 TEXTS, TEXT "ST:"
      5757 7200
4765 5760 0402 TEXTDB, TEXT "DB:"
      5761 7200
4766 5762 0415 TEXTCH, TEXT "CH:"
      5763 7200
4767 5764 0401 TEXTDA, TEXT "DA:"
      5765 7200
4768 5766 0301 TEXTCA, TEXT "CA:"
      5767 7200
4769 5770 0104 TEXTAD, TEXT "AD:"
      5771 7200
4770 5772 0424 TEXTDT, TEXT "DT:"
      5773 7200
4771
4772 /
      PAGE
4773 /
4774 /SUBROUTINE TO SHIFT CRC REGISTER TO DATA
4775 /BUFFER THEN READ IT.
4776 /
4777 6000 0200 ROCR, 0
4778 6001 7300 CLA CLL
4779 6002 1126 TAD M12
4780 6003 3133 DCA SRCNT1 /12 SHIFTER
4781 6004 7330 CLA CLL CML RAR
4782 6005 4455 LDMAN /LOAD MAINTENANCE
4783 6006 7010 RAR
4784 6007 4455 LDMAN /LOAD MAINTENANCE
4785 6010 7010 RAR
4786 6011 4455 LDMAN /LOAD AND GO
4787 6012 2133 ISZ SRCNT1
4788 6013 5211 JMP -2 /12 BIT SHIFT
4789 6014 7300 CLA CLL
4790 6015 1712 TAD K0020 /ENABLE READ BUFFER
4791 6016 4455 LDMAN
4792 6017 3145 DCA CRRG2 /SAVE IT
4793 6020 1126 TAD M12
4794 6021 3133 DCA SRCNT1 /12 BIT SHIFTER
4795 6022 7332 CLA CLL CML RTR
4796 6023 4455 LDMAN /LOAD MAINTENANCE
4797 6024 7010 RAR
4798 6025 4455 LDMAN /LOAD AND GO
4799 6026 2133 ISZ SRCNT1
4800 6027 5225 JMP -2 /12 BIT SHIFT
4801

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4802
4803 6030 7300 CLA CLL
4804 6031 1712 TAD K0020 /ENABLE READ BUFFER
4805 6032 4455 LDMAN
4806 6033 0117 AND K0017
4807 6034 3144 DCA CRRFG1 /SAVE OTHER HALF
4808 6035 5600 JMP I ROCR /EXIT
4809
4810 /SUBROUTINE TO PRINT TWO OCTAL
4811 /
4812 6036 0200 TOCT, 0
4813 6037 3133 DCA SRCNT1 /SAVE AC
4814 6040 1133 TAD SRCNT1
4815 6041 7010 RAR
4816 6042 7012 RTR
4817 6043 0101 AND K0007
4818 6044 1777 TAD K0260
4819 6045 4436 TYPE /PRINT FIRST BYTE
4820 6046 1133 TAD SRCNT1
4821 6047 0101 AND K0007
4822 6050 1777 TAD K0260
4823 6051 4436 TYPE /PRINT SECOND BIT
4824 6052 5636 JMP I TOCT /EXIT
4825
4826 /
4827 /
4828 /ROUTINE TO DO CRLF
4829 /
4830 6053 0200 UPONE, 0
4831 6054 7300 CLA CLL
4832 6055 1262 TAD K0215
4833 6056 4436 TYPE
4834 6057 1263 TAD K0212
4835 6060 4436 TYPE
4836 6061 5653 JMP I UPONE
4837
4838 6062 0215 K0215, 0215
4839 6063 0212 K0212, 0212
4840 6064 0240 K0240, 0240
4841
4842 /ROUTINE TO PRINT FOUR OCTAL
4843 /
4844 6065 0200 FROCT, 0
4845 6066 7006 RTL
4846 6067 7006 RTL
4847 6070 3253 DCA UPONE
4848 6071 1310 TAD M4
4849 6072 3236 DCA TOCT
4850 6073 1253 TAD UPONE
4851 6074 0101 AND K0007
4852 6075 1777 TAD K0260
4853 6076 4436 TYPE
4854 6077 1253 TAD UPONE
4855 6100 7006 RTL
4856 6101 7004 RAL

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

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4912 6157 6041 TSF
4913 6160 5357 JMP ,=1
4914 6161 6042 TCF
4915 6162 7200 CLA
4916 6163 5751 JMP I PRINT
4917
4918 /SUBROUTINE TO LOAD TRACK ADDRESS REGISTER
4919 /
4920 6164 0000 LOAD, 0
4921 6165 3151 OCA DAREG /SAVE OUTBOUND DATA
4922 6166 1151 TAD DAREG
4923 6167 6743 IOY3, DLAG /LOAD DISK ADDRESS REGISTER
4924 6170 5764 JMP I LOAD /EXIT
4925 6171 4405 CLASIC
4926 6172 4436 C0ERR
4927 6173 7402 ERHLT3, HLT /SKIP TRAP ERROR.
4928 6174 5371 JMP ,=3
4929
4930 6177 4364 PAGE
4931 /
4932 /ROUTINE TO RECALIBRATE SELECTED DRIVE OR
4933 /SEEK ONLY POSITION IN AC ON SELECTED DRIVE.
4934 /
4935 6200 0000 RESTOR, 0
4936 6201 7300 CLA CLL
4937 6202 1600 TAD I RESTOR /GET TEXT POINTER
4938 6203 3316 OCA SAVPC /SAVE FOR ERROR
4939 6204 2200 ISZ RESTOR /UPDATE PC
4940 6205 1200 TAD RESTOR /GET PC
4941 6206 3215 OCA ONLY /SAVE FOR END OF SEEK ROUTINE
4942 6207 1072 TAD DRIVNO /CURRENT DRIVE
4943 6210 1156 TAD HOMEMA /CURRENT FIELD
4944 6211 4450 LOCMD /LOAD COMMAND
4945 6212 7326 CLA CLL CML RTL /ENABLE RECALIBRATE BIT
4946 6213 4453 CLRALL /"RECALIBRATE"
4947 6214 5232 JMP CHECK /CHECK FOR ERRORS
4948
4949 6215 0000 /ONLY, 0
4950 6216 3317 OCA SAVTO /SAVE LOWER TRACK BITS
4951 6217 1615 TAD I ONLY /GET TEXT POINTER
4952 6220 3316 OCA SAVPC /SAVE FOR ERROR
4953 6221 2215 ISZ ONLY
4954 6222 1150 TAD CMREG /GET COMMAND
4955 6223 0073 AND K0001 /MASK OFF EXTENDED BIT
4956 6224 1156 TAD HOMEMA /CURRENT FIELD
4957 6225 1072 TAD DRIVNO /CURRENT DRIVE
4958 6226 1104 TAD K3000 /SEEK ONLY FUNCTION
4959 6227 4450 LOCMD /LOAD COMMAND
4960 6230 1317 TAD SAVTO /GET POSITION
4961 6231 4452 LOADD /LOAD AND GO
4962 6232 4433 CHECK, SKPMAT /WAIT FOR FIRST DONE FLAG
4963 6233 5314 JMP SEKER1 /ERROR, NO SKIP
4964 6234 7330 CLA CLL CML RAR /EXPECTED STATUS
4965 6235 3143 OCA D0REG2 /SETUP COMPARE REGISTER

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4966 6236 1122 TAD K7740
4967 6237 3321 DCA RNAD
4968 6240 4444 ROSTAT /SETUP SKIP TIMER
4969 6241 1125 TAD /READ STATUS
4970 6242 7650 SNA CLA
4971 6243 5252 JMP J+7
4972 6244 1106 TAD K4000 /HAS DRIVE DONE?
4973 6245 3143 DCA GOREG2 /YES
4974 6246 1146 TAD K4000 /NO, DRIVE MUST BE BUSY!
4975 6247 1103 TAD STREG2 /EXPECTED STATUS
4976 6250 7640 SZ4 CLA /GET STATUS READ
4977 6251 5311 JMP SEKER2 /ADD IN FUDGE FACTOR
4978 6252 1015 TAD K0200 /HAS DRIVE BUSY
4979 6253 1150 TAD CMREG /NO, ERROR
4980 6254 4450 LDCMD /ENABLE SET SECOND DONE FLAG
4981 6255 7332 CLA CLL CML RTR /ORIGINAL COMMAND
4982 6256 3143 DCA GOREG2 /LOAD COMMAND
4983 6257 4530 CMKSKP, TICK /EXPECTED STATUS
4984 6260 4444 ROSTAT /APT TIMING
4985 6261 4447 DSKSKP /READ STATUS
4986 6262 7410 SKP /FLAG SET?
4987 6263 5274 JMP GOTSKP /NO
4988 6264 1106 TAD K4000 /YES GOT IT!
4989 6265 7640 SZ4 CLA
4990 6266 5311 JMP SEKER2 /DRIVE BUSY?
4991 6267 2365 ISZ RNWRD4 /NO, ERROR
4992 6270 5257 JMP CMKSKP
4993 6271 2321 ISZ RNAD
4994 6272 5257 JMP CMKSKP
4995 6273 5314 JMP SEKFR1 /ERROR, NO SKIP!
4996 6274 7330 GOTSKP, CLA CLL CML RAR
4997 6275 3143 DCA GOREG2 /SETUP EXPECTED STATUS
4998 6276 4444 ROSTAT /READ STATUS
4999 6277 1105 TAD K4000
5000 6300 7640 SZ4 CLA /HAS IT ONLY DONE FLAG
5001 6301 5311 JMP SEKER2 /NO, ERROR STATUS
5002 6302 1150 TAD CMREG /GET LAST COMMAND
5003 6303 0320 AND A7577 /MASK OUT
5004 6304 4450 LDCMD /CLEAR STATUS
5005 6305 3143 DCA GOREG2 /SETUP COMPARE REGISTER
5006 6306 4444 ROSTAT /READ STATUS
5007 6307 7650 SNA CLA /HAS STATUS 0000?
5008 6310 2215 ISZ ONLY /UPDATE PC
5009 6311 1166 SEKER2, TAD K5300
5010 6312 3716 GORAK, DCA I SAVPC /SETUP TEXT POINTER
5011 6313 5615 JMP I ONLY /BACK TO TEST
5012 6314 1164 SEKER1, TAD K0306 /SKIP TEXT POINTER
5013 6315 5312 JMP GORAK /EXIT
5014
5015 6316 0000 SAVPC, 0
5016 6317 0000 SAVTD, 0
5017 6320 7577 A7577, 7577
5018
5019 /ROUTINE TO GET A RANDOM DISK ADDRESS
5020 /

```

```

5021 6321 0000 RNAD, 0
5022 6322 3361 DCA SAVPOT /SAVE DISK NO, POINTER
5023 6323 7101 CLL IAC
5024 6324 1363 TAD RNWRD1
5025 6325 1364 TAD RNWRD2
5026 6326 7106 CLL RTL
5027 6327 3363 DCA RNWRD1
5028 6330 1364 TAD RNWRD2
5029 6331 7012 RTR
5030 6332 1363 TAD RNWRD1
5031 6333 3364 DCA RNWRD2
5032 6334 1364 TAD RNWRD2
5033 6335 7420 SNL
5034 6336 5342 JMP GOTADD /USE THIS AS DISK ADDRESS
5035 6337 1170 TAD ENOTRK /HAVE TO CHECK BOUNDARIES
5036 6340 7200 CLA
5037 6341 1364 TAD RNWRD2
5038 6342 3365 GOTADD, DCA RNWRD4 /GET SAME
5039 6343 1362 TAD DSKSAV /SAVE WORD
5040 6344 1361 TAD SAVPOT /GET POINTER
5041 6345 3361 DCA SAVPOT /ADD IN DRIVE NUMBER
5042 6346 1365 TAD RNWRD4 /MAKE ADDRESS
5043 6347 3761 DCA I SAVPOT /GET WORD
5044 6350 1361 TAD SAVPOT /STORE IT
5045 6351 1076 TAD K0004 /ADD IN FUDGE FACTOR
5046 6352 3361 DCA SAVPOT /MAKE ADDRESS
5047 6353 7004 RAL /GET THE LINK
5048 6354 3761 DCA I SAVPOT /SAVE EXTENDED BIT
5049 6355 1761 TAD I SAVPOT /GET IT
5050 6356 7110 CLL RAR /SHIFT
5051 6357 1365 TAD RNWRD4 /GET WORD
5052 6360 5721 JMP I RNAD /EXIT
5053
5054 6361 0000 SAVPOT, 0
5055 6362 6366 DSKSAV, DSK0A
5056 6363 1234 RNWRD1, 1234
5057 6364 2345 RNWRD2, 2345
5058 6365 0000 RNWRD4, 0
5059 6366 0000 DSK0A, 0
5060 6367 0000 DSK1A, 0
5061 6370 0000 DSK2A, 0
5062 6371 0000 DSK3A, 0
5063 6372 0000 DSK0B, 0
5064 6373 0000 DSK1B, 0
5065 6374 0000 DSK2B, 0
5066 6375 0000 DSK3B, 0
5067
5068 6400 PAGE
5069 /
5070 /SUBROUTINE FOR "NO ERRORS" AND SCOPE
5071 /LOOPS. UPDATE UP COUNTER "REG1" ON EVERY ENTRY.
5072 /
5073 6400 NFRPD, 0
5074 6401 2200 ISZ NERRO
5075 6402 7300 CLA CLL

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```

5076 6403 4530      TICK
5077 6404 1620      TAD I  NERR0
5078 6405 3173      DCA  RSTRT      /GET RSTART ADDRESS
5079 6406 4405      CLASIC /STORE
5080 6407 4440      C8CKPA
5081 6410 7000      NOP
5082 6411 4404      LAS
5083 6412 0215      AND  K0200      /GET SWITCH 4
5084 6413 7650      SNA CLA /MASK
5085 6414 5223      JMP  .+4      /PROGRAM HALT
5086 6415 4405      CLASIC
5087 6416 4437      C8CKPA
5088 6417 7400      STPHLT, HLT
5089 6420 4404      LAS
5090 6421 7000      RAL
5091 6422 7720      SNA CLA
5092 6423 5226      JMP  .+3
5093 6424 1620      TAD I  NERR0
5094 6425 5640      JMP I  NSCOPE
5095 6426 1131      TAD  RFG0
5096 6427 7640      SZA CLA
5097 6430 5233      JMP  NEXTST
5098 6431 2132      ISZ  REG1
5099 6432 5573      JMP I  RSTRT
5100 6433 7301      NEXTST, CLA CLL IAC
5101 6434 4453      CLRALL
5102 6435 2220      ISZ  NERR0
5103 6436 2220      ISZ  NERR0
5104 6437 5600      JMP I  NERR0
5105
5106 6440 5470      / NSCOPE, SCOPE
5107
5108      / ROUTINE TO DO HALF BLOCK DATA CHECKS
5109
5110 6441 0200      HFCMK, 0
5111 6442 3143      DCA  GOREG2
5112 6443 1267      TAD  RGNRUF
5113 6444 3153      DCA  ADREG
5114 6445 1150      TAD  CMREG
5115 6446 0101      AND  K0007
5116 6447 7041      CIA
5117 6450 1553      TAD I  ADREG
5118 6451 7650      SNA CLA
5119 6452 5256      JMP  .+4
5120 6453 1150      TAD  CMREG
5121 6454 0101      AND  K0007
5122 6455 5337      JMP  HFERR
5123 6456 2153      ISZ  ADREG
5124 6457 1553      TAD I  ADREG
5125 6460 7041      CIA
5126 6461 1151      TAD  DAREG
5127 6462 7650      SNA CLA
5128 6463 5266      JMP  .+3
5129 6464 1151      TAD  DAREG
5130 6465 5337      JMP  HFERR

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5131 6466 2153      ISZ  ADREG
5132 6467 7526      CLA CLL CML RTL
5133 6470 1124      TAD  K7600
5134 6471 3162      DCA  DATCNT
5135 6472 1553      HFR1, TAD I  ADREG
5136 6473 7041      CIA
5137 6474 1143      TAD  GOREG2
5138 6475 7640      SZA CLA
5139 6476 5340      JMP  HFERR+1
5140 6477 2153      ISZ  ADREG
5141 6500 1143      TAD  GOREG2
5142 6501 7040      CMA
5143 6502 3143      DCA  GOREG2
5144 6503 2162      ISZ  DATCNT
5145 6504 5272      JMP  HFR1
5146 6505 1124      TAD  K7600
5147 6506 3162      DCA  DATCNT
5148 6507 3143      DCA  GOREG2
5149 6510 1553      HFR2, TAD I  ADREG
5150 6511 7640      SZA CLA
5151 6512 5337      JMP  HFERR
5152 6513 2153      ISZ  ADREG
5153 6514 2162      ISZ  DATCNT
5154 6515 5310      JMP  HFR2
5155 6516 1553      TAD I  ADREG
5156 6517 7041      CIA
5157 6520 1102      TAD  K1234
5158 6521 7650      SNA CLA
5159 6522 5325      JMP  .+3
5160 6523 1122      TAD  K1234
5161 6524 5337      JMP  HFERR
5162 6525 7330      CLA CLL CML RAR
5163 6526 3143      DCA  GOREG2
5164 6527 1171      TAD  S0FERR
5165 6530 7640      SZA CLA
5166 6531 5641      JMP I  HFCMK
5167 6532 7340      CLA CLL CMA
5168 6533 3171      DCA  S0FERR
5169 6534 1166      TAD  K5300
5170 6535 3572      DCA I  SAVPCT
5171 6536 7330      CLA CLL CML RAR
5172 6537 3143      HFR3, DCA  GOREG2
5173 6540 1553      TAD I  ADREG
5174 6541 3154      DCA  DTREG
5175 6542 2241      ISZ  HFCMK
5176 6543 5641      JMP I  HFCMK
5177
5178      / SUBROUTINE TO LOAD COMMAND REGISTER
5179
5180 6544 0200      LOCM, 0
5181 6545 3150      DCA  CMREG
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, DLDC /LOAD COMMAND REGISTER
5187 6553 5744 JMP I LDCM /EXIT
5188 6554 4405 CLASIC /CHECK FOR CLASSIC.
5189 6555 4436 CRERR /ROUTINE TO EXECUTE.
5190 6556 7402 ERHLT6, HLT /SKIP TRAP ERROR.
5191 6557 5354 JMP .-3
5192 /
5193 6560 2405 NMES2, TEXT "TEST (Y=YES OR N=NO):"
      6561 2324
      6562 4050
      6563 3175
      6564 3105
      6565 2340
      6566 1722
      6567 4916
      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 NOP
5202 6603 4404 LAS
5203 6604 0227 AND K0770
5204 6605 3631 DCA I KMFCHK /SAVE DESIRED CODE
5205 6606 1235 TAD CNTR1
5206 6607 3632 DCA I KNERRO
5207 6610 1236 TAD CHNPOY
5208 6611 3233 DCA CNGSAV
5209 6612 1633 CHANGR, TAD I CNGSAV /GET ADDRESS POINTER
5210 6613 3000 DCA 0 /SAVE IT
5211 6614 1400 TAD I 0 /GET OLD IOT CODE
5212 6615 0234 AND K7007 /MASK
5213 6616 1631 TAD I 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 KNERRO /UPDATE CHANGE COUNTER
5217 6622 5212 JMP CHANGR
5218 6623 4405 CLASIC
5219 6624 4436 CRERR
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 KNERRO, NERR0
5230 /

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5231 6633 0200 CNGSAV, 0
5232 6634 7007 K7007, 7007
5233 6635 7746 CNTR1, 7746
5234 6636 6637 CHNPOY, CHNPOY+1
5235 6637 1001 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 3231 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 4222
      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 2401 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
        7020 2217
        7021 2200
5269 7022 2411 FRTX8, TEXT "DISK INTERRUPT ERROR"
        7023 2313
        7024 4011
        7025 1624
        7026 2522
        7027 2225

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```

        7010 2024
        7011 4005
        7012 2222
        7013 1722
        7014 0000
5270
5271 7015 4020 /
        7016 2123 /TXEND, TEXT " PASS COMPLETE"
        7017 2340
        7020 2317
        7021 1522
        7022 1405
        7023 2405
        7024 2000
5272
5273
5274
5275
5276
5277
5278
5279
5280
5281 7025 0000 /
5282 7026 1022 /
5283 7027 0105 /
5284 7030 7650 /THIS ROUTINE WILL TEST FOR THE AVAILABILITY OF THE
5285 7031 5625 /APT BA TEST SYSTEM AND NOP ANY CONSOLE PACKAGE WHICH
5286 7032 1022 /MIGHT HAVE BEEN SET UP.
5287 7033 2300 /
5288 7034 3022 /
5289 7035 1107 /
5290 7036 3701 /
5291 7037 3362 /
5292 7040 3072 /
5293 7041 1022 /
5294 7042 2075 /
5295 7043 3303 /
5296 7044 1303 /
5297 7045 7040 /
5298 7046 3071 /
5299 7047 1071 /
5300 7050 3330 /
5301 7051 1022 /
5302 7052 2014 /
5303 7053 7650 /
5304 7054 5264 /
5305 7055 7240 /
5306 7056 3071 /
5307 7057 1303 /
5308 7060 7104 /
5309 7061 3072 /
5310 7062 1303 /
5311 7063 7410 /
5312 7064 1362 /
        APTA, 0
        TAD 22
        AND K0000 /TEST FOR APT SYSTEM
        SNA CLA /ON APT ?
        JMP I APTA /NO
        TAD 22
        AND K7377 /NOP CONSOLE PACKAGE
        DCA 22
        TAD K7000 /NOP SWITCH REGISTER ROUTINE
        DCA I XMYLAS /NOP SWITCHES
        DCA CLKCNT
        DCA DRVNO /START WITH DRIVE 0.
        TAD 22
        AND K0003 /# OF DRIVES
        DCA AERRO /SET COUNTER FOR NO. OF DRIVES.
        TAD AERRO
        CMA
        DCA DRVNT /SETUP COUNTER.
        TAD DRVNT
        DCA CLKCNT
        APTAR, TAD 22
        AND K0100
        SNA CLA /SINGLE DRIVE TEST?
        JMP .+10 /NO!!!!
        CLA CMA
        DCA DRVNT /COUNT OF 1.
        TAD AERRO
        CLL RAL
        DCA DRVNO /TEST ONLY THIS DRIVE.
        TAD AERRO /TEST THIS DRIVE
        SKP
        TAD CLKCNT

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5313 7065 1677 TAD I XDSKON
5314 7066 1327 DCA PCSAV
5315 7067 7240 CLA CMA
5316 7070 1327 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 3270 DCA DRVH4V /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 MYVLAS, MYVLAS+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 APTRO, 0
5334 7104 7200 CLA /MAKE SURE AC IS CLEAR
5335 7105 1022 TAD 22 /GET CONFIGURATION
5336 7106 0105 AND K4000 /GET CONFIGURATION
5337 7107 7650 SNA CLA /ISOLATE APT BIT
5338 7110 5703 JMP I APTRO /ON APT
5339 7111 7340 CLL CLA CMA /NO
5340 7112 1725 TAD I PERRO /SET UP FOR GETTING ERROR PC
5341 7113 3327 DCA PCSAV /GET ERROR PC
5342 7114 6002 IOF /STORE FOR FUTURE USE
5343 7115 6224 WIF /DISABLE INTERRUPT SYSTEM
5344 7116 1121 TAD KCDF /SET UP FOR DATA FIELD IN ERROR
5345 7117 3321 DCA .+2 /ESTABLISHES DATA FIELD
5346 7120 1327 TAD PCSAV /GET ERROR ADDRESS
5347 7121 7492 HLT /REPLACED WITH ERROR DATA FIELD
5348 7122 6272 CIF 70 /FIELD OF UVFROM
5349 7123 5726 JMP I K6520 /REPORT ERROR
5350 7124 5703 JMP I APTRO /RETURN TO THE NORMAL REPORTING
5351 /
5352 7125 5200 PERRO, ERRO /POINTER TO PC IN ERROR
5353 7126 6520 K6520, 6520 /POINTER TO UV FROM ADDRESS
5354 7127 2000 PCSAV, 0 /PLACE WHERE ERROR PC IS STORED
5355 /
5356 /THIS ROUTINE IS A NOP IF NOT BEING USED ON THE APT LINE.
5357 /IF APT IS ENABLED A TIMING PULSE IS GENERATED AT
5358 /APPROXIMATELY 1.5 SECOND INTERVALS
5359 /
5360 7130 0000 KTICK, 0
5361 7131 1022 TAD 22 /GET HARDWARE CONFIGURATION
5362 7132 0105 AND K4000 /TEST FOR APT EACH TIME
5363 7133 7650 SNA CLA
5364 7134 5730 JMP I KTICK /NO TIMING GENERATED
5365 7135 2362 ISZ CLKCNT /SEE IF TIMING NEEDS TO BE DONE
5366 7136 5730 JMP I KTICK /NO, RETURN TO MAIN FLOW
5367 7137 1361 TAD COUNT /INIT FIRST CLOCK

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5368 7140 1362 DCA CLKCNT
5369 7141 2175 ISZ KCNT /FOR TESTS REQUIRING LONGER TIME OUT ON APT
5370 7142 5730 JMP I KTICK /RETURN, NOT READY TO NOTIFY APT
5371 7143 6224 WIF /START SETUP FOR UV FROM
5372 7144 1121 TAD KCDF
5373 7145 3347 DCA .+2 /WILL ESTABLISH CURRENT DATA FIELD
5374 7146 6002 IOF
5375 7147 7492 HLT /CHANGED TO CURRENT DATA FIELD
5376 7150 6272 CIF 70 /LOCATION OF UVFROM
5377 7151 4763 JMS I K6500 /LET APT KNOW YOU ARE RUNNING
5378 7152 7300 CLL CLA /MAKE SURE AC AND LINK ARE CLEAR
5379 7153 1361 TAD COUNT
5380 7154 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 FROM
5389 /
5390 7177 +7177
5391 /
5392 7177 WRKRUF=.
5393 /
5394 7177 HJTRK=.
5395 7200 IOTRK+.+1
5396 /
5397 7576 ENDHUF+.+377
5398 /
5399 7577 STPCHK+.+400
5400 /
5401 $$$

```

[illegible][illegible]

A7577	6320	C88ETD	0613	DCLR	6742
ACCHP1	4442	C88ET8	0535	DCNT1	4370
ACCHP2	4443	C88W17	4431	DCNT2	4371
ACL	7701	C88W87	0745	DCNT3	4372
ACREG	0155	C8TYP1	1021	DCNT4	4373
ACSAVE	1345	C8TYVI	4426	DIN	4530
ADREG	0153	C8TYPE	4435	DISK0	1561
AERRO	7103	CAF	6007	DISK1	1562
AGAIN	5325	CAREG	0152	DISK2	1563
ALLBAK	4242	CCNTR1	6635	DISK3	1564
AP1	5045	CHANG	6600	DISK4	1565
APER	5066	CHANGR	6612	DISK5	1566
APHLT1	5073	CHECK	6232	DISK6	1567
APR1	5024	CHKCLA	1200	DISK7	1570
APT8	7025	CHKERR	5342	DISK8	5600
APT8R	7051	CHKNEF	4432	DISKGO	4426
AUTC10	0010	CHKSKP	6257	DLAG	6743
AUTPRO	5000	CHNHLT	6625	DLCA	6744
RGN	0200	CHNPOT	6636	DLDC	6746
BGNBUF	0067	CKCOUT	0232	DMAN	6747
BYRETR	0506	CLASIC	4405	DOCNT	0247
C8BY1	0230	CLASTK	5102	DOONEA	0426
C8BY2	1300	CLDR	5571	DOPACK	0212
C8BY3	1061	CLKCNT	7142	DOSET	0251
C8BY4	0515	CLRALL	4453	DOIT	5553
C8BY5	1116	CLRTN	1315	DRIVNO	0072
C8CHAP	1075	CMREG	0150	DRST	6745
C8CKP	1022	CNGSAG	6633	DRVNT	0071
C8CKPA	4440	CNT	7140	DRVHAV	0070
C8CKSW	4425	CNTRLC	0551	DSK0A	6366
C8CNT	4427	CNTRLD	0600	DSK0B	6372
C8CONT	1145	CNTRLE	0545	DSK1A	6367
C8CRLF	4433	CNTRLL	0537	DSK1B	6373
C8DD1	0310	CNTRLD	0500	DSK2A	6370
C8DD10	1262	CNTRLR	0511	DSK2B	6374
C8DD11	0607	CNTRLS	0521	DSK3A	6371
C8DD2	1033	CNTVAL	0252	DSK3B	6375
C8DC3	0350	COMP1	4557	DSK4D	4526
C8DD4	1006	COMP2	3600	DSKIN	4607
C8DD7	0527	CONSOL	0000	DSKON	4374
C8FCHO	4434	CONST1	1366	DSKOUT	4406
C8ERR	4436	COUNT	7161	DSKP	6741
C8GET	0620	CRERR	3614	DSKDOT	4527
CRHANG	1122	CLF	4462	DSKSAV	6362
CRNTQU	4437	CRREG1	0144	DSKSKP	4447
C8OCTA	4432	CRREG2	0145	DTERR	5743
CRPA86	4420	CRWRD1	0160	DTREG	0154
CRPAUS	4441	CRWRD2	0161	ENDBUF	7576
CRPRNT	4430	CYL450	0065	ENDHLT	4122
CRDPS	0666	DAREG	0151	ENDIT	0742
C8RETD	0614	DATCNT	0162	ENDTRK	0170
C8RETR	0536	DAREG	0147	ENDTSY	4062

ERMLT1	4761
ERMLT2	5576
ERMLT3	6173
ERMLT4	4776
ERMLT5	5161
ERMLT6	4556
ERMLT7	4136
ERMLT9	9344
ERR1	0736
ERRA1	5217
ERRNE3	1320
ERR0	5200
ERROR	4440
ERTX1	6671
ERTX2	6704
ERTX3	6720
ERTX4	6736
ERTX5	6746
ERTX6	6740
ERTX7	6772
ERTX8	7002
EXCOPE	5357
EXIT	6145
EXITA	0440
F10P1	0021
F10P2	0022
F10P3	0020
FIGURE	5654
FIGURE	4430
FILRUF	4431
FILCNT	1040
FILLER	1037
FLRUF	5447
FLSAVE	1347
PROCT	6065
GNREG1	0142
GNREG2	0143
GETCH1	0703
GETDAT	0456
GETDRV	4345
GORAK	6312
GOTTA	0443
GOTADD	0342
GOTDA	0454
GOTSKP	6274
GTF	0004
GTRG	5527
HAFCHK	4427
HEDHLT	4021
HEDLST	5370
HEDTAD	5367
HFCMK	6441

HFERR	6537	K0240	6064	LOCMD	4450	OVRDOK	4435
HFR1	6472	K0260	4364	LOCUR	4451	OVRERR	4254
HFR2	6510	K0277	4366	LOMAN	4455	OVR LAP	4200
HTRK	7177	K0306	0164	LOMN	4131	OVRDK	4233
HOMEMA	0156	K0331	4365	LOADCT	1355	OVRRI	4203
HRDERR	5652	K0400	0016	LOTRK	7200	OVRRE2	4206
ICNTR1	4763	K0770	6627	LPAAT	5456	OVRRE3	4221
ICNTR2	4764	K1000	0017	LPPFG	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
IONWAT	4401	K4000	0105	MESAC	1333	PCNTR1	5365
IONWT	4727	K4100	6147	MESFL	1341	PCNTR2	5366
IOI	1001	K5000	0115	MESHAN	1146	PCSAV	7127
IOI1A1	2650	K5252	0114	MESHO	1336	PCSAVE	1344
IOI1A2	3031	K5300	0166	MESPAS	0253	PERROR	7125
IOI2	5572	K5373	0165	MESPC	1330	PNTBUF	1120
IOI2A2	3055	K5400	0364	MPERR	2771	POLERR	4427
IOI3	6167	K6000	0106	MPHLT1	2734	PRINT	6151
IOI3A1	2647	K6304	0167	MPHLT2	2776	PRN	6111
IOI3A2	3030	K6500	7163	MPRI	2735	PRINTER	4457
IOI4	4772	K6520	7126	MQA	7501	PRSFLO	0222
IOI4A1	2643	K7000	0107	MQL	7421	PSIE	6665
IOI4A2	3024	K7007	6634	MQSAVE	1346	PSKE	6663
IOI5	5155	K7156	3772	MYAC	1317	PSKF	6661
IOI5A1	2652	K7377	7100	MYLAS	5075	PSYB	6664
IOI5A2	3033	K7400	0123	NOIN	4553	PTSTOR	0336
IOI6	6552	K7501	5655	NERR0	6400	RANADD	4423
IOI6A1	2645	K7577	5525	NERROR	4437	ROAD	4140
IOI6A2	3026	K7600	0124	NEXOSK	4123	ROADD	4446
IOI7	4132	K7700	0111	NEXTST	6433	ROAF	5400
K0001	0073	K7707	4726	NL7775	7346	ROBUF	4456
K0002	0074	K7740	0122	NMES1	0760	ROCM	5412
K0003	0075	K7760	0110	NMES2	6560	ROCMD	4445
K0004	0076	K7771	0116	NMES3	4165	ROCR	6000
K0005	0077	KAERR0	0127	NOCLR	5522	ROCR0	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	REDRAK	4510
K0037	0120	KNERR0	6632	NTCRC	5301	REDOA	0415
K0040	0013	KRMF	2362	NTGD	5264	REG0	0131
K0077	0112	KTICK	7130	NTSEK	4666	REG1	0132
K0100	0014	KTIME	0174	NXTOSK	4274	RESEK	4022
K0177	4367	LAS	4404	OCTEL	4460	RESTOR	6200
K0200	0015	LADAD	6164	ONLY	6215	RESTRY	0173
K0207	5356	LADDD	4452	OP1	0021	RETRN	5632
K0212	6063	LDCA	4765	OP2	0022	RETRN2	5360
K0215	6062	LOCM	6544	OVRDER	4522	RNAD	6321

RNRD1	6363	T149E	1063	T2910A	2100	T40R	3242
RNRD2	6364	T15E	1106	T2910B	2102	T40S	3246
RNRD4	6365	T15T	1110	T2910C	2105	T40T	3265
RQUINS	1302	T16E	1126	T2910D	2110	T41E	3337
ROUTHP	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	T42M	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	T190K	1266	T30T	2211	T43R1	3454
SAVTRK	5654	T19T	1271	T31E	2257	T43R2	3461
SRCNT1	2133	T1E	0275	T31R	2214	T43T	3514
SCOPE	5470	T20E	1317	T31T	2261	T44E	3557
SDKP	1000	T200K	1316	T32E	2372	T440K	3567
SEEK	4424	T20T	1321	T32R1	2271	T44R	3526
SEKER1	6314	T21E	1350	T32R2	2312	T44T	3572
SEKER2	6311	T210K	1347	T32R3	2331	T45A1	3604
SELOSK	4260	T21T	1352	T32R4	2353	T45A2	3720
SETUP1	1233	T22E	1442	T32T	2374	T45E	3765
SETUP2	0225	T22R1	1404	T33E	2507	T45R1	3634
SKPERR	5634	T22R2	1423	T33R1	2404	T45R2	3650
SKPWAT	4433	T22T	1444	T33R2	2431	T45R3	3711
SKWAT	5134	T23E	1506	T33R3	2450	T45R4	3723
SOFFER	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	T35E	2615	T5E	0420
STRAUT	5310	T24T	1556	T36E	2673	T5T	0422
STREG	0146	T25E	1642	T36N	2700	T6E	0435
SWR	0020	T25S	1602	T36R	2637	T6T	0437
SWSEK	4012	T25T	1644	T36T	2703	T7E	0451
T0E	0256	T26E	1714	T37A	3054	T7T	0453
T10E	0571	T26R1	1651	T37E	3100	T8E	0477
T10R	0542	T26R2	1673	T37R	3015	T8R	0456
T10T	0573	T26T	1716	T37T	3102	T8T	0501
T11E	0637	T27E	1765	T380E	3157	T9E	0532
T11P1	0602	T27R1	1723	T38E	3146	T90K	0531
T11R2	0612	T27R2	1745	T380K	3156	T9R	0507
T11R3	0616	T27T	1767	T38R	3115	T9T	0534
T11T	0641	T28E	2055	T38T	3161	TARLA	0461
T12A	0673	T2810A	2015	T390E	3235	TARLB	0471
T12E	0677	T2810B	2017	T39E	3224	TAPROT	0570
T12R	0654	T2810C	2022	T390K	3234	TCNTR1	0134
T13A	0747	T2810D	2025	T39R	3173	TCNTR2	0135
T13E	0753	T280K	2052	T39T	3237	TCNTR3	0136
T13R	0707	T28R	2010	T3E	0355	TCNTR4	0137
T14KE	1067	T28T	2057	T3T	0357	TCNTR5	0140
T14R	1013	T29E	2135	T40E	3263	TCNTR6	0141

TEXAD	5770	T8T32	2262	X00LPT	1112
TEXCA	5766	T8T33	2400	X0NSW	0520
TEXCH	5742	T8T34	2514	X0OUT	0006
TEXCR	5754	T8T35	2551	X0SKCN	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	XHFCMK	0027
TEXST	5756	T8T41	3270	XMITRK	0064
THSFLO	0035	T8T42	3400	XIONWT	0041
TICK	4530	T8T43	3452	XKLBUF	0032
TMSTYP	3541	T8T44	3517	XLAP	4163
THANE	4722	T8T45	3622	XLAS	0004
THANOK	4721	T8T5	0411	XLHAD	0052
THANS	4643	T8T6	0423	XLOCA	0051
THANT	4724	T8T7	0440	XLNCM	0050
TMPCNT	0746	T8T8	0454	XLDMN	0055
TMPROT	2773	T8T9	0502	XLOAD	0125
TOCT	6036	T8TCH	0715	XLOTRK	0043
TOTST	5526	T8TSEK	0067	XMYLAS	7101
TOVRDT	4524	TTYLPT	1121	XNFRRO	0037
TRK212	0066	TWOCT	4461	XONLY	0024
TST0	0240	TYPE	4436	XOVRRD	4164
TST0P	7102	UPAROW	0615	XPRINT	0036
TST1	0265	UPONE	6053	XPRN	0057
TST10	0540	WATISZ	4434	XRNAD	0046
TST11	0600	WATMES	0651	XRNBF	0056
TST12	0645	WPKRUF	7177	XRNCH	0045
TST13	0702	WTISZ	4000	XRNCR	0054
TST14	1010	XCRCKP	1041	XRNST	0044
TST14P	0757	XCRCNT	0400	XREG	5364
TST15	1073	XCRCL	1023	XREFSTR	0025
TST16	1111	XCRECH	1063	XRNAD	0023
TST17	1133	XCBERR	1207	XSNKP	0047
TST18	1202	XCBIND	0635	XSKWAT	0033
TST19	1242	XCBROCT	1000	XTABLA	0457
TST2	0301	XCAPAS	0200	XTABLB	0460
TST20	1272	XCBPAU	0337	XTEXT	5363
TST21	1322	XCBPNT	0303	XTICK	0130
TST22	1400	XCBPSW	0656	XTOCT	0061
TST23	1445	XCBSSW	0262	XWTISZ	0034
TST24	1511	XCBTTY	0272		
TST25	1600	XCBTYP	1077		
TST26	1645	XCLAS	0005		
TST27	1717	XCLDR	0053		
TST28	1773	XCOMP1	0042		
TST29	2062	XCOMP2	0043		
TST3	0326	XCRLF	0062		
TST30	2140	XOIN	0007		
TST31	2212	XOTSKG	0026		

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ERRORS DETECTED: 0
LINKS GENERATED: 136
RUN-TIME: 34 SECONDS
4K CORE USED

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[illegible]

[illegible][illegible]

[illegible]

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FIGURE	1154	4792#	4749	4758	4759													
FIGURE	1293#	1885	1933	2105	2154													
	3278	3146	3206	3236	3299	2201	2261	2316	2370	2665	2685	2767	2788	3001				
FILBUF	1290#	1864	1913	1953	1987	2219	2276	2344	2381	2466	2482	2559	2560	2611				
	2634	2715	2736	2894	2959	3267	3330	3516	3545	4096	4210							
FILCNT	758	761	765#															
FILLER	756	764#																
FLBUF	1155	4539#	4555															
FLSAVE	364	561	797	943	982	1028#												
PROCT	1178	4844#	4862	4873	4874	4885	4894											
GDRG1	1235#	2530	2582	3469	4401													
GDRG2	1236#	1307	1315	1394	1400#	1653	1697	1710	1717	1760	1781	1788	2463	2531				
	2584	2819	2866	2906	2985	3063	3477	4005	4010	4028	4244	4403	4670	4783				
	4729	4732	4734	4746	4755	4965	4973	4982	4997	5005	5111	5137	5141	5163				
	5148	5163	5172															
GETCH1	642#	650																
GETDAT	369	370	377	403#														
GETDRV	3679	3687	3771	37A2	3799	3867	3872#	3885	3886	3912	3923	3978						
GOBAK	5012#	5013																
GOLTA	375	392#																
GOTADD	5034	5038#																
GOTOA	397	398	399	420	401#													
GOTSXP	4987	4996#																
GTF	47#	363	796	942														
GTRG	4469	4497#	4601	4622	4616	4621	4629											
HAFCHK	1288#	1971	2005	2038	4138													
MEDHLT	1263	3636#																
MEDLSY	4474	4475#																
MEDTAD	4377	4474#																
MFCHK	1153	5110#	5166	5175	5176	522#												
HFERR	5122	5130	5139	5151	5161	5172#												
HFR1	5135#	5145																
HFR2	5149#	5154																
HITRK	1069	1182	5394#															
HOMEMA	1247#	1273	1274	13A2	2387	2813	2848	2869	2899	2933	3118	3178	3420	4627				
	4667	4943	4956	</														

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K5252	2640	2850	2987	2963	2978	4106	4222	4237							
	1206#	1912	1932	1986	2004	2125	2153	2235	2260	2281	2315	2610	2664	2714	
K5370	2766	3515	3944	3965											
	1255#	1390	2401	2461	2986	3068	3150	3210	3452	3929	4245	4693	4752	5000	
	5169														
K5373	1254#	3075	3148	3208	3450	4675									
K5403	1280	1412#													
K6000	1200#	4017	4100	4688	4972	4988									
K6304	1256#	2526	2577												
K6500	5377	5388#													
K6520	5349	5353#													
K7000	1201#	1381	3223	4099	4105	4687	5289								
K7007	5212	5232#													
K7156	3500	3605#													
K7377	5287	5326#													
K7400	1213#	4529	4724												
K7501	4659	4697#													
K7577	4571	4583	4589#												
K7600	1214#	4544	4615	5133	5146										
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K7707	4057	4150#													
K7740	1212#	1607	1861	1910	2073	2094	2123	2144	2172	2233	2279	2303	2334	2350	
	2392	2454	2608	2631	2652	2674	2712	2733	2757	2776	3376	3511	3557	3613	
	4157	4317	4966												
K7760	1202#	2507	2555	2565	2573	3256	3517	3525	3561	3566	3650	3663			
K7771	1208#	4424													
KAERR0	1223#	4353													
KCDF	1211#	1275	5344	5372											
KCNT	1262#	3495	3696	5369	5382										
KHFCMK	5204	5213	5224#												
KILBUF	1280#	1811	1876	1925	1964	1997	2030	2096	2146	2190	2251	2305	2360	2511	
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KLBuF	1156	4525#	4534												
KNERR0	5206	5216	5229#												
KRMF	1277	1410#													
KTICK	1224	5300	5318	5360#	5364	5366	5370	5383							
KTIME	1261#	2414	2474												
LAS	1116#	2951	3632	3643	3705	4056	4076	4087	4210	4356	4359	4441	4560	4564	
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LOAD	1172	4920#	4924												
LOADD	1102#	1367	1703	1766	2021	2052	2073	3126	3186	3428	3651	3664	4238	4630	
	4666	4961													
LDCA	1171	4189#	4195												
LOCM	1170	5180#	5187												
LOCMO	1104#	1310	1335	1356	1367	1384	1666	1702	1764	1777	1787	2816	2851	2872	
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LOCUR	1105#	2847	2868	3122	3182	3424	4606	4664							
LOMAN	1108#	2823	2825	2827	2854	2856	2859	3737	3739	3742	3747	4491	4493	4508	
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LOMN	1175	3615	3616	3721#	3723										
LOADCT	1215	2050#	2051	2057	2058										

LOYRK 1070 11A1 5395#
 LPDAT 4546# 4552
 LPFIG 4726# 4736
 M12 1219# 3734 4505 4779 4793
 M4 1655 1687 3A25 4A48 4A63#
 MANPRO 1269 294A# 3013
 MANUAL 1267 4053#
 MESA 629 6A7#
 MESAC 973 1022#
 MESFL 981 1024#
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 MESMQ 977 1023#
 MESPAS 147 176#
 MESPC 969 1021#
 MPERR 2967 2991 2999 3003#
 MPHLT1 1059 2970#
 MPHLT2 1067 300A#
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 MOL 50# 5A0
 MQSAVE 366 559 799 945 97A 1227#
 MYAC 1006 1012 101A#
 MYLAS 1126 4274# 427A 4318 4325 4327
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 NERR0R 1094# 1319 1342 1370 1403 1432 1451 1471 1490 1519 1553 1591 1637 1675
 1724 1795 1822 1846 1890 193A 1972 2006 2039 2110 2159 2206 2266 2321
 2375 2439 2496 2542 2591 2690 2793 2832 2878 2937 3002 3092 3153 3213
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 NEXDSK 3681 3699 3712#
 NEXTST 5297 5100#
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 NMES1 1732# 3702 3819
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 NXTDSK 3928# 3859
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 ONLY 1150 4941 4949# 4951 4953 500A 5011
 OP1 1146# 4200 4300
 OP2 1147# 4289 4301 4302 4306 398A#
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 OVRERR 3788 3805 3809#
 OVRLAP 3752 3765# 3810 3812

SEQ 0140

OVR0K 3787 3792#
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 PCLF 43# 865 867
 PCNTR1 4025 4439 4472#
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 PCSAV 5314 5316 5341 5346 5354#
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 PERROR 5340 5352#
 PNTRUP 854 85A 864 870# 877 883
 POLERR 3929# 3944
 PRINT 1160 4906# 4910 4916
 PRN 1177 4A47# 4A69 4872 4896 489A
 PRNTER 1110# 3721 3703 3A18 3821 3A28 4381 4384 4396 4412 4435
 PRSFLD 1159 1276 1284#
 PSIE 46#
 PSKE 40#
 PSKF 42# 878
 PSTB 45# 865
 PSTOR 259 261 272 2A1 2A3#
 RANADD 1084# 1629 1613 1617 3225 3254 3258 3262 3325 3374 3378 3774 3915 3971
 RDAN 1168 3614 361A 3732# 3750
 RDAND 1101# 4610
 ROBF 1176 4089# 449A
 ROBUF 1109# 4624
 RDCM 1167 4503# 4521
 RDCMD 1120# 4611
 RDCR 1174 4777# 4A08
 RDCRC 1107# 2536 2585 4609
 ROST 1166 4333# 4342
 ROSTAT 1099# 1311 1317 1395 1401 1667 1704 1711 171A 1769 17A2 17A9 2830 2876
 3129 31A9 3431 3655 366A 4006 4011 4231 4403 4471 4968 4984 4998 5006
 REALPC 952 970 1017#
 RECAL 1085# 1429 146A 14A7 1575 3334 3346
 REDBAK 3978# 3982 39A6
 REDDA 370# 37A
 REG0 1225# 1294 1352 1409 1750 2957 3714 4060 4216 5095
 REG1 1226# 2956 3715 4215 5098
 RESEK 3640# 3671
 RESTOR 1151 4935# 4937 4939 4940 5099
 RESTRY 1260# 1271 4355 507A
 RETRN 4677# 4680 4692 4694 4667#
 RETRN2 4368 4450 4456
 RNAD 1149 4967 4993 5021# 5052
 RNWRD1 5024 5027 5030 5056#
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 RNWRD4 4991 5038 5042 5051 505A#

SEQ 0141

[illegible]

116T	183A	1844	1849#	
117E	1875	1843	1887	1891#
117S	1863#	1889		
117T	1874	1882	1893#	
118E	1924	1931	1935	1939#
118S	1912#	1937		
118T	1923	1939	1941#	
119E	1962	1969	1973#	
119OK	1972#			
119T	1961	196A	1975#	
11E	1337	1341#		
120E	1995	2003	2007#	
120OK	2006#			
120T	1994	2002	2009#	
121E	2028	2036	2040#	
121OK	2039#			
121T	2027	2035	2042#	
122E	2087	2103	2107	2111#
122R1	2077#	2089		
122R2	2096#	2109		
122T	2086	2102	2113#	
123E	2137	2152	2156	2160#
123R1	2127#	2139		
123R2	2146#	2158		
123T	2136	2151	2162#	
124E	2189	2199	2203	2207#
124S	2174#	2205		
124T	2188	2198	2209#	
125E	2250	2259	2263	2267#
125S	2235#	2265		
125T	2249	2258	2269#	
126E	2296	2314	2318	2322#
126R1	22A3#	229A		
126R2	2305#	2320		
126T	2295	2313	2324#	
127E	2351	2368	2372	2376#
127R1	2338#	2353		
127R2	2360#	2374		
127T	2350	2367	2378#	
128E	2400	2436	2440#	
128IDA	2408#	5253		
128IOB	2410#	5254		
128IOC	2413#	5255		
128IOD	2416#	2421	5256	
128OK	2419	2437#		
128R	2403#	2438		
128T	2399	2402	2442#	
129E	2460	2489	2497#	
129IOA	2468#	5257		
129IOB	2470#	5258		
129IOC	2473#	5259		
129IOD	2476#	2491	5260	
129OK	2494#			

	3115	3136	3137	3176	3196	3197	3261	3273	3286	3328	3331	3339	3349	3381	320 8146
	3382	3390	3418	3438	3439	3518	3542	3562	3587	3644	3645	3649	3648	3649	
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	3560	3564	4088	4095	4137	
	4141														
TCNTR4	1231#	1614	1629	3228	3229	3265	3268	3279	3292	3377	3388	3583	3588	3944	
	3550	3554	3590	3769	3777	3781	3789	3793	3798	3806	3910	3918	3922	3932	
	3977	3985	4103	4123	4130										
TCNTR5	1232#	1616	1627	3224	3239	3253	3304	3324	3359	3372	3400	3501	3595	3767	
	3794	3908	3973												
TCNTR6	1233#	1620	1633	3257	3302	3519	3520	3539	3541	3563	3571	3584	3586		
TEXAD	4769#														
TEXCA	4768#														
TEXCM	4766#														
TEXCR	4413	4763#													
TEXDA	4767#														
TEXDH	4765#														
TEXDT	4770#														
TEXEND	3704	5271#													
TEXGD	4397	4762#													
TEXPC	4385	4761#													
TEXST	4470	4764#													
TMSFLD	1159#														
TICK	1117#	2904	3042	3120	3180	3422	4316	4983	5076						
TIMSTP	3371	3433#													
TMANE	4114	4129	4140	4144#											
TMANOK	4115	4132	4139	4143#											
TMAN5	4097#	4145	4148												
TMAINT	4113	4128	4144#												
TMPCNT	641	649	679#												
TMPCNT	2966	2981	2987	2998	3005#										
TOCT	1179	4812#	4824	4849	4858										
TOTST	4559	4587	4590#												
TOVPDT	3930	3956	3963	3990#											
TRK212	1184#	1447	1464	1530	1753	2420									
TST0	1306#	1321	3717	5328											
TST0P	5322	5328#													
TST1	1333#	1342													
TST10	1567#	1593													
TST11	1597	1607#	1639												
TST12	1650#	1677													
TST13	1684#	1726													
TST14	1732	1753#	1797	1801											
TST14P	1730#														
TST15	1812#	1824													
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													
TST28	2390#	2441													
TST29	2454#	2498													
TST3	1381#	1405													
TST30	2507#	2544													
TST31	2555#	2593													
TST32	2608#	2692													
TST33	2696	2712#	2795												
TST34	2807#	2834													
TST35	2843#	2880													
TST36	2891#	2939													
TST37	2942	3031#	3094												
TST38	3112#	3155													
TST39	3173#	3215													
TST4	1408	1429#	1434												
TST40	3223#	3243													
TST41	3252#	3308													
TST42	3311	3323#	3363												
TST43	3371#	3404													
TST44	3415#	3457													
TST45	3461	3498#	3599												
TST5	1437	1445#	1453												
TST6	1462#	1473													
TST7	1482#	1492													
TST8	1501#	1521													
TST9	1530#	1555													
TSTCHA	636	643	652#	669											
TSTSEK	3684#														
TTYLPT	441	474	476	493	855	A71#	8A7								
TWOCT	1112#	4402	4415												
TYPE	1113#	3815	3837	3845	3856	4364	4819	4A23	4833	4835	4853	4861	4884	4893	
UPAROW	444	477	485	495	526	545#	551								
UPONE	1180	4830#	4A36	4847	4850	4A50	4857								
WATISZ	1291#	4563													
WATMES	592	598#													
WRKBUF	1067	1185	5392#												
WTISZ	1158	3611#	3620												
XC8CKP	89	200	794#	809	811										
XC8CNT	71	357#	362	387	388	389	391	433	459	464	479	488	530	595	
	807	830	885												
XC8CRL	79	145	150	386	550	672	674	752#	763	890	965	984			
XC8ECH	81	635	642	826#	831	835									
XC8ERR	85	939#	947	995	1001										
XC8INO	87	155	586#	590	596	597	891	989							
XC8OCT	77	149	631	719#	735	971	975	983							
XC8PAS	65	132#	140	156	157										
XC8PAU	91	305#	310	311	313	314									
XC8PNT	73	146	256#	258	260	264	275	591	628	888	966	968	972	976	

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	980																		
XCBSW	75	533	619#	622	676														
XCBSW	67	137	152	199#	206	95A	986	992											
XCSTTV	69	223#	231	462	593	A05	627												
XCSTYP	83	271	280	3A3	385	547	549	633	671	728	755	760	832	853#					
	869																		
XCLAS	1115	1127#																	
XCLDR	1106	1175#																	
XCOMP1	1097	1164#																	
XCOMP2	109A	1165#																	
XCRLF	1114	1180#																	
XDIN	1083	1129#																	
XDISKG	1087	1152#																	
XDOLPT	857	864#																	
XDOSW	447	448#																	
XDOOT	1082	1128#																	
XDSKON	5313	5325#																	
XERRO	1095	1162#																	
XFGURE	1093	1154#																	
XFLBUF	1090	1155#																	
XFROCT	1111	1178#																	
XFTREG	4455	4469#																	
XHFCMK	1088	1153#																	
XHITRK	1182#	1871	1920	1955	1989	2021	2081	2131	2178	2279	2289	2344	2614	2639					
	2721	2739	2897	2922	2923	2961	2977	3270	3333	3531	3532	3948	3951	4118					
	4220	4236																	
XIGNWT	1096	1163#																	
XKLBUF	1089	1156#																	
XLAP	3684	3752#																	
XLAS	1116	1126#																	
XLDAD	1102	1172#																	
XLOCA	1105	1171#																	
XLOCM	1104	1173#																	
XLDNN	1108	1175#																	
XLOAD	1215#	1647	1A59	2393	2452	2A05	2A89	3029	3110	3171	3250	3413	3496						
XLOTRK	1181#	1869	1A72	191A	1921	1956	1990	2022	2079	2084	2129	2134	2185	2186					
	2246	2247	2286	2293	2341	234A	2618	2622	2637	2642	2719	2724	2743	2747					
	2895	2911	2919	2927	2934	2962	327												

NAME	1103	1169#				
XSDKP	1103	1169#				
XSKWAT	1092	1157#				
XTABLA	368	404#				
XTABLB	395	405#				
XTEXT	4420	4072#				
XTICK	1117	1224#				
XTOCT	1112	1179#				
XWT1SZ	1091	1158#				
.L0357	312	317#				
.L0360	279	318#				
.L0361	278	319#				
.L0362	276	320#				
.L0363	273	321#				
.L0364	271	280	322#			
.L0365	262	323#				
.L0366	229	230	324#			
.L0367	228	325#				
.L0370	227	326#	1332	1410#		
.L0371	200	327#	1129	1415#		
.L0372	155	328#	1287	1416#		
.L0373	149	329#	1285	1417#		
.L0374	145	150	330#	1270	1418#	
.L0375	138	153	331#	1269	1419#	
.L0376	136	151	332#	1268	1420#	
.L0377	134	307	333#	1267	1421#	
.L0560	498	503#				
.L0561	462	504#				
.L0562	445	486	494	505#		
.L0563	444	477	485	495	506#	
.L0564	441	474	476	493	507#	
.L0565	432	435	463	478	487	508#
.L0566	393	509#				
.L0567	386	510#				
.L0570	384	511#				
.L0571	383	385	512#			
.L0572	379	408	443	513#		
.L0573	373	382	390	392	394	514#
.L0574	366	515#				
.L0575	364	516#				
.L0576	359	517#				
.L0577	358	361	518#	1566	1599#	
.L0752	670	683#				
.L0753	666	684#				
.L0754	662	685#				
.L0755	658	686#				
.L0756	654	687#				
.L0757	640	688#				
.L0760	635	642	689#			
.L0761	634	690#				
.L0762	632	691#				
.L0763	631	692#				
.L0764	626	693#				
.L0765	593	694#				

.L0766	591	628	695#					
.L0767	588	620	696#					
.L0770	564	697#						
.L0771	561	698#						
.L0772	559	699#						
.L0773	550	672	674	700#				
.L0774	548	637	647	657	661	665	667	701#
.L0775	547	549	633	671	702#			
.L0776	546	703#	1658	1690	1734#			
.L0777	530	955	704#	1655	1687	1735#		
.L1162	891	896#						
.L1163	888	897#						
.L1164	807	830	885	898#				
.L1165	806	810	828	899#				
.L1166	805	827	900#					
.L1167	802	901#						
.L1170	799	902#						
.L1171	797	903#						
.L1172	795	904#						
.L1173	759	905#						
.L1174	754	906#						
.L1175	727	907#						
.L1176	726	908#						
.L1177	723	909#	1752	1898#				
.L1365	1009	1031#						
.L1366	996	1032#						
.L1367	989	1033#						
.L1370	971	975	979	983	1034#			
.L1371	966	968	972	976	980	1035#		
.L1372	965	984	1036#					
.L1373	960	1037#						
.L1374	958	986	992	1038#				
.L1375	957	985	991	998	1000	1039#		
.L1376	951	1010	1040#	2056	2062#			
.L1377	922	1041	2054	2063#				
.L2176	2527	2534#						
.L2177	2518	2525	2535#					
.L2377	2541	2698#						
.L3377	3199	3203	3321#					
.L4175	3696	3757#						
.L4176	3686	3758#						
.L4177	3679	3687	3759#					
.L4375	3855	3898#						
.L4376	3825	3899#						
.L4377	3771	3782	3799	3900#				
.L4576	3912	3923	3978	4034#				
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.L5176	4298	4346#						
.L5177	4290	4347#						
.L6177	4818	4822	4852	4930#				

[illegible]

.V5102	951	1010	1040#			
.V6064	3855	3898#				
.V6110	1655	1687	1735#	3825	3899#	
.V6600	1268	1420#				
.V7025	1285	1417#				
.V7160	1332	1414#	1566	1599#	1752	1898#
.V7161	1329	1415#	2054	2063#		
.V7162	2056	2062#	3696	3757#		
.V7402	312	317#	996	1032#		
.V7510	662	685#				
.V7520	658	686#				
.V7600	498	503#				
.V7700	262	323#				
.V7774	723	909#				

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