

TEXT LISTING

068-000470-04

PROGRAM

MOVING HEAD DISK DIAGNOSTIC

TEXT TAPE

097-000470-04

ABSTRACT

: THIS PROGRAM IS A HARDWARE DIAGNOSTIC FOR THE
: 6060,6061,6067,6122 MOVING HEAD DISK CONTROLLERS,
: ADAPTERS, AND DRIVES.

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0001 *MAIN          MACRO REV 06.30          00:35:18 11/06/79          10002 *MAIN
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07 *****
08 ? NAME: MHDDZ.TX          PART NUMBER: 097-000470
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12 ? DESCRIPTION: 6060,6061,6067,6122 MOVING HEAD DISK DIAGNOSTIC
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15 ? REVISION HISTORY:
16 ?
17 ? REV.          DATE
18 ?
19 ? 00          12/03/76
20 ? 01          03/11/77
21 ? 02          04/28/78
22 ? 03          12/15/78
23 ? 04          11/06/79
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46 ? MANUFACTURED IN ACCORDANCE HEREWITH.
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; 1. PROGRAM NAME: MHDDZ.SR, 6060,6061,6067,6122 MOVING HEAD
; DISK SYSTEM DIAGNOSTIC
;
; 2. REVISION HISTORY:
; 3. IMPLEMENT DIAG ERROR PACKAGE AND DTOS I/O MODULE
; LINKS.
; 4. UPDATE FOR 6122 ADDITION.
;
; 3. MACHINE REQUIREMENTS:
; 1. NOVA OR ECLIPSE FAMILY CENTRAL PROCESSOR
; 2. MINIMUM OF 16K READ/WRITE MEMORY
; 3. DGC 6060,6061,6067,6122 MOVING HEAD DISK SYSTEM
; 4. 0-3 DGC 6060,6061,6067,6122-A ADD ON DISK DRIVES
; 5. TELETYPE OR CRT AND CONTROL
;
; 4. TEST REQUIREMENTS: N/A
;
; 5. SUMMARY:
; THIS PROGRAM IS A HARDWARE DIAGNOSTIC FOR THE
; 6060,6061,6067,6122 MOVING HEAD DISK CONTROLLERS,
; ADAPTERS, AND DRIVES.
; THE DEVICE CODE MAY BE 20-76 OCTAL WITH THE
; DEFAULT BEING 27 ## SEE 9.2 ##
;
; 6. RESTRICTIONS:
; THIS PROGRAM HAS NO RESTRICTIONS AS TO SINGLE OR
; DUAL PROCESSOR HARDWARE CONFIGURATION. HOWEVER, THE
; DIAGNOSTIC MAY BE RUN ON ONLY ONE CPU AT A TIME AND
; MUST BE THE ONLY PROGRAM BEING RUN WITHIN THE DISK
; SYSTEM.
;
; 7. PROGRAM DESCRIPTION/THEORY OF OPERATION:
;
; 7.1 TESTS 1-10. CHECK:
; - BUSY, DONE, I/O BUS SELECT LOGIC
; - DIB, DOB, DDC, DATA PATHS AND
; - LOADING OF THE CA AND DISK ADDRESS
; - REGISTERS
; - CLEAR OF CA AND DISK ADDRESS REGISTERS
; - DISK SELECT LOGIC
;
; 7.2 TESTS 11-23. CHECK:
; - START, BUSY, CLEAR LOGIC
; - RECALIBRATE, ATTN, INTERRUPT LOGIC
; - INTERRUPT DISABLE, INTA LOGIC
; - THAT SEEKS TO CYL'S 0,252,525,410. CAN AT
; - LEAST BE EXECUTED AND SET DRIVE BUSY.
; - READY/SELECT LOGIC

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10005 .MAIN

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01 SWITCH COMMANDS
02 ONCE THE PROGRAM STARTS EXECUTING THE STATE OF ANY OF
03 THE BITS CAN BE CHANGED BY HITTING KEYS 1-9, A-F. THE
04 PROGRAM WILL CONTINUE RUNNING AFTER UPDATING THE OPTIONS.
05 EACH KEY WILL COMPLEMENT THE STATE OF THE BIT AFFILIAT-
06 ED WITH IT, THUS BIT 4 CAN BE ALTERED BY HITTING KEY 4.
07 SETTING OF ANY BIT OF LOCATION "SMREG" WILL SET BIT 0.
08 (DEFAULT MODE IS DEFINED AS ALL BITS OF SMREG SET TO 0)
09
10 OTHER COMMANDS (^ = CONTROL KEY)
11
12 "CR" A "RETURN" CAN BE TYPED TO CONTINUE THE PROGRAM
13 AFTER ITS LOCKED IN A SWITCH MODIFICATION MODE
14
15 "D THIS COMMAND GIVEN AT ANY TIME WILL RESET "SMREG"
16 TO DEFAULT MODE AND RESTART THE PROGRAM.
17
18 "R THIS COMMAND GIVEN AT ANY TIME WILL RESTART THE
19 PROGRAM. SWITCHES ARE LEFT WITH THE VALUES THEY
20 HAD BEFORE THE COMMAND WAS ISSUED.
21
22 "O THIS COMMAND GIVEN AT ANY TIME WILL CAUSE THE
23 PROGRAM CONTROL TO GO TO ODT (NOTE: THIS IS AN
24 OPTIONAL COMMAND AND IS AVAILBLE ONLY IF
25 OOTPK IS PRESENT)
26
27 M THIS COMMAND GIVEN AT ANY TIME WILL PRINT THE
28 CURRENT OPERATING MODES.
29
30 0 THIS COMMAND GIVEN AT ANY TIME WILL LOCK THE
31 PROGRAM INTO SWITCH MODIFICATION MODE WHERE
32 MORE THAN 1 BIT CAN BE CHANGED.
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10006 .MAIN

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; 9. OPERATING PROCEDURE/OPERATOR INPUT:
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; 1. LOAD USING THE BINARY LOADER
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; 2. STARTING ADDRESSES
; 2- TO IDENTIFY DISK TYPE (RE-INITIALIZE)
; PROGRAM THEN PROCEEDS TO 500.
; 4- SET DISK CONTROL ADDRESS TO OTHER THAN 27
; 6- RANDOM SEEK EXERCISERS
; SEEK EXER 1 IS A SINGLE DRIVE EXERCISER
; SEEK EXER 2 IS TWO DRIVE EXERCISER
; WITH SEEK OVERLAP
; 70 - ODT - DIRECT ENTRY ONLY
; 200- START DIAGNOSTIC
;
; 3. THE PROGRAM PRINTS "PASS" FOLLOWING EACH
; COMPLETE PASS THROUGH THE TESTS. RANDOM
; SEEK EXERCISER PERFORMS 1000 SEEKS
; PER "PASS" MESSAGE.
;
; 4. IN THE ABSENCE OF A REAL TIME CLOCK A TTY BAUD
; RATE (REFERRING TO THE BAUD RATE OF CONSOLE
; TERMINAL) IS REQUESTED FOR TIMING PURPOSES.
;
; UNIT NUMBERS ARE REQUESTED TO WHICH THE OPERATOR
; ENTERS THE UNIT NUMBERS TO BE TESTED, SEPARATING
; THE INDIVIDUAL #'S BY A '>' OR '<SPACE>'.
; A MEGABYTE COUNT IS THEN REQUESTED FOR
; EACH UNIT.
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10007 .MAIN

10008 .MAIN

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; 10. PROGRAM OUTPUT/ERROR DESCRIPTION:
; WHEN AN ERROR IS DETECTED THE PROGRAM PRINTS THE ERROR
; PC, AC'S 0,1,AND 2 AT THE POINT OF ERROR,
; PLUS AN OPTION PRINTOUT. THE PROGRAM THEN
; GOES INTO A SCOPE LOOP BETWEEN THE ENTRIES TO
; .SETUP AND .LOOP ALLOWING THE OPERATOR TO SET SWPAK.
; IN GENERAL THE ERROR PC WILL POINT TO A CALL ERROR.

; THE OPTION PRINTOUT WILL BE OF ONE OF THE FOLLOWING FORMATS:

; A. STANDALONE CONTROLLER TEST FAILURES=
; FAILING MODULE = DISK CONTROLLER

; B. STATUS ERRORS
; MODE UNIT # DATA
; STARTING DISK ADDRESS
; CYL # HEAD # SECTOR #
; ACI(STATUS) SHOULD =ACO
; DESCRIPTIONS OF FAILING STATUS BITS
; PROBABLE FAILING MODULES =(AS PER EACH FAILING BIT)

; C. MEMORY/DISK ADDRESS ERROR
; MODE UNIT # DATA
; STARTING DISK ADDRESS
; CYL # HEAD # SECTOR #
; ENDING MEMORY/DISK ADDRESS ERROR
; ACI(MA/DA) SHOULD =ACO

; C. INTERRUPT TIMEOUT
; MODE UNIT # DATA
; STARTING DISK ADDRESS
; CYL # HEAD # SECTOR #
; INTERRUPT TIMEOUT

; ADDITIONAL TEST SIGNIFICANCE CAN BE FOUND IN THE PROGRAM
; LISTING, ALTHOUGH IT IS HOPED THAT A NEED FOR THE
; LISTING WILL BE MINIMAL. SWPACK(SWREG) WILL PROVIDE
; ALL CONTROL OVER TEST LOOP OPTIONS AND PRINTOUTS.

; DATA ERRORS WILL RESULT IN THE 1ST 3 GOOD/BAD
; PAIRS AND THEIR ADDRESSES BEING PRINTED ALONG WITH THE
; TOTAL COUNT. IF AN ECC ERROR IS DETECTED, THE CALL
; EHCC WILL ACKNOWLEDGE THE FACT AND RETURN TO THE
; MAIN TEST FOR THE DATA COMPARE. PRINTOUTS RESULT
; ON THE 1ST ERROR PASS ONLY. AS THE CHECK ROUTINE
; CHECKS THE ENTIRE READ BUFFER, ANY ERROR ACCOMPANIED
; BY AN ECC ERROR, TERMINATING THE READ, MAY CAUSE ALL
; DATA IN SUCCEEDING SECTORS TO APPEAR BAD.

; TESTS THAT PERFORM A RECALIBRATE HAVE A 2 SEC.
; DELAY BUILT INTO THE SCOPE LOOP. SET SWPAK 9 = 1
; TO INTRODUCE AN ADDITIONAL 1 SECOND DELAY DURING
; THE SCOPE LOOP.

; IN GENERAL EACH SUCCESSIVE TEST ASSUMES ALL
; PREVIOUS TESTS WORK. BYPASSING ERRORS
; CAN RESULT IN CONFUSING SITUATIONS
; IN THE SETUP OF MORE COMPLEX TESTS.

; 11. DEBUG HELP:
; 11A.0 SUBROUTINES AND CALLS:
; CHECK DATA SUBROUTINE
; CALL CHECK
; ADDRESS OF DATA BUFFER 1
; ADDRESS OF DATA BUFFER 2
; # OF WORDS
; ERROR RETURN
; NORMAL RETURN

; GENERATE N SECTORS OF DATA
; CALL GENDAT
; ADDRESS OF DATA GEN ROUTINE
; DATA BUFFER ADDRESS
; # OF SECTORS
; RETURN

; CHECK DATA SUBROUTINE/CONSTANT DATA
; CALL CHECKS
; ADDRESS OF DATA GEN ROUTINE
; ADDRESS OF READ BUFFER
; # OF WORDS
; ERROR RET
; NORMAL RET
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0013 .MAIN

10014 .MAIN

**00000 TOTAL ERRORS, 00000 PASS 1 ERRORS

12. SPECIAL NOTES/SPECIAL FEATURES:

1 IF THE DISK PACK HAS BAD SECTOR FLAGS SET ON CYLINDER
 0, OR ON THE FIRST 8 SECTORS OF HEAD 0 OF ANY CYLINDER,
 ERROR PRINTOUTS WILL RESULT WHEN THE FLAGS ARE
 ENCOUNTERED.

2. TESTS F1-F5 ALTER THE FORMAT ON
 CYL 0, HD 0, SEC 0 FOR PURPOSES OF
 CHECKING THE ADDRESS CHECK AND BAD SECTOR LOGIC.
 SWPAK12 SHOULD BE SET TO 1 IN ORDER TO STOP PROGRAM
 WHEN NOT RUNNING THESE TESTS. IF SWPAK12 = 1 WHEN
 IN TESTS F1-F5, PROGRAM WILL CONTINUE UNTIL
 AFTER THESE TESTS ARE COMPLETED AND THEN HALT.
 IF THERE IS ANY CHANCE THE PROGRAM MAY HAVE
 TERMINATED IN THOSE TESTS, THE PROGRAM SHOULD BE
 RE-STARTED WITH SWPAK7 = 1.

3. SOME SCOPE LOOPS WILL REQUIRE A RECALIBRATE
 TO INITIALIZE THE DISK DRIVE FOLLOWING A FAILURE.
 SET SWPAK 8 = 1 TO INTRODUCE THE RECALIBRATE TO THE
 UNIT UNDER TEST.

4. DISK PACKS
 ONLY USE DISK PACKS FORMATTED BY THE DGC DISK
 PACK FORMATTER PROGRAM. THE DIAGNOSTIC PROGRAM
 WILL WRITE OVER MOST OF THE DISK SURFACE.

13. RUN TIME:
 THE RUN TIME FOR 2 PASSES IS APPROXIMATELY:
 8 MIN ALL DISKS

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0015 .MAIN

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