

DataGeneral

**TECHNICAL
STATEMENT**

TEXT LISTING

068-000648-01

PROGRAM

ECL MULTI-PROGRAMMING RELI TST
(PERIPHERAL)

TEXT TAPE

097-000648-01

ABSTRACT

THE ECLMORT ECLIPSE MULTIPROGRAMMING RELIABILITY TEST
CONSISTS OF A SERIES OF INDIVIDUAL PROCESSOR AND PERIPHERAL
TESTS AND A SUPERVISOR PROGRAM, THE DIAGNOSTIC LINKER.


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12.3 PREREQUISITES
12.3.1 SOFTWARE PREREQUISITES
12.3.1.1 THE SYSTEM SHOULD BE CAPABLE
OF RUNNING ALL INDIVIDUAL LOGIC AND
RELIABILITY TESTS PERTAINING TO THE
PROCESSOR AND ITS PERIPHERAL EQUIPMENT
BEFORE ATTEMPTING TO RUN THIS TEST
NOTE: ALTHOUGH THIS TEST MAY AT TIMES BE USEFUL
IN DETERMINING THE GO/NO GO STATUS OF AN
UNKNOWN SYSTEM, IT IS RECOMMENDED THAT:
A. ALL OTHER DIAGNOSTICS BE RUN EVEN IN THE
EVENT THAT THIS TEST FINDS NO PROBLEMS.
B. AN ATTEMPT BE MADE TO ISOLATE ANY PROBLEMS
FOUND BY FIRST UTILIZING THE LOWEK
LEVEL TESTS FOR MORE CONCISE ERROR REPORTS.
12.3.2 SYSTEM SETUP
12.3.2.1 IF THE MOVING HEAD DISKS ARE TO BE
EXERCISED THEY MUST HAVE A PACK INSTALLED
AND BE IN THE READY STATE
12.3.2.2 IF MAGNETIC TAPES ARE TO BE EXERCISED
THEY MUST BE ON LINE WRITE ENABLED
12.3.2.3 IF THE LINE PRINTER IS TO BE EXERCISED
IT MUST BE ON LINE AND IN THE READY STATE
12.3.2.4 IF THE DCU IS TO BE RUN AT DEVICE CODE OTHER THAN
64 THEN ONE MEMORY LOCATION NEEDS TO BE UPDATED TO CONTAIN
THE DCU 507200 DEVICE CODE. SEE DCU TEST LOCATION DCUDV.
PATCH=DCUDV
026246
13. OPTIONAL STARTING ADDRESS
13.1 200 AUTO-SIZE AND GO START
13.2 202 MANUAL SELECT/DELETE TESTS START
13.3 204 RUN UP TO FIRST 32K UNMAPPED START
13.4 206 RESTART LAST TEST SELECTIONS
13.5 210 START IN THE ODT
13.6 212 AUTO-START WITH IPMORT
NOTE: THIS PROGRAM CONTAINS AN OCTAL DEBUGGER
TO ASSIST IN DETERMINING ERROR INFO
OR TO BE UTILIZED TO PATCH THE TEST
BEFORE STARTING.
IF STARTED FROM DTOS AND THIS PROGRAM
VERSION IS ECLMORT L OR ECLMORT P THEN IT
WILL AUTOMATICALLY START AT ADDRESS
210 TO ALLOW SELECTION OF TESTS/PATCHING
AND OR OPERATOR SETUP. TYPE P TO SELECT
A 202 START, OR TYPE XXXR (WHERE XXX=200,
202,204,212) FOR OTHER STARTS.
12.3.7 KEY ENTERED SWITCH OPTIONS(SWREG)
KEY 0 LOCKS THE SMPACKAGE INTO INPUT MODE
ALLOWING SETUP OF THE CONTENTS OF "SWREG".
TYPE A CARRAGE RETURN TO EXIT.
TYPING KEY'S 1 - 9, A - F SETS/RESETS SWREG BITS
1 - 9, 10 - 15 RESPECTIVELY. EACH KEY ENTRY
COMPLEMENTS THE PREVIOUS STATE OF THE SWREG BIT.
KEY SWREG BIT
1 1 = 1
2 2 = 1
3 3 = 1
4 4
5 5 = 1
6 6 = 1
7 7
8 8
9 9 = 1
A 10 = 1
B 11 = 1
C 12
D 13 = 1
E 14 = 1
NOTE: (C) = CONTROL KEY
I
H
M
PRINTS THE CURRENT CONTENTS OF SWREG.

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: (C)D
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: (C)R
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: EXAMPLE:
: TO DELETE ERROR TYPEOUTS AND LOOP ON FAILING
: SCRATCH AREAS TYPE 0,1,2, AND CR.

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: 4. OPERATING PROCEDURES
: 4.1 LOAD THE PROGRAM VIA THE BINARY LOADER
: 4.2 SET SWITCHES TO:
: 200 FOR AUTO SIZE AND GO
: 202 FOR MANUAL SELECT/DELETE
: 204 TO IGNORE MMPU
: 206 TO RESTART LAST TESTS SELECTED
: 210 TO START IN ODI
: 212 TO AUTO START WITH IPMORT
:
: NOTE: THE TEST MUST HAVE BEEN STARTED
: AND RUN FOR A FEW SECONDS
: BEFORE ADRS 206 MAY BE UTILIZED
: 4.3 PRESS START
: PROCESSOR WILL TYPE:
: ECLMORT-(S,L,P) (MULTI-PROGRAMMING REL. TEST XXX VER)
: TOTAL #1K'S=XX(DECIMAL) MMPUI OR NO MMPUI
: IOP EXISTS(IF FOUND)
: PROGRAM RUN LIST
:
: 4.4 IF START WAS 200 (OR 206) THE LIST OF
: PROGRAMS TO BE RUN CONCURRENTLY WILL
: THEN BE LISTED AND THE TEST SYSTEM
: WILL AUTO START
: 4.5 IF START WAS 202 LINKER WILL
: PAUSE AT THE END OF EACH TEST
: DESCRIPTION AND WAIT FOR KEYBOARD
: INPUT. TYPING IN A SPACE WILL
: ENABLE THAT TEST TO BE RUN.
: TYPING IN ANY OTHER CHARACTER WILL
: DELETE THAT TEST FROM BEING RUN
: 4.6 IF THE STARTING ADDRESS WAS 204 THE LINKER
: WILL SIZE MEMORY WITHOUT UTILIZING
: OR EVEN LOOKING FOR THE MMPUI OPTION
: AND THEN PROCEED AS IN STARTING AT ADRS. 202
: WITH THE MMPUI NONEXISTENT.
: 4.7 IF THE ODI WAS STARTED (ADDRESS 210) AND "P"
: IS TYPED THE TEST WILL BE STARTED AS IF
: IT WAS STARTED AT 202.
: 4.8 OPTION SET UP
: THE PROGRAM WILL PAUSE AFTER PRINTING
: "ENTER OPTIONS,CR TO CONTINUE" AND ALLOW
: KEY ENTRY OF SWITCH REG., OPTIONS., TYPE
: A "CR" KEY TO START TESTS.
: 4.8.2 IF AN AUTOSTART ADDRESS WASN'T USED
: AND AN IOP WAS FOUND DURING SIZING
: THE OPERATOR WILL BE ASKED TO SPECIFY THE
: IOP STARTING ADDRESS FOR EACH IOP.
: ENTER VALUE FROM 200 TO 214 TO START, 0 TO DELETE.
: TERMINATE INPUT WITH A CR.(VALUES OUTSIDE
: THIS RANGE WILL NOT BE ACCEPTED.)
: (SEE IPMORT LISTING FOR STARTING ADDRESS
: DESCRIPTIONS).
: 4.9 IF STARTED THE IOPS WILL OUTPUT THEIR HEADER
: AND RUN LISTS AT THIS TIME AND IF NOT AN AUTO
: START WILL ALLOW TEST SELECTION/DELETION
: AND OPTION SETUP.
: EACH TEST WHICH HAS SIZING INFORMATION
: WILL PRINT THAT INFORMATION THE FIRST TIME
: THE TEST IS SELECTED FOR EXECUTION.

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10011 PEMRT

01 ERROR DESCRIPTIONS
02 MOST ERRORS DETECTED BY EITHER
03 THE INDIVIDUAL TEST PROGRAMS OR
04 BY THE DIAGNOSTIC LINKER WILL
05 RESULT IN AN EXTENSIVE ERROR
06 TYPEOUT. SOME SMALL NUMBER OF
07 HIGHLY IMPROBABLE ERRORS MAY RESULT
08 IN A PROGRAM HALT IF THEY ARE
09 OF A NATURE THAT THE LINKER CANNOT
10 RECOVER FROM AND LOGICALLY PROCEED,
11 (I.E. INTERRUPT STACK OVERFLOWS,
12 AFTER 50 ERRORS HAVE BEEN DETECTED, THE
13 TEST WILL INDICATE SUCH VIA TYPEOUT, THEN
14 WAIT FOR A CR KEY FROM DEVICE TTI IF TYPEOUTS
15 AREN'T DELETED(SWI=1).
16
17 :5.1 ERROR FORMAT
18
19 : NOTE: ALL TYPEOUTS ORIGINATING IN A
20 SLAVE IOP WILL BE PRE-FACED BY THE
21 IOP NUMBER.
22
23 ERROR TYPEOUTS INCLUDE:
24
25 :5.1.1 PROGRAM # AND NAME AT TIME OF ERROR
26 :5.1.2 THE CURRENT CONTENT OF THE USER STACK
27 IN UP TO 2 SETS OF 5 VARIABLES.
28 EACH SET OF VARIABLES (1 STATE BLOCK) INCLUDE
29 AC0 TO AC3 AND THE PC WITH CARRY.
30 :NOTE: THE 2 STATE BLOCKS TYPED ARE THE FIRST
31 AND LAST 5 ENTRIES ON THE USER STACK.
32 IF THESE ARE SEVEN ENTRIES ON THE STACK
33 THESE STATE BLOCKS WILL OVERLAP AND FOR THIS
34 REASON THE START ADRS OF EACH STATE BLOCK
35 IS INCLUDED IN THE TYPEOUT
36 :5.1.3 LOGICAL SCRATCH AND DATA CHANNEL LIMITS
37 MEMORY ALLOCATION TABLE
38 :5.1.4 PHYSICAL 1K PAGE# +LOGICAL ADDRESS
39 +REL LOG. ADDR(IF RELOCATED AND REMAPPED)
40 CONTINUATION INFORMATION IN GROUPS
41 OF 3 MEMORY LOCATIONS PERTINENT TO
42 THE INDIVIDUAL TEST THAT FAILED
43
44 :5.1.6 THE CPU TESTS THAT RELOCATE/REMAP WILL
45 IN THEIR ERROR TYPEOUTS:
46 \$T.LA START/ERROR (RES.)
47 \$XXXXXX YYYYYY ZZZZZZ
48
49 :\$T.LA THE LOGICAL START OF THE RELOCATED TEST LOOP
50 :\$XXXXX (I.E. THE LAST LCALL SETUL)
51
52 :\$START THIS NUMBER INDICATES WHERE THE RESIDENT COPY
53 :\$YYYYY OF THE TEST LOOP MAY BE FOUND IN THE LISTING
54
55 :\$ERROR THIS NUMBER INDICATES WHERE IN THE RESIDENT
56 COPY OF THE LISTING THE ERROR CALL MAY BE FOUND
57 :\$ZZZZZ (FOR SOME VALIDITY TRAP ERRORS THIS NUMBER
58 MAY NOT APPEAR TO BE VALID.)

10012 PEMRT

01 :5.1.6 DEMAND PAGING DATA FOR PAGE AND
02 BREAKPOINT FAULTS.
03
04 : IF THE DEMAND PAGING TEST IS SELECTED AND THE SW9/SW10
05 SELECTION IS IN THE ENABLE STATE(=0), THEN ANY ERRORS
06 INCURRED IN THE CPU TESTS WHICH REMAP AND RELOCATE COULD
07 BE DUE TO INTERACTIONS WITH THE MMPU2. TO DETERMINE
08 IF THIS IS THE CASE EITHER SET SW9 TO THE INHIBIT
09 STATE (=1) OR RESELECT TESTS WITH THE DEMAND PAGING
10 TEST DELETED.
11
12 :5.1.8.1 CONTEXT BLOCK INFORMATION RETRIEVAL
13
14 : IF A TEST WAS TAKING PAGE/BREAKPOINT FAULTS
15 AND SW11 IS IN THE ENABLE STATE(=0)
16 THE CONTEXT BLOCK INFORMATION WILL BE PRINTED
17 FOLLOWING THE MEMORY ALLOCATION TABLE. ALSO THE CONTEXT
18 BLOCK INFO. CAN BE OBTAINED BY ENTERING THE ODT AND TYPING
19 A "C". (SEE SECTION 7. FOR ODT DESCRIPTION)
20
21 : NOTE: THIS TABLE IS 38 WORDS LONG BY FIVE WORDS WIDE
22 USE A HARDCOPY OUTPUT DEVICE TO RECOVER ALL
23 THE ERROR OUTPUT.
24
25 :5.1.8.2 CONTEXT BLOCK OUTPUT ORGANIZATION
26
27 : THE CONTEXT BLOCK DATA IS PRINTED IN FIVE VERTICAL
28 COLUMNS, THE MOST RECENT BEING ON THE LEFT AND THE
29 LEAST CURRENT ON THE RIGHT. USUALLY THE TWO LEFT
30 COLUMNS WILL BE EXACT COPIES BECAUSE BEFORE THE DPOP
31 BY THE FAULT HANDLER THE CONTEXT INFORMATION IS
32 SHIFTED TOWARD THE RIGHT. IF THE TWO LEFT COLUMNS
33 AREN'T IDENTICAL THEN THE LEFT MOST COLUMN WAS
34 CAUSED BY A VALIDITY MMPU1 FAULT, NOT A MMPU2 FAULT.
35
36 : NOTE: THE FPU INFORMATION IN THE CONTEXT BLK
37 IS ONLY VALID IF WORD 15 BIT 0 IS "1"
38
39 :5.1.8.3 CONTEXT BLOCK FORMAT
40
41 : WORD 1 VALIDITY WORD # 1
42 " " # 2
43 GR0 - GR2 3-5
44 JSR0 - JSR3 6-9
45 STATUS(8BITS0-3)+RAS 10
46 CPU STATE(8BITS0-7)+BREAKCONTROL 11
47 I.R. 12
48 CPU BIT COUNTER 13
49 PAGE 14
50 F.P.+BREAKPOINT ADDR. 15
51 AC0 - AC3 16-19
52 P.C. 20
53 FLOATING POINT STATUS REG BITS 0-15 21
54 " " " " " " 16-31
55 FPAC0 25-26
56 FPAC1 27-30
57 FPAC2 31-34
58 FPAC3 35-38

10015 PEMRT

01 :
02 :
03 : THE AC'S WILL BE TYPED AS THEY WERE AT THE
04 : TIME OF ERROR DETECTION
05 :
06 : IN ADDITION THE FOLLOWING LOCATIONS ARE TYPED:
07 : EI.FK SEE DISCUSSION OF TEST FOR THE
08 : SEQUENCE BEING EXECUTED
09 : EI.LO LOW LIMIT OF SCRATCH AREA AFTER IT WAS
10 : REMAPPED FOR EXECUTION
11 : EI.LA LOGICAL START OF TEST AFTER REMAP
12 : (SEE DISCUSSION OF ST.LA,ETC AT PARA.5.1.6)
13 :

10016 PEMRT

01 :
02 :
03 : :5.3.3 EIS/MRI TEST
04 :
05 : :5.3.12 DCU-50/200 TEST
06 :
07 : THIS IS AN ARITHMETIC TEST PERFORMED BY THE
08 : DCU-50/200 USING THE DATA CHANNEL.
09 :
10 : THE AC'S AT THE TIME OF ERROR DETECTION WILL
11 : BE TYPED.
12 : IN ADDITION THE FOLLOWING DATA IS TYPED:
13 : RANDOM DATA AC0,AC1,AC2
14 : OCLOR LOGICAL START OF LOOP
15 : OCLPK LOOP COUNT
16 : OCLER LOGICAL ERR ADDR
17 : DC.LA LOGICAL START OF TEST
18 : DC.LP LISTING START OF LOOP
19 : ERROR LISTING ADDR OF ERROR
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:5.3.14 6063/6064 DISK
: PD.SA IS THE KEY TO USING THE ERROR PRINT OUT.
: IF PD.SA=ADDRESS OF SAVED DATA WORD
: (PDDW1 TO PDDW4), THEN THE ERROR WAS DATA COMPARE
: ERROR IN THE FIRST 4 WORDS IN THE BUFFER
: AC0=GOOD DATA
: AC1=BAD DATA
: AC2=ADRS. OF BAD DATA
: =MINUS NUMBER, THEN ERROR WAS DATA COMPARE ERROR
: IN THE REMAINDER OF THE DATA BUFFER.
: AC0=GOOD DATA
: AC1=BAD DATA
: AC2=ADRS. OF GOOD DATA
: ADDR OF BAD IS AC2+4
: =AC2, THEN ERROR WAS DISK STATUS ERROR
: AC0=DRV DISK
: AC1=TRK SECTOR
: AC2= BNC CHANNEL STATUS (IF USING BMC)
: AC2= DISK STATUS
: ALSO THE FOLLOWING INFORMATION IS OUTPUTTED:
: PDDST DATA START IN CORE
: PD.LCA LOGICAL ADDR OF CHANNEL IN 1K'S OCTAL
: PD.STA DISK STATUS (DIC)
: PD.ADR DRIVE+TRK+SECTOR (FIRST WORD OF QUEUE)
: PD.LCO 0=READ, 1=WRITE, 2=DATA VERIFY
: ALSO IF THE ERROR OCCURS IN A READ OPERATION
: THE FOLLOWING DATA IS PRINTED:
: WRITE POCST = XXXX MD4
: MD1 MD2 MD3 MD4
: GGGG HHHH JJJJ KKKK
: WHERE,
: XXXXX = STARTING CHANNEL ADDRESS OF WRITE OPERATION
: GGGG = FIRST PHYS 1K USED IN DISK WRITE
: HHHH = 2ND " " " " "
: JJJJ = 3RD " " " " "
: KKKK = 4TH " " " " "
: NOTE: UPON DETECTION OF AN ERROR THE TEST WILL
: RETRY THE OPERATION FOUR TIMES.
: *****
: 6063/64 DISK STATUS WORD
: BIT(S) MEANING BIT(S) MEANING
: 0 ERROR FLG 10 DISK RDY
: 3 BUS ENABLE 11 UNSAFE
: 4-5 DISK CAPACITY 12 DATA LATE
: 6 IDLE DONE 13 ECC
: 7 WRITE PARITY 14 DATA VERIFY
: 8 DCH ERROR 15 PAGE DONE
: 9 READ/WRITE TIMEOUT
: *****
: 6063/64 DISK STATUS WORDS
: R/W DONE 4048,57 4231 6030,45 6067
: 0 SAME SAME SAME SAME DC DNE
: 1 SEEK 0 DNE SAME SAME SAME CMD DNE 0
: 2 SEEK 1 DNE SAME SAME SAME CMD DNE 1
: 3 SEEK 2 DNE SAME SAME SAME CMD DNE 2
: 4 SEEK 3 DNE SAME SAME SAME CMD DNE 3
: 5 SEEK ON DRV 0 SAME DUAL PRC DKT DISKETTE
: 6 SEEK ON DRV 1 SAME SECT ERR V.S. SEL.
: 7 SEEK ON DRV 2 SAME HEAD ERR N/A. BAD SECTOR
: 8 SEEK ON DRV 3 SAME ADDR ERR UNSAFE
: 9 DRIVE RDY SAME SAME SAME UNSAFE
: 10 SEEK RDY SAME SAME SAME SAME
: 11 ECC ERR SAME SAME SAME SAME
: 12 UNSAFE ADDR ERR UNSAFE ADDR ERROR
: 13 ECC ERR SAME SAME SAME SAME
: 14 DATA LATE SAME SAME SAME SAME
: 15 ERR SAME SAME SAME SAME
: *****

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:5.3.15 MOVING HEAD DISK TEST
: MH.SA IS THE KEY TO USING THE ERROR PRINT OUT.
: IF MH.SA=ADDRESS OF SAVED DATA WORD
: (MHMW1 TO MHMW4), THEN THE ERROR WAS DATA COMPARE
: ERROR IN THE FIRST 4 WORDS IN THE BUFFER
: AC0=GOOD DATA
: AC1=BAD DATA
: AC2=ADRS. OF GOOD DATA
: =MINUS NUMBER, THEN ERROR WAS DATA COMPARE ERROR
: IN THE REMAINDER OF THE DATA BUFFER.
: AC0=GOOD DATA
: AC1=BAD DATA
: AC2=ADRS. OF GOOD DATA
: ADDR OF BAD IS AC2+4
: =AC2, THEN ERROR WAS DISK STATUS ERROR
: AC0=DRV DISK
: AC1=DIC DISK
: AC2=DISK STATUS (DIA)
: AC3=DISK STATUS (DIA)
: IN ADDITION THE FOLLOWING LOC'S ARE TYPED
: MH.DST= LOGICAL ADDRESS OF DATA BUFFER
: MH.STA= LOGICAL ADDRESS OF DATA RUFFER
: MH.DOA= LAST DISK STATUS (DIA)
: MH.DOC= LAST DOA TO DISK (COMMAND)
: MH.DOC= LAST DOC TO DISK
: ALSO IF THE ERROR OCCURS IN A READ OPERATION
: THE FOLLOWING DATA IS PRINTED:
: WRITE MH.CST = XXXXX MD3
: MD1 MD2 MD3 MD4
: GGGG HHHH JJJJ KKKK
: WHERE XXXXX = STARTING CHANNEL ADDRESS OF WRITE OPERATION
: GGGG = FIRST PHYS 1K USED IN DISK WRITE
: HHHH = 2ND " " " " "
: JJJJ = 3RD " " " " "
: KKKK = 4TH " " " " "
: NOTE: UPON DETECTION OF AN ERROR THE TEST WILL
: RETRY THE OPERATION FOUR TIMES.
: *****
: MOVING HEAD DISK STATUS WORDS
: *****
: BITS 4047 4048,57 4231 6030,45 6067
: 0 R/W DONE SAME SAME SAME SAME DC DNE
: 1 SEEK 0 DNE SAME SAME SAME SAME CMD DNE 0
: 2 SEEK 1 DNE SAME SAME SAME SAME CMD DNE 1
: 3 SEEK 2 DNE SAME SAME SAME SAME CMD DNE 2
: 4 SEEK 3 DNE SAME SAME SAME SAME CMD DNE 3
: 5 SEEK ON DRV 0 SAME DUAL PRC DKT DISKETTE
: 6 SEEK ON DRV 1 SAME SECT ERR V.S. SEL.
: 7 SEEK ON DRV 2 SAME HEAD ERR N/A. BAD SECTOR
: 8 SEEK ON DRV 3 SAME ADDR ERR UNSAFE
: 9 DRIVE RDY SAME SAME SAME SAME UNSAFE
: 10 SEEK RDY SAME SAME SAME SAME UNSAFE
: 11 ECC ERR SAME SAME SAME SAME UNSAFE
: 12 UNSAFE ADDR ERR UNSAFE ADDR ERROR
: 13 ECC ERR SAME SAME SAME SAME UNSAFE
: 14 DATA LATE SAME SAME SAME SAME UNSAFE
: 15 ERR SAME SAME SAME SAME UNSAFE
: *****

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: 5.3.16 6060/61 DISK TEST
: ZB-SA IS THE KEY TO USING THE ERROR PRINT OUT.
: IF ZB-SA=ADDRESS OF SAVED DATA WORD
: (ZB0W1 TO ZB0W4), THEN THE ERROR WAS DATA COMPARE
: ERROR IN THE FIRST 4 WORDS IN THE BUFFFF
: AC0=GOOD DATA
: AC1=BAD DATA
: AC2=ADRS. OF BAD DATA
: IN THE REMAINDER OF THE DATA BUFFER.
: =MINUS NUMBER, THEN ERROR WAS DATA COMPARE ERROR
: AC0=GOOD DATA
: AC1=BAD DATA
: AC2=ADRS. OF GOOD DATA
: ADDR OF BAD IS AC2+4
: =AC2, THEN ERROR WAS DISK STATUS ERROR
: AC0=DIB DISK
: AC1=BMC CHANNEL STATUS(IF USING BMC)
: AC2=DISK STATUS(DIA)
: AC3=DISK
: IN ADDITION THE FOLLOWING LOC'S ARE TYPED
: ZB0ST LOGICAL ADDRESS OF DATA BUFFER
: ZB0ST LOGICAL ADDRESS OF DATA FOR DCH MAP
: ZB00A LAST DISK STATUS(DIA)
: ZB00C LAST DDC TO DISK
:
: ALSO IF THE ERROR OCCURS IN A READ OPERATION
: THE FOLLOWING DATA IS PRINTED:
: WHITE ZHCST = XXXX MD4
: M01 MD2 MD3
: GGGG HHHH JJJJ KKKK
: WHERE XXXX = STARTING CHANNEL ADDRESS OF WRITE OPERATION
: GGGG = FIRST PHYS IK USED IN DISK WRITE
: HHHH = 2ND " " " " "
: JJJJ = 3RD " " " " "
: KKKK = 4TH " " " " "
: NOTE: UPON DETECTION OF AN ERROR THE TEST WILL
: RETRY THE OPERATION FOUR TIMES.
: *****
: 6060/61 STATUS WORDS
: *****
: BITS DIA
: 0 CNIL FULL INVALID STATUS
: 1 R/W DONE DRV RESERVED
: 2 SEEK 0 DONE TRESPASSED
: 3 SEEK 1 DONE READY
: 4 SEEK 2 DONE BUSY
: 5 SEEK 3 DONE OFFSET
: 6 PARITY ERROR WRITE DISABLE
: 7 ILLEGAL SECT N/A
: 8 ECC ERROR ILLEGAL ADDR
: 9 BAD SECTOR ILLEGAL CMD
: 10 CYL ERROR PMR FAULT
: 11 SURF/SECT ERR PACK UNSAFE
: 12 VERIFY ERROR POSITIONER
: 13 R/W TIMEOUT CLK FAULT
: 14 DATA LATE WRITE FAULT
: 15 RD/WKT FAULT DRIVE DONE
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: 5.3.17 MAGNETIC TAPE TEST
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: AC0 GOOD DATA
: AC1 BAD DATA
: AC2 ADRS OF BAD DATA (GOOD IS AT AC2=4)
: IN ADDITION THE FOLLOWING LOC'S ARE TYPED
: MODE 0=REWIND 1=WRITE 2=BACKSPACE OR READ
: DRIVE # WILL APPEAR IN BITS 4,5,6
: STATUS LAST TAPE STATUS
: MT.EK ERR COUNTER STARTS AT 3 AND COUNTS
: DOWN FOR EACH REREAD
: #READ NUMBER OF BLOCKS READ
: W/D0B LOGICAL DCH ADDR USED IN WRITING TAPE
: LAST/D0H CURRENT DCH LOGICAL ADDRESS
:
: NOTE: IF STATUS INDICATES TAPE ERR (BIT 0=1)
: THE CONTENTS OF AC0,1, AND 2 SHOULD BE IGNORED**.
: *****
: TAPE STATUS WORD - DIA X,MTA
: *****
: BIT MEANING BIT MEANING
: 0 ERROR 8 BEGINNING OF TAPE
: 1 DATA LATE 9 TRACK
: 2 REWINDING 10 BAD TAPE
: 3 ILLEGAL 11 SEND CLOCK
: 4 DENSITY 12 FIRST CHARACTER
: 5 PARITY ERROR 13 WRITE LOCK
: 6 END OF TAPE 14 000 CHARACTER
: 7 END OF FILE 15 UNIT READY
: *****
: 5.3.18 LINE PRINTER
:
: NO ERROR TYPEOUTS.
: PRINTER OUTPUT MUST BE EXAMINED VISUALLY.

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:5.4 SPECIAL CASE ERROR TYPEOUTS
:5.4.1 POWER FAIL INTERRUPT
: UPON DETECTION OF A POWER FAIL INTERRUPT
: THE LOGICAL ADDR. OF THE P.C. AT INTERRUPT
: WILL BE SAVED.
: IF AUTO-RESTART IS ENABLED OR THE POWER
: FAIL WAS ONLY MOMENTARY, THE TEST WILL RE-
: START AS IN A START AT 206 AFTER TYPING
: POWER FAIL @XXXXX (WHERE XXXXX IS THE PC AT INTR.)
:5.4.2 ILLEGAL SUPERVISOR CALL
:
: SUPERVISOR CALLS IN MULTI-PROGRAMMING ARE OF THE
: FORMAT:
:
:     SYNC 3,3 ;SUPERVISOR CALL
:     JSR @XXXX ;SUBROUTINE CALL
:
: WHERE XXXX IS A PAGE 0 ADDRESS WITHIN
: SPECIFIED MEMORY LIMITS.
:
: THESE CALLS IN THIS PROGRAM ALLOW A MAPPED
: TEST TO MAKE CALLS TO SUBROUTINES CONTAINED
: IN THE LINKER AND RETURN. THE JSR IS EXECUTED
: IN UNMAPPED SPACE BY THE CALL HANDLER.
: THERE ARE SEVERAL CASES OF ILLEGAL SUPER-CALL'S
: 1.) IF THE LOCATION INDICATED IS 000001
: THEN THE PROGRAM DETECTED THAT FOR SOME REASON
: LOCATION 000000 WAS EXECUTED. THE ILLEGAL
: SUPERCALL WAS FORCED BY THE ERROR HANDLER
: TO INDICATE WHICH TEST WAS EXECUTING AT THE
: TIME OF ERROR AND ITS ASSOCIATED INFORMATION.
: 2.) IF OTHER THAN LOCATION 000001 THEN
: THE SUPERCALL HANDLER WAS ENTERED AND UPON
: CHECKING THE LOCATION FOLLOWING THE SUPER-
: CALL THERE WASN'T A VALID "JSR @XXXX".
: THIS COULD HAPPEN IN SEVERAL WAYS:
: A.) THE PROGRAM COULD HAVE JUMPED INTO
: A DATA AREA WHICH CONTAINED A WORD
: RECOGNIZED AS A SUPERCALL. IN THIS
: CASE AC3 OF THE SECOND ENTRY OF THE
: STACK USUALLY ISN'T 177510(SYC 3,3).
: B.) THE JSR @XXXX WORD WAS OVER WRITTEN
: BY ANOTHER TEST.
: C.) THE 177510(SYC 3,3) OR THE JSR @XXXX
: WAS IN A BAD MEMORY AREA CAUSING THE
: WORDS TO DROP OR ADD BITS.
: D.) THE JSR @XXXX WAS IN A DIFFERENT MAP
: PAGE WHOSE CONTENTS ISN'T CORRECT.
: E.) SOME OTHER REASON ??
:
: IN ANY CASE THE FOLLOWING INFORMATION IS TYPED:
: THE STACK SHOULD CONTAIN TWO BLOCKS.
: THE FIRST IS PUSHED BY THE ILLEGAL CALL.
: (IF SYNC 3,3 THEN HEADER IS CORRECT)
: THE SECOND IS BUILT BY THE ILLEGAL CALL
: HANDLER AND INCLUDES THE FOLLOWING INFO.
: AC0 ILLEGAL CALL IN LOC. XXXXX
: AC1 CONTENTS OF LOC. XXXXX-1
: AC2 (SHOULD = SYNC 3,3 OR 177510)
:
:5.4.3 ERROR TRAP
: AN I/O,WRITE,DEFER OR VALIDITY TRAP
: OCCURED THAT WAS NOT FORCED BY ANY TEST
: THE STATE BLOCK TYPED IS THAT PUSHED AS A
: RESULT OF THE TRAP
: IN ADDITION THE FOLLOWING ARE TYPED:
:
: *****
: DIA MAP STATUS AS FOLLOWS *****
: *****
: BIT 1 EXT. FAULT *****
: BIT 2 I/O PROTECT TRAP *****
: BIT 3 WRITE PROTECT TRAP *****
: BIT 4 DEFER PROTECT TRAP *****
: BIT 5 SINGLE REF. TRAP *****
: BIT 6-8 FORMAT BITS *****
: BIT 9 LEF MODE *****
: BIT 10 I/O PROTECT ENABLE *****
: BIT 11 WRITE PROTECT ENABLE *****
: BIT 12 DEFER PROTECT ENABLE *****
: BIT 13 A/B USER SEL. *****
: BIT 14 DCH ENABLE *****
: BIT 15 USER MODE *****
: *****
: INSTR-THE INSTRUCTION WHICH IS LOCATED AT
: PC-1 AND SHOULD RE CAUSING THE TRAP.
:
: *****
: DIC MAP STATUS "C" AS FOLLOWS *****
: *****
: BIT 0 WRITE PROTECT BIT *****
: BIT 1-3 FORMAT BITS *****
: BIT 5 EXT PAGE *****
: BIT 6-15 PHYSICAL BLK # *****
: (1777=VALIDITY PROTECT)

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10023 PERMT
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:5.4.4 INTERRUPT WAIT ELAPSED
: THE PERIPHERAL DEVICE ASSOCIATED WITH THE
: PROG. NUMBER TYPED HAS NOT RESPONDED WITH
: A PROGRAM INTERRUPT FOR AN EXTENDED
: PERIOD OF TIME. THE 2ND NUMBER TYPED
: SHOULD POINT AT THE INTERRUPT HANDLER
: FOR THE DEVICE THAT FAILED

:5.4.5 ERROR CORRECTION INTERRUPTS
: IF ERCC IS ENABLED THE TYPE OUTS THAT
: OCCUR WILL MORE LOGICALLY BE DUE TO
: ERROR CORRECTION INTERRUPTS THAN
: TO DATA FAILURES DETECTED BY
: ANY OF THE GOOD/BAD COMPARES
: AGAIN, THE INITIAL TYPEOUT WILL CONSIST
: OF THE FOUR AC'S:
: AC0= NOT USED.
: AC1= DIB FROM ERCC OPTION
: BITS 0 TO 4 ARE CORRECTION CODE
: BITS 13-15 ARE THE COMPLEMENT
: OF PHYSICAL EXT. ADDR BITS Bnk2, XPA0-1
: AC2= DIA, COMPLEMENT OF THE FOLLOWING
: BIT 0 IS THE EXT. PHYSICAL ADDRESS BIT XPA2
: BITS 1-3 ARE THE PHYS. ADDR. BITS 1-3
: BITS 12-15 ARE THE PHYS. BITS PA12-PA15
: AC3= ADDRESS(PC) OF THE INTERRUPT
: (REFER TO LISTING)
: THE CORRECTION CODE IS RIGHT JUSTIFIED
: AND TYPED
: THE TOTAL NUMBER OF ERROR CORRECTION
: INTERRUPTS THAT OCCURRED DURING THE LAST
: TEST LOOP ARE TYPED

NOTE: THIS VERSION OF ERROR CORRECT ALLOWS
IDENTIFICATION OF ONLY WHICH 4K MODULE
OF MEMORY HAS FAILED AND WHICH INTERLEAVING
LEAF IT IS IN.

EXAMPLE: IF, AC2
AC1 130017 120013
THEN,
RNK0-2, XPA0-2=0

PA1-3=101 GIVES A PHYSICAL ADDRESS
RANGE OF 50000 TO 57777
PA 12-15=0100 WHICH GIVES INTERLEAVE BOARD #4
IN 8 WAY SCHEME

10024 PERMT
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:FOR CONVENIENCE THE FOLLOWING TABLE
: IS INCLUDED TO HELP DETERMINE WHICH BIT
: IS FAILING IN AN ERROR CORRECTION MEMORY
: COR.CODE
: BIT
: NO ERROR
: CHECK BIT 4
: CHECK BIT 3
: DATA BIT 0
: CHECK BIT 2
: DATA HIT 1
: MULTIPLE HIT
: DATA HIT 3
: CHECK BIT 1
: DATA HIT 4
: ALL 21 BITS WERE=1
: DATA HIT 6
: DATA HIT 7
: DATA HIT 8
: DATA HIT 9
: MULT. BITS FAILED
: CHECK BIT 0
: DATA BIT 11
: DATA BIT 12
: DATA BIT 13
: DATA BIT 14
: ALL 21 BITS READ AS 0'S
: DATA BIT 2
: MULTIPLE BIT'S
: DATA BIT 10
: MULTIPLE BITS
: DATA HIT 5
: MULTIPLE BITS
: DATA BIT 15
: MULTIPLE BITS
: SAME
: 35
: SAME
: 37

:THE DATA TYPED BY THE ERROR CORRECTION
: TYPEOUT IS AFTER CORRECTION HAS OCCURED.
: THEREFORE, FOR THE BIT TO HAVE FAILED,
: IT WOULD HAVE BEEN READ AS THE COMPLIMENT
: OF HOW IT APPEARS IN THE TYPEOUT

:NOTE THAT ALL SINGLE BIT ERROR CODES
: INDICATE A CORRECTION BIT FAILED

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10025 PEMRT

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PROGRAM INITIALIZE
THE DIAGNOSTIC LINKER INITIALIZES ITSELF
AND INDIVIDUAL TESTS IN THE FOLLOWING
SEQUENCE:

1. SYSTEM IS RESET, MAP OPTION IS DETERMINED TO EXIST OR NOT EXIST AND SWITCHES ARE SET UP ACCORDINGLY
2. ANY OTHER NECESSARY CONSTANTS ARE INITIALIZED (MEM ALLOCATION TABLES)
3. INTERRUPT VECTOR TABLES ARE SET UP TO PROCESS UNEXPECTED DEVICE INTERRUPTS
4. MEMORY IS SIZED IN 1K INCREMENTS FROM 0 TO 1024K AND BUILDS A 64 WORD BIT MAP OF EXISTING CONTIGUOUS MEMORY
5. THE EXIST MAP IS MOVED TO THE AVAILABLE MAP AND EACH BIT CORRESPONDING TO 1K OF UTILIZED MEMORY IS REMOVED FROM THE MAP SO THAT IT WILL NOT BE ASSIGNED AS A SCRATCH AREA TO ANY TEST. (INCLUDES PROGRAM STORAGE, MEMORY ALLOC. TABLES, INTERRUPT MASKS AND STACK AREA AND THE LAST 1K OF MEMORY TO PRESERVE THE BINARY LOADER)
6. EACH TEST IS ENTERED IN SEQUENCE AT ITS INIT. ENTRY POINT. OPTION TESTS DETERMINE IF THE DEVICE THEY ARE ASSOC. WITH EXISTS OR NOT AND PASS INTERRUPT SERVICE PARAM'S TO THE LINKER. (DEV#, MASK AND INTERRUPT SERVICE ADDRESS)
7. LINKER THEN TYPES THE SYSTEM SIZE INFORMATION ALONG WITH THE PROGRAM RUN LIST. THE OPERATOR CAN THEN SELECT OR DELETE SPECIFIC TESTS. START THE IOP, AND ENTER KEY OPTIONS IF START WAS 202 OR 204.
8. AFTER STARTING, THOSE TESTS THAT HAVE "SIZED" THEIR SUBSYSTEM FOR SPECIFIC PARAMETERS TYPE AN INDICATION OF THE PARAMETERS THEY DETERMINED TO EXIST. (SEE THE INDIVIDUAL DISK TEST DESCRIPTIONS.)

10026 PEMRT

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PROGRAM RUN
ONCE THE LINKER HAS COMPLETED ALL INITIALIZATION THE FOLLOWING SERIES OF OPERATIONS IS LOOPED THROUGH

1. LINKER RANDOMLY SELECTS ONE OF THE INDIVIDUAL TESTS UNTIL IT FINDS ONE THAT IS NOT WAITING FOR INTERRUPT (WAIT IS BIT 0 OF THE THIRD WORD IN TEST-I) AND THAT THE NEXT RANDOM NUMBER FALLS WITHIN ITS ENTER LIMITS
2. IF THE MAP OPTION EXISTS, ALL LOGICAL PAGES EXCEPT PAGE 0 ARE ACCESS PROTECTED WITH THE PHYSICAL AREA OF THE SELECTED TEST MAPPED TO ITSELF AND ANY ASSIGNED SCRATCH AREA MAPPED TO START AT 1K ABOVE THE TEST, MEMORY LOCATIONS SCRLOD AND SCRHI (SCRATCH LOW AND HIGH) ARE SET TO INDICATE THE LIMITS OF THE SCRATCH AREA AVAILABLE TO THE TEST.
3. DATA CHANNEL LIMITS (DCHLO AND DCHHI) ARE CALCULATED AND ENTERED (IF USED)
4. BMC LIMITS ARE CALCULATED AND SETUP. (IF USED)
5. THE SELECTED TEST IS ENTERED AT ITS SPECIFIED EXECUTE ENTRY POINT


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10024 PEMRI
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:6.4.5 EIS/MRI TEST
:
: THE MULTIPROGRAMMING EXTENDED INSTRUCTION SET - MEMORY
: REFERENCE INSTRUCTION TEST IS ESSENTIALLY ANOTHER MEMORY
: CHECKERBOARD EXERCISER. THIS TEST, HOWEVER, INCLUDES 19
: BIT PATTERNS FOR ERROR CORRECTION MEMORY'S AND UTILIZES
: BYTE, BIT AND BLM INSTRUCTIONS TO EXERCISE THE MEM-
: ORY. A COMPLETE PASS OF THE EIS/MRI TEST INCLUDES ALL
: OF THE FOLLOWING:
:
: EI.TK=0
: ASSIGN SCRATCH (1 TO 32K), RANDOMLY RE-
: LOCATE EXECUTABLE CODE INTO THE SCRATCH AREA,
: GENERATE CHECKERBOARD PATTERN.(1 OF 4 RANDOM
: SELECTED IF ERROR CORRECTION)
:
: EI.TK=1
: VERIFY THAT THE SCRATCH AREA CONTAINS THE
: CORRECT CHECKERBOARD PATTERN
:
: EI.TK=2
: RANDOMLY SELECT GROUPS OF 16 WORDS COMPLIMENT
: A SINGLE BIT IN EACH WORD, SHUFFLE 16 WORDS
: 16 TIMES, RECOMPLIMENT THE SINGLE BIT IN
: EACH WORD.
:
: EI.TK=3
: (SEE EI.TK=1) COMPARE
:
: EI.TK=4
: SELECT RANDOM X DRIVERS, COMPLIMENT A
: SINGLE BIT ON EACH OF 16 DRIVERS (EVERY 64TH WORD)
: WORD) BLM ALL OF THE PATTERN AREA BACK TO ITSELF,
: RECOMPLIMENT BITS
: (SEE EI.TK=1) COMPARE
: BLM THE PATTERN AREA TO ITSELF
: (SEE EI.TK=1) COMPARE
: BYTE TEST - L08 - COMPLIMENT
: STB L08 - RE-COMPLIMENT - STR EACH
: SEQUENTIAL BYTE IN THE PATTERN AREA.
: (COMPARE AGAIN)
: GENERATE COMPLIMENT WORST CASE PATTERN
: (SEE EI.TK=1) COMPARE
: (SEE EI.TK=2) BIT TEST
: (SEE EI.TK=3) COMPARE
: (SEE EI.TK=4) DRIVERS
: (SEE EI.TK=5) COMPARE
: (SEE EI.TK=6,7,10) BLM'S
: (SEE EI.TK=11) COMPARE
: (SEE EI.TK=12) BYTE'S
: (SEE EI.TK=13) COMPARE
:
:6.4.14 DCU-50/200 TEST
:
: THE MULTI-PROGRAMMING DCU-50/200 TEST RUNS
: AN ARITHMETIC TEST VIA THE DATA CHANNEL INTO
: THE HOST MEMORY.
: THE DCU-50/200 INTERRUPTS THE HOST CPU WHEN EITHER IT
: COMPLETES THE TEST OR UPON DETECTING AN ERROR.
:
: THIS TEST WILL AUTO-SIZE FOR THE EXISTANCE OF THE DCU AT
: DEVICE CODE 84. IF OTHER DEVICE CODES ARE TO BE USED,
: PATCH THEM INTO LOCATION DC00V. IF NOT FOUND THE TEST
: WILL BE AUTOMATICALLY DELETED.

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10053 PEMRT

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01 :6.4.17 MOVING HEAD DISK TEST
02 :AFTER ENTERED FOR INITIALIZATION, THE MOVING HEAD
03 :DISK TEST SIZES EACH DISK THAT IS "READY".
04 :A. THE HIGHEST AVAILABLE SECTOR IS FOUND BY A SERIES
05 :OF SEEKS AND RECALIBRATE COMMANDS.
06 :B. THE NUMBER OF AVAILABLE SECTORS ON A SURFACE ARE
07 :FOUND BY INITIATING A SERIES OF 2 SECTORS READS.
08 :C. THE NUMBER OF SURFACES ARE DETERMINED BY INITIATING
09 :ANOTHER SERIES OF 2 SECTOR READS AT THE LAST
10 :SECTOR ON EACH SURFACE UNTIL END OF CYLINDER.
11 :THIS INFORMATION IS TYPED THE
12 :FIRST TIME THE TEST IS ENTERED DURING "RUN"
13 :NOTE: IF DISK IS FOUND TO HAVE 4 SURFACES THE OPERATOR
14 :WILL BE ASKED IF THE FIXED PLATTER IS TO BE TESTED.
15 :IF NOT THEN THE SIZED INFORMATION WILL BE MODIFIED
16 :TO PROTECT THIS AREA OF THE DISK. THE NEW SIZED
17 :INFORMATION WILL BE PRINTED.
18 :NOTE: THIS TEST CANNOT DETERMINE IF
19 :THE DISK CONTROL IS ON THE PRIMARY OR
20 :SECONDARY SIDE OF THE DISK ADAPTER
21 :THE TESTING OF EACH AVAILABLE DRIVE IS CONTROLLED BY
22 :AN INDIVIDUAL CONTROL TABLE FOR EACH DRIVE.
23 :AFTER RANDOMLY SELECTING AN AVAILABLE DRIVE, THE
24 :SEQUENCE PROCEEDS AS FOLLOWS:
25 :THE OPERATION OF THE EACH MOVING HEAD DISK IS CONTROLLED BY
26 :THE CONTENTS OF 3 TABLES. EACH CONTROL TABLE IS 13 WORDS
27 :IN LENGTH. THE FIRST WORD CONTAINS THE CYLINDER NUMBER,
28 :(RANDOMLY SELECTED), THE SECOND WORD CONTAINS THE STARTING
29 :SECTOR AND NUMBER OF SECTORS UTILIZED. THE START SECTOR IS
30 :RANDOMLY SELECTED AND THE NUMBER OF SECTORS IS CONTROLLED BY THE
31 :AMOUNT OF SCRATCH AREA AVAILABLE TO THE DISK TEST WHEN THE
32 :DISK IS WRITTEN.
33 :THE 3RD WORD IS AN ERROR COUNTER. FOR EACH ERROR DETECTED, THE
34 :DISK IS RECALIBRATED AND THE OPERATION IS REPEATED.
35 :THIS "RECAL/REPEAT" IS EXECUTED UP TO 4 TRYS.
36 :THE FOURTH THROUGH 7TH WORDS ARE THE RANDOM DATA
37 :USED TO GENERATE THE TEST PATTERN. (THEY REPEAT EVERY
38 :14 WORDS.
39 :THE 8TH WORD IS A RANDOM SEC.# THAT IS TREATED
40 :SINGLY AS THE CONTIGUOUS SECTORS IN WORD 2. IF THE LAST
41 :SECTOR ON THE CYLINDER, READS AND WRITES FORCE THE EUC
42 :STATUS AS EVERY OPERATION IS DONE WITH A SEC. COUNT=2
43 :THE 9TH WORD IS THE CHANNEL ADDRESS USED TO WRITE TO
44 :THE DISK. THE 10TH THRU 13TH WORDS ARE THE PHYS IN ADDR
45 :USED TO WRITE TO THE DISK.
46 :
47 :WHEN INITIALLY ENTERED, THE DISK TEST ATTEMPTS TO ACQUIRE 1
48 :TO 4K OF SCRATCH AREA. THE TEST THEN RANDOMLY SELECTS A DATA
49 :START ADDRESS WITHIN THE FIRST 256 WORDS OF SCRATCH.
50 :THE TEST THEN RANDOMLY SELECTS ONE OF THE AVAIL DISKS
51 :THE TEST THEN RANDOMLY SELECTS ONE OF THE 3 OP TABLES. IF
52 :THE FIRST WORD OF THE OP TABLE IS NOT=0 IT INDICATES THAT --
53 :AT THE CYLINDER NUMBER IN THE FIRST WORD -- STARTING WITH THE
54 :SECTOR # IN BITS 6 TO 15 OF THE 2ND WORD -- FOR THE # OF SECTORS
55 :SPECIFIED BY IN BITS 2 TO 5 OF THE 2ND WORD -- RANDOM DATA HAS
56 :BEEN WRITTEN THAT IS EQUAL TO THE DATA IN WORDS 4 TO 7
57 :OF THE OP TABLE. HEAD FROM DISK IS SELECTED.
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10034 PEMRT

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01 :6.4.17 (CONTINUED)
02 :IF THE FIRST WORD OF THE TABLE IS=0 THE TEST -- RANDOMLY
03 :SELECTS A CYLINDER NOT CURRENTLY IN AN OP TABLE -- RANDOMLY
04 :SELECTS A START SECTOR (THE # OF SECTORS IS = TO THE AMOUNT
05 :OF SCRATCH AVAILABLE) AND GETS FOUR RANDOM DATA WORDS-WRITE
06 :TO DISK IS SELECTED.
07 :THE TEST THEN INITIATES A SEEK TO THE CYLINDER SELECTED
08 :AND AT SUCCESSFUL COMPLETION OF THE SEEK EITHER READS OR
09 :WRITES THE # OF SECTORS AVAILABLE.
10 :AT SUCCESSFUL COMPLETION OF EITHER THE READ OR WRITE, THE
11 :DATA BUFFER IS CHECKED TO VERIFY THAT IT CONTAINS THE
12 :CORRECT DATA. AS DATA COMPARES CORRECTLY, THE CORRECT
13 :WORDS ARE FILLED WITH THE NEGATIVE COUNT=TO THE NUMBER
14 :OF WORDS LEFT IN THE BUFFER.
15 :
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10035 PEMHT

01 :6.4.18 6060/61 DISK TEST
02 :
03 : THE 6060/61 DISK TEST IS SIMILAR TO THE MOVING
04 : HEAD DISK TEST IN OPERATION.
05 : DISC SIZING IS LIMITED TO DRIVES AVAILABLE,
06 : DENSITY AND WHETHER CABLED TO HMC OR DCH.
07 :6.4.19 MAGNETIC TAPE TEST
08 :
09 : A SCRATCH AREA IS ASSIGNED, THREE TO SIXTY THREE RECORDS
10 : OF RANDOM DATA ARE WRITTEN, THE DATA BUFFER IS CHECKED,
11 : THE MAG TAPE IS BACKSPACED TO THE BEGIN-
12 : NING OF THE JUST WRITTEN RECORDS. THEN, AS MANY RECORDS
13 : AS THE SCRATCH AREA WILL CONTAIN ARE READ BACK, THE
14 : DATA IS VERIFIED AND THE SEQUENCE (READ/VERIFY) IS RE-
15 : PEATED UNTIL ALL RECORDS IN THE SEQUENCE HAVE BEEN READ.
16 :
17 : FOR TAPE WRITE STATUS ERRORS, THE TAPE IS BACKSPACED/RE-
18 : WRITTEN UNTIL THE ERROR NO LONGER OCCURS. FOR TAPE READ
19 : STATUS ERRORS THE TEST BACKSPACES AND REREADS A TOTAL OF
20 : 3 TRYS. STATUS ERRORS DURING BACKSPACE ARE CONSIDERED NON-
21 : RECOVERABLE. FOR ALL ERRORS TYPED, THE TAPE IS REWOUND
22 : AND THE TEST RESTARTED AT LOAD POINT.
23 :
24 : WHEN THE TAPE REACHES EOT DURING THE WRITE OPERATION, TAPE
25 : IS REWOUND AND THE TEST RESTARTS AT LOAD POINT.
26 :
27 : THE RANDOM DATA IS A SEQUENCE OF 4 WORDS REPEATED EVERY 4TH
28 : WORD. ALL RECORDS ARE 256 WORDS IN LENGTH. AS DATA IS
29 : VERIFIED IN THE BUFFER IT IS REPLACED WITH A WORD EQUAL
30 : TO THE NEGATIVE COUNT OF THE NUMBER OF WORDS LEFT
31 : TO BE COMPARED.
32 :
33 : THESE TAPE TESTS UTILIZE 1 TO 6K OF SCRATCH AND THE
34 : DATA BUFFER START IS RANDOMLY SELECTED TO BE IN THE FIRST 256
35 : WORDS.
36 :
37 : ANY COMBINATION OF 1 TO 8 DRIVES MAY BE TESTED SIMPLY BY
38 : HAVING THEM ON LINE WHITE ENABLED.

10036 PEMHT

01 :6.4.20 LINE PRINTER TEST
02 :
03 : REGULAR LINE PRINTER:
04 : THE LINE PRINTER TEST RANDOMLY PRINTS 10 TO 60 LINES OF
05 : PRINT PER PAGE WITH RANDOM STALLS EVERY 1 TO 9 LINES.
06 : EACH LINE OF PRINT CONSISTS OF THE CHARACTERS SPACE
07 : (40) TO Z (132). THE TEST FILLS THE PRINT BUFFER UNTIL THE
08 : FIRST PRINT CYCLE STARTS. CONTINUATION OF PRINTING UNTIL
09 : RANDOM STALL IS THEN RUN OFF INTERRUPTS FROM THE PRINTER
10 :
11 : DCH LINE PRINTER:
12 : 1 OR 2K OF SCRATCH IS ASSIGNED, RANDOM NUMBER
13 : OF LINES ARE SELECTED(10-60), SCRATCH AREA IS FILLED WITH
14 : DATA PATTERN CONSISTING OF SPACE THRU BRACKET. THEN
15 : THE LINE PRINTER IS STARTED. A TAB RUNAWAY STATUS
16 : ERROR WILL RESULT IN A PROGRAMMED HALT.
17 :6.4.21 REAL TIME CLOCK
18 :
19 : THE REAL TIME CLOCK IS RUN AT 100 HERTZ. RUNTIME ALONG
20 : WITH ACCUMULATED ERROR COUNT ARE PRINTED AT 5 MINUTES
21 : (15 MINUTES, 30 MINUTES AND EVERY 30 MINUTES OF RUNTIME
22 : THEREAFTER. THIS TIMEOUT ALSO OCCURS AFTER EVERY ERROR
23 : TIMEOUT OR IF TTY KEY 4 IS TYPED.
24 : * * * * * NOTE * * * * *
25 : * * * * * WHEN RUNNING THIS TEST WITH THE DCU-50/200 TEST AND/OR
26 : * * * * * WITH IMPORT STARTED USING IT'S MAP, THE PRINTED TIME
27 : * * * * * CAN LOSE TIME WITH RESPECT TO REAL RUN TIME. THIS IS
28 : * * * * * DUE TO THE HEAVY CONCENTRATION OF DCH ACTIVITY CAUSED BY
29 : * * * * * THESE DEVICES AS TESTED BY MULTI-PROGRAMMING REL. TEST
30 : * * * * *
31 :
32 :6.4.22 TELETYPE TEST
33 :
34 : THE TELETYPE TEST PRINTS A SINGLE LINE CONSISTING OF THE
35 : CHARACTERS SPACE TO Z. THE TEST WILL ALSO ECHO CHARACTERS
36 : AS TYPED.

10037 PEMRT

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01 17.0 ODT EDITOR
02 REQUESTING THE ODT EDITOR
03 17.1 TO ENTER THE ODT TYPE A CONTROL 0 ON
04 THE TTY. THIS CAN BE DONE AT ANY POINT IN THE
05 PROGRAM.
06 17.2 ON ENTERING THE ODT A CARRIAGE RETURN, LINE FEED
07 RESPONSE
08 AND AN @ IS TYPED ON THE TTY.
09
10 17.3 CONVENTIONS AND SYMBOLS IN COMMAND LINES
11 -----
12 CR PRESSING THE RETURN KEY IS REPRESENTED BY CR .
13 LF PRESSING THE LINE FEED KEY IS REPRESENTED BY LF .
14 ? PRESSING AN ILLEGAL KEY CAUSES THE ODT TO RESPOND WITH
15 A ? .
16 ^ PRESSING AN UP-ARROW KEY IS REPRESENTED BY ^ .
17 @ ODT IS READY AND AT YOUR SERVICE.
18
19 17.4 COMMAND STRUCTURE
20 -----
21 AN ODT COMMAND HAS THE GENERAL FORMAT:
22
23 [ARGUMENT] [COMMAND]
24 ARGUMENT MAY BE ONE OF THE FOLLOWING:
25
26 ADR AN OCTAL ADDRESS OR AN EXPRESSION OF THE FORM:
27 X*XX*...
28 WHERE EACH X IS AN OCTAL INTEGER, SEPARATED
29 FROM THE FOLLOWING * BY EITHER +(PLUS)
30 OR -(MINUS). LEADING ZEROS NEED NOT BE TYPED.
31
32 N AN OCTAL INTEGER.
33
34 A COMMAND IS A SINGLE TELETYPE CHARACTER
35
36 CHARACTERS USED TO OPEN/CLOSE LOCATIONS INCLUDE:
37 "/" "CR" "LF"
38
39 CHARACTERS USED TO ENTER/EXIT ODT INCLUDE:
40 "-O"(CTRL 0) "R" "P"
41
42 CHARACTERS USED TO MODIFY CURRENT ARGUMENTS ARE:
43 "RUBOUT" "+" "-" AND THE INTEGERS 0 TO 7
44
45 THE CHARACTER "=" ALLOWS THE CURRENT ARGUMENT TO BE
46 EXAMINED WITHOUT OPENING OR CLOSING THE CURRENT LOC.
47
48 CHARACTERS TO SPECIFY IOP OR HOST INCLUDE:
49 "I" "P" "R" "H"
50
51 NOTE: A "R" OR "P" WHILE IN "I" MODE PLACES ODT IN
52 HOST MODE.
53
54 CHARACTERS USED TO MANIPULATE THE ECLIPSE MAP INCLUDE:
55 "MM" "MA" "MB" "MT" "MNE" "MNL"

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0038 PEMRT

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01 17.5 COMMANDS TO OPEN/CLOSE A LOCATION
02 -----
03
04 THE MEMORY LOCATION TO BE OPENED IS TYPED OUT.
05 OPEN THE LOCATION AND PRINT ITS CONTENTS
06 AND PRINT ITS CONTENTS.
07
08 *+ADR/ ADD ADR TO THE POINTER, OPEN THE LOCATION AND
09 PRINT ITS CONTENTS.
10 *--ADR/ SUBTRACT ADR FROM THE POINTER, OPEN THE LOCATION AND
11 PRINT ADDR CONTENTS.
12 CR CLOSE THE OPEN LOCATION WITH OR WITHOUT
13 MODIFICATION OF ITS CONTENTS.
14 LF CLOSE THE OPEN LOCATION WITH OR WITHOUT
15 MODIFICATION OF ITS CONTENTS AND OPEN THE
16 SUCCEEDING LOCATION.
17 / CLOSE THE OPEN LOCATION WITHOUT MODIFYING
18 ITS CONTENTS AND OPEN THE CELL POINTED
19 BY ITS CONTENTS
20 *+ADR/ CLOSE THE OPEN LOCATION WITHOUT MODIFYING
21 ITS CONTENTS AND OPEN THE LOCATION POINTED
22 BY ITS CONTENTS*ADR
23 *--ADR/ CLOSE THE OPEN LOCATION WITHOUT MODIFYING ITS
24 CONTENTS AND OPEN THE LOCATION POINTED BY
25 ITS CONTENTS*ADR.
26 ^ CLOSE THE CURRENT LOCATION AND OPEN "-1"
27

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10059 PEMRT
01 : 7.6 OTHER COMMANDS
02 : -----
03 :
04 : RUBOUT THE RUBOUT KEY IS USED TO DELETE ERRONEOUSLY TYPED
05 : DIGITS EACH TIME THE RUBOUT KEY IS PRESSED, THE RIGHT
06 : MOST DIGIT IS DELETED AND ECHOED ON THE TERMINAL.
07 : IF THE RUBOUT KEY IS PRESSED RIGHT AFTER OPENING A CELL
08 : THEN IT ALLOWS THE MODIFICATION OF THE CONTENTS AS IF
09 : THEY WERE TYPED JUST BEFORE THE KEY WAS PRESSED.
10 :
11 : P RESTART THE EXECUTION OF THE PROGRAM AT THE LOCATION
12 : FOLLOWING THE ONE WHICH CALLED ENTRY TO ODT. IF IN
13 : "I" MODE, THE IOP WILL BE STARTED AT THE SAVED PC
14 : AND THE MODE WILL BE CHANGED TO "H"(HOST).
15 :
16 : ADDR START EXECUTION OF THE PROGRAM AT LOCATION ADR AFTER
17 : AN IO RESET. IF IN "I" MODE, THE SART WILL BE TO THE
18 : IOP AND THE MODE WILL BE SET TO "H"(HOST). USE ONLY
19 : THE STARTING ADDRESSES 200 TO 212 AS APPROPRIATE.
20 :
21 : I STOPS THE IOP,SETS MODE TO IOP, ALL FOLLOWING COMMANDS
22 : WILL BE INTERPRETED AS IOP COMMANDS UNTIL EITHER
23 : " H,P,R " ARE TYPED.
24 :
25 : NA TYPE THE CONTENTS OF SAVED ACCUMULATOR "N".
26 :
27 : K KILL THE STRING TYPED SO FAR. ODT RESPONDS WITH A ? AND
28 : THE OPEN LOCATION IS CLOSED WITHOUT MODIFICATION.
29 :
30 : = PRINT THE CURRENT ARGUMENT (I.E. TYPING "= " WILL
31 : PRINT THE ADRS OF THE LAST OPENED LOCATION)

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10040 PEMRT
01 : 7.7 MAPPED COMMANDS
02 :
03 : ALL MAPPED COMMANDS MUST BE PRECEDED WITH A "M"
04 : COMMAND, I.E. "MM" "MA" "MB" "MC" "MT" "MNE" "MNL"
05 : ETC.
06 : ALL MAPPED COMMANDS ARE VALID ONLY UNDER LOCAL MODE.
07 : IE. NOT TO AN IOP
08 :
09 : MM SETS SWITCH SO THAT ALL MEMORY ACCESSES ARE
10 : MAPPED USING THE LAST USER'S SETUP UNTIL A "MU"
11 : "MA" OR "MB" IS INPUTTED.
12 :
13 : MA SETS SWITCH SO THAT ALL FURTHER MEMORY ACCESSES
14 : ARE MAPPED USING USER-A UNTIL A "MB" OR "MU" IS
15 : ENTERED.
16 :
17 : MB SETS SWITCH SO THAT ALL FURTHER MEMORY ACCESSES
18 : ARE MAPPED USING USER-B UNTIL A "MA" OR "MU"
19 : IS ENTERED.
20 :
21 : MC PRINTS THE CONTENTS OF THE LAST FIVE CONTEXT BLOCKS
22 : NOTE: FIRST TWO WILL BE IDENTICAL COPIES IF THE
23 : MOST RECENT PUSH WASN'T A MAP VIOLATION TRAP.
24 : THE "MC" COMMAND IS USEFUL ONLY ON MPP02 TYPE
25 : PROCESSORS.
26 :
27 : MT PRINTS THE CURRENT CONTENTS OF ALL MAP ENTRY TABLES
28 :
29 : MNE PRINTS THE MAP ENTRY CORRESPONDING TO THE VALUE OF
30 : N TYPED. WHERE N IS THE LOGICAL PAGE ADDRESS.
31 : IF NO VALUE FOR N IS ENTERED THEN THE NEXT
32 : LOGICAL MAP ENTRY IS TYPED.
33 :
34 : MNL SETS MAP LAST BLOCK TO VALUE ENTERED .
35 : OCTAL VALUES CAN RANGE FROM 0 TO 377.
36 : COMMANDS "A,B" CAN BE USED TO MODIFY FORMAT IF CALLED
37 : BEFORE "L" COMMAND.
38 :
39 : MU CLEARS MAP MODE TO STOP MAPPING OF MEMORY ACCESSES.
40 :
41 : MNS PRINTS THE CONTENTS OF THE BMC MAP WHICH CORRESPONDS
42 : TO THE LOGICAL PAGE ENTERED "N".
43 :
44 : NOTE: ENTERING OR EXITING ODT CLEARS MAPPED MODE.
45 :

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10041 PERMT

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01 ;
02 ; 7.8 MODIFICATION OF A LOCATION
03 ; -----
04 ;
05 ; ONCE A LOCATION HAS BEEN OPENED ITS CONTENTS CAN BE
06 ; MODIFIED IN ONE OF THE FOLLOWING WAYS:
07 ;
08 ; 1) TYPE THE OCTAL NUMBER OR A STRING OF NUMBERS SEPERATED
09 ; BY + OR -, FOLLOWED BY CR, OR LF. IN THIS CASE THE SUM
10 ; OF THE TOTAL NUMBERS TYPED-IN WILL BE DEPOSITED. LEADING
11 ; ZEROS NEED NOT BE TYPED.
12 ;
13 ; 2) TYPE + OR - FOLLOWED BY A NUMBER OR A STRING OF NUMBERS
14 ; SEPERATED BY + OR -, FOLLOWED BY CR, OR LF. IN THIS
15 ; CASE SUM OF THE TOTAL NUMBERS TYPED IN WILL BE ADDED TO
16 ; OR SUBTRACTED FROM THE PREVIOUS CONTENTS OF THE LOCATION.
17 ; LEADING ZEROS NEED NOT BE TYPED.
18 ;
19 ; 3) ADDRESS ITSELF OR AN OCTAL NUMBER RELATIVE TO THE
20 ; ADDRESS OF THE LOCATION CAN BE DEPOSITED IN A MEMORY
21 ; LOCATION BY TYPING A . OR *AOR FOLLOWED BY A CR, OR LF.
22 ;
23 ; 4) LOCATION ALLOWS THE MODIFICATION OF ITS CONTENTS
24 ; AS IF THEY WERE TYPED IN JUST BEFORE THE COMMAND
25 ; WAS ISSUED.
```