

DataGeneral

**TECHNICAL
STATEMENT**

TEXT LISTING

068-000321-07

PROGRAM

EXERCISER FOR COMMERCIAL
ECLIPSE: PART 1

TEXT TAPE

097-000321-07

ABSTRACT

'ECOM1' IS AN EXERCISER PROGRAM DEVELOPED FOR CHECKING OUT THE CENTRAL PROCESSOR INSTRUCTIONS OF COMMERCIAL ECLIPSE AND FOR TESTING ITS RELIABILITY. IT IS DESIGNED TO RUN IN BOTH UNMAPPED AND MAPPED MODE IF THE SYSTEM IS A MAPPED SYSTEM.

0001 .MAIN MACRO REV 06.30 12:49:57 05/17/79 :0002 .MAIN
01 : ECOM1
02 : ECOM1 - PART 1 OF EXERCISER TESTS
03 : FOR ECLIPSE COMMERCIAL INSTRUCTIONS
04
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07 *****
08 : NAME: ECOM1.TX PART NUMBER: 097-000321
09 :
10 : DESCRIPTION: EXERCISER FOR COMMERCIAL ECLIPSE: PART 1
11 :
12 : REVISION HISTORY:
13 :
14 : REV. DATE
15 :
16 : 00 08/08/75
17 : 01 12/23/75
18 : 02 02/20/76
19 : 03 05/18/76
20 : 04 12/31/76
21 : 05 09/09/77
22 : 06 09/15/78
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28 :
29 : COPYRIGHT © DATA GENERAL CORPORATION, 1975, 1976, 1977, 1978
30 : ALL RIGHTS RESERVED.
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:: 0.0 REVISION HISTORY
 ::
 :: REV. 06 WAS CREATED TO
 :: IMPLEMENT THE STANDARDS PROVIDED
 :: BY DLIB.
 :: THIS HAS NOT CHANGED THE PHILOSOPHY
 :: OR TEST PROCEDURES IN THIS PROGRAM.
 :: ALL UNNECESSARY "10RST" HAVE BEEN
 :: DELETED FROM THIS FILE.
 ::
 :: REV. 07 WAS CREATED TO CORRECT THE MMAPUT
 :: WRAP AROUND SIZING PROBLEM (OTR # 247).
 ::

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EXERCISER FOR COMMERCIAL ECLIPSE: PART 1
 ::
 :: 1. PROGRAM NAME
 ::
 :: ECOM1
 ::
 :: GENERAL DESCRIPTION
 ::
 :: 12.1 'ECOM1' IS AN EXERCISER PROGRAM DEVELOPED FOR CHECKING
 :: OUT THE CENTRAL PROCESSOR INSTRUCTIONS OF COMMERCIAL
 :: ECLIPSE AND FOR TESTING ITS RELIABILITY. IT IS DESIGNED
 :: TO RUN IN BOTH UNMAPPED AND MAPPED MODE IF THE SYSTEM
 :: IS A MAPPED SYSTEM.
 ::
 :: 12.2 THE INSTRUCTIONS EXERCISED ARE AS FOLLOWS:
 :: ELDR,ESTB,CMV,CMP,CTR AND CMT
 ::
 :: CAUTION !!! AT LEAST 2 PASSES OF 'ECOM1' MUST BE RUN
 :: WITH 'KITTEM' AND 'CAT' TO ASSURE THE USER OF THE PROPER
 :: FUNCTIONING OF ECLIPSE SYSTEM.

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13. MACHINE REQUIREMENTS

 13.1 ECLIPSE PROCESSOR (COMMERCIAL)
 I.E. EXTENDED INSTRUCTION SET MICRO PROGRAM
 BINARY FILE "76-000005-04" REV. 04 OR LATER.
 16.K READ-WRITE MEMORY
 13.3 CONSOLE EQUIPMENT

 13.4 RESTRICTIONS

 ECOM1 REQUIRES AT LEAST 40.K WORDS OF MEMORY
 STORAGE TO RUN MAPPED WITH "CAT" OR "KITTEN".
 ECOM1 REQUIRES A MINIMUM OF 32.K WORDS OF MEMORY
 TO RUN MAPPED.
 ECOM1 REQUIRES AT LEAST 16.K WORDS OF MEMORY
 TO LOAD UNDER DTOS.
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4.0 ADDRESS LOCATIONS 200 TO 216 IN PAGE 0 ARE FIXED
 THE USE OF THESE LOCATIONS ARE AS FOLLOWS:
 LOC 200 IS THE STARTING ADDRESS OF THIS PROGRAM.
 LOC 201 KEEPS TRACK OF RELOCATED ADDR OF THE TEST
 CURRENTLY RUNNING AND IS USEFUL FOR DEBUG WHEN
 LOOPING OCCURS IN THE PROGRAM.
 LOC 202 CONTAINS THE STARTING ADDR OF THE PROGRAM.
 LOC 203 SHOWS NUMBER OF PASSES RUN THROUGH THIS
 PROGRAM.
 LOC 204 SHOWS INTERNAL PASS COUNT WHICH IS FIXED BY
 LOCATION 205.
 LOC 207 IS THE CURRENT PASS COUNT FOR INDIVIDUAL
 TEST AND SHOWS THE PASSES REMAINING THRU THIS
 TEST AT A PARTICULAR TIME.
 LOC 214 IS THE BASE OFFSET USED TO CALCULATE THE
 CURRENT RELOCATION OF THE PROGRAM.
 LOC 215 KEEPS TRACK OF THE LISTING ADDR OF THE TEST
 CURRENTLY RUNNING AND IS USEFUL FOR DEBUG WHEN
 LOOPING OCCURS IN THE PROGRAM.
 LOC 216 KEEPS TRACK OF THE CURRENT TEST# (TALLY)
 RUNNING AND IS USEFUL FOR DEBUG WHEN RUNNING
 UNDER A NORMAL PROGRAM EXECUTION.
 NOTE:

 4.0.1 LOCATION 216 (TST#N) IS ADVANCED EACH TIME THAT THE
 "SETUP" MACRO IS EXECUTED FOR STAND ALONE SURTEST
 EXECUTION, THE SIGNIFICANCE OF THIS ENTRY IS ONLY
 THAT OF A TALLY OF SURTESTS ENTERED.

 4.1 THE FIRST PASS THRU THE PROGRAM WILL RUN VERY FAST
 (I.E. WITHOUT SURTEST ITERATIONS). ADDITIONAL PASSES
 WILL RUN SLOWER AS EACH SURTEST IS RUN ACCORDING TO IT'S
 ITERATION VALUE SUPPLIED IN IT'S "SETUP" CALL, THIS WILL
 ALLOW ALL RANDOM NUMBER COMBINATIONS OF ARGUMENTS AND OF
 BUFFER ADDRESSES TO BE TESTED.
 CAUTION !!! - AT LEAST 2 PASSES OF THE PROGRAM MUST
 BE RUN WITH 'KITTEN' AND 'CAT' TO ASSURE THE USER OF
 THE PROPER FUNCTIONING OF THE ECLIPSE SYSTEM.
 .EJEC

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SWMPD 4.2
SWITCH SETTINGS
LOCATION "SWREG" IS USED TO SELECT THE PROGRAM OPTIONS
(NOT SYSTEM CONFIGURATION). WHILE RUNNING UNDER DTOS,
THIS LOCATION WILL BE LOADED BY THE MONITOR.
HOWEVER UNDER STAND ALONE AND PROGRAM LOAD MODES THIS
LOCATION WILL BE SET ACCORDING TO THE ANSWERS SUPPLIED
BY THE OPERATOR. IN ANY CASE THE OPTIONS CAN BE CHANGED
OR VERIFIED BY USING ONE OF THE COMMANDS GIVEN IN SEC.
4.2.2
SWITCH OPTIONS
DIFFERENT BITS AND THEIR INTERPRETATION AT LOCATION
"SWREG" IS AS FOLLOWS:
BIT OCTAL BINARY INERPRETATION
VALUE VALUE
1 40000 1 LOOP ON ERROR
2 20000 1 SKIP LOOPING ON ERROR
3 10000 1 PRINT TO CONSOLE
4 04000 1 ABORT PRINT OUT TO CONSOLE
5 02000 1 DO NOT PRINT % FAILURE
6 01000 1 PRINT % FAILURE
7 00400 1 ALLOW END OF PASS PRINT OUT
8 00200 1 SUPPRESS END OF PASS PRINT OUT
9 00100 1 DO NOT PRINT ON THE LINE PRINTER
10 00010 1 PRINT ON THE LINE PRINTER
11 00001 1 DO NOT HALT ON ERROR
12 00000 1 HALT ON ERROR
13 00000 1 DO NOT PRINT SUMMARY AND/OR
14 00000 1 PASSING OF EACH SUBTEST
15 00000 1 PRINT SUMMARY AND/OR
16 00000 1 PASSING OF EACH SUBTEST
17 00000 1 PRINT ONLY THE FIRST ERROR
18 00000 1 PRINT EVERY ERROR
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OTHER COMMANDS
4.2.2.1
"CR" A "RETURN" CAN BE TYPED TO CONTINUE THE PROGRAM
AFTER ITS LOCKED IN A SWITCH MODIFICATION MODE
"D THIS COMMAND GIVEN AT ANY TIME WILL RESET "SWREG"
TO DEFAULT MODE AND RESTART THE PROGRAM.
"R THIS COMMAND GIVEN AT ANY TIME WILL RESTART THE
PROGRAM. SWITCHES ARE LEFT WITH THE VALUES THEY
HAD BEFORE THE COMMAND WAS ISSUED.
"O THIS COMMAND GIVEN AT ANY TIME WILL CAUSE THE
PROGRAM CONTROL TO GO TO DTI (NOTE: THIS IS AN
OPTIONAL COMMAND AND IS AVAILBLE ONLY IF
ODTPK IS PRESENT)
M THIS COMMAND GIVEN AT ANY TIME WILL PRINT THE
CURRENT OPERATING MODES.
BIT OCTAL BINARY INTERPRETATION
VALUE VALUE
C 00010 0 DISABLE MMPU/MMPUI MAP DUMP
1 00001 1 ENABLE MMPU/MMPUI MAP DUMP
F 00001 0 DO NOT ENABLE QUICK VERIFY OPTION
1 00001 1 ENABLE QUICK VERIFY (QV) MODE
EXECUTION
4.2.2 STARTING ADDRESS = 200 IN STAND ALONE MODE.
IF 'CAT' OR 'KITTEN' WAS LOADED FROM DTOS AND RESTART
WAS NEEDED, THEN USE AS FOLLOWS:
STARTING ADDR = 170 (FOR START WITH NO 'CAT')
STARTING ADDR = 171 (FOR START WITH 'CAT')
4.2.3 MONITOR LOCATION 203 TO CHECK THE CURRENT PASS COUNT.
4.2.4 MONITOR LOCATION X6000 TO MAKE SURE THAT 'CAT' OR
'KITTEN' IS RUNNING. IN CASES WHERE THE PROGRAM IS
STARTED WITH 'CAT' OR 'KITTEN'. (X = THE NUMBER
OF THE HIGHEST MEMORY MODULE IN THE SYSTEM AND IS
1 THR' 7) MODULO 8.K.
LOCATION X6000 MUST HAVE PATTERN CHANGING FROM ZEROES
TO ALL ONES TO INC/SWAP PATTERN.
.EJEC

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SWITCH SETTINGS
LOCATION "SWREG" IS USED TO SELECT THE PROGRAM OPTIONS
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THIS LOCATION WILL BE LOADED BY THE MONITOR.
HOWEVER UNDER STAND ALONE AND PROGRAM LOAD MODES THIS
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BY THE OPERATOR. IN ANY CASE THE OPTIONS CAN BE CHANGED
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DIFFERENT BITS AND THEIR INTERPRETATION AT LOCATION
"SWREG" IS AS FOLLOWS:
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4.2.2.1
"CR" A "RETURN" CAN BE TYPED TO CONTINUE THE PROGRAM
AFTER ITS LOCKED IN A SWITCH MODIFICATION MODE
"D THIS COMMAND GIVEN AT ANY TIME WILL RESET "SWREG"
TO DEFAULT MODE AND RESTART THE PROGRAM.
"R THIS COMMAND GIVEN AT ANY TIME WILL RESTART THE
PROGRAM. SWITCHES ARE LEFT WITH THE VALUES THEY
HAD BEFORE THE COMMAND WAS ISSUED.
"O THIS COMMAND GIVEN AT ANY TIME WILL CAUSE THE
PROGRAM CONTROL TO GO TO DTI (NOTE: THIS IS AN
OPTIONAL COMMAND AND IS AVAILBLE ONLY IF
ODTPK IS PRESENT)
M THIS COMMAND GIVEN AT ANY TIME WILL PRINT THE
CURRENT OPERATING MODES.
BIT OCTAL BINARY INTERPRETATION
VALUE VALUE
C 00010 0 DISABLE MMPU/MMPUI MAP DUMP
1 00001 1 ENABLE MMPU/MMPUI MAP DUMP
F 00001 0 DO NOT ENABLE QUICK VERIFY OPTION
1 00001 1 ENABLE QUICK VERIFY (QV) MODE
EXECUTION
4.2.2 STARTING ADDRESS = 200 IN STAND ALONE MODE.
IF 'CAT' OR 'KITTEN' WAS LOADED FROM DTOS AND RESTART
WAS NEEDED, THEN USE AS FOLLOWS:
STARTING ADDR = 170 (FOR START WITH NO 'CAT')
STARTING ADDR = 171 (FOR START WITH 'CAT')
4.2.3 MONITOR LOCATION 203 TO CHECK THE CURRENT PASS COUNT.
4.2.4 MONITOR LOCATION X6000 TO MAKE SURE THAT 'CAT' OR
'KITTEN' IS RUNNING. IN CASES WHERE THE PROGRAM IS
STARTED WITH 'CAT' OR 'KITTEN'. (X = THE NUMBER
OF THE HIGHEST MEMORY MODULE IN THE SYSTEM AND IS
1 THR' 7) MODULO 8.K.
LOCATION X6000 MUST HAVE PATTERN CHANGING FROM ZEROES
TO ALL ONES TO INC/SWAP PATTERN.
.EJEC

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:4.3 OPERATING PROCEDURE/OPERATOR INPUT
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:4.3.1 LOAD THE PROGRAM VIA THE BINARY LOADER OR INSERT A
:4.3.2 PRELOADED MEMORY MODULE.
:4.3.3 SET SWITCHES TO 200.
:4.3.4 PRESS START.
:4.3.5 THE PROGRAM WILL RUN UNTIL MANUALLY STOPPED. IN CASE
: OF MALFUNCTIONING, THE PROGRAM WILL PRINT ERROR
: MESSAGE AND TAKE APPROPRIATE ACTION AS PER THE SW
: SETTINGS.
:
:
:4.4 PROGRAM OUTPUT/ERROR DESCRIPTION
:*****
:
:4.4.1 FOR ANY ERRORS DETECTED, THE PROGRAM WILL PRINT ERROR
: REPORT OR % FAILURES DEPENDING UPON THE SW SETTINGS.
:
:
:4.4.2 FOR ALL ERRORS, APPROPRIATE PROGRAM INFORMATION WILL BE
: PRINTED WHICH CONSISTS OF TEST#, ALL ACCUMULATORS, CARRY,
: LISTING PC OF ERR, LOGICAL RELOCATED PC OF ERR, PHYSICAL
: PC (OCTAL) WHERE ERROR OCCURED AND THEN THE PROGRAM
: WILL GO INTO SCOPE LOOP. % FAILURE RATE MAY BE PRINTED
: AT THIS TIME BY USING THE PROPER SWITCHES.
: IF THE ERROR IS DETECTED IN MAPPED ENVIRONMENT, ADDITIONAL
: DATA ABOUT CURRENT MAP WILL BE PRINTED SHOWING THE BEGIN
: AND END OF THE 32K MODULE THAT LOGICAL 32K IS MAPPED
: TO. IF THE PROGRAM IS LOADED FROM 'DTOS', IT WILL ALSO
: PRINT 'DTOSIK' SHOWING THAT 'DTOSIK' IS NOT MAPPED AND
: MUST BE SKIPPED OVER TO DETERMINE THE PHYSICAL BLOCK OF
: FAILING ADDR IF IT HAPPENS TO BE ABOVE 'DTOSIK'.
: THE CONTENTS OF THE MMPU/MMPUI MAP WILL BE DUMPED TO
: THE SELECTED DISPLAY DEVICE IF SWT "C" IS = 1 AND SWT "0"
: IS = 1.
:
:4.4.3 THE PROGRAM WILL LOOP IN THE TEST THAT IS FAILING IF
: SWT "1" IS 0 AND SWT "15" OF SWREG = 0. SEE 4.8.1 BELOW !!!
: THE PRINTING OF ERROR REPORT CAN BE ABORTED BY SETTING
: SW2" TO 1 AND/OR SW5" TO 0.
: IF LOOPING OCCURS IN THE PROGRAM, SELECT MONITOR MODE
: AND CHECK LOCATION 216 TO FIND OUT THE TEST THAT WAS
: RUNNING BEFORE THE LOOPING OCCURRED.
: LOCATION 215 WILL HAVE THE LISTING ADDRESS AND LOCATION
: 201 WILL HAVE THE RELOCATED ADDRESS OF THE FAILING TEST.
:
:4.4.6 CAUTION
:*****
:
: ERRORS AT "XFERM" AND "XFERM" SIGNIFY THAT AN
: ERROR WAS DETECTED IN BASIC "BAM" (XFERM)
: PROGRAM RELOCATION OR "RLM" MAP MODE (XFERM)
: PROGRAM RELOCATION. IF EITHER OCCUR, IT IS
: HIGHLY PROBABLE THAT THE PROGRAM SEGMENT
: THAT WAS TRANSFERRED IS NOT CORRECT, AND THE
: USER SHOULD RUN THE BASIC ECLIPSE DIAGNOSTICS!!!
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:4.4.7 FATAL ERRORS
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: UNPREDICTABLE ERRORS SUCH AS STACK OVER/
: UNDER FLOW, MAPPED PROTECTION FAULTS, ERCC PROTECTION
: FAULTS AND, FALSE LOCATION EXECUTION LINKAGE AS WELL AS
: "XFERM" AND "XFERM" RELOCATION CHECK SUM ERROR AND WORD
: TRANSFER VERIFICATION ERRORS WILL RESULT IN PROGRAM HALT
: EXECUTION WHEN ENCOUNTERED IN DTOS "LOAD MODE". THESE
: ERRORS ARE ALL CONSIDERED UNRECOVERABLE AND THE USER IS
: ADVISED TO RUN THE BASIC ECLIPSE DIAGNOSTICS. IF THESE
: TYPE OF ERRORS ARE ENCOUNTERED DURING NON-LOAD MODE OF
: EXECUTION UNDER THE DTOS MONITOR, THE PROGRAM WILL THEN
: ABORT FURTHER EXECUTION AND DISPLAY THE FOLLOWING
: OUTPUT BELOW:
:
:
:4.4.8 MONITOR MODE EXECUTION FATAL ERROR DISPLAY
:*****
: (TYPICALLY)
:
: PROGRAM ABORTING
: %LOC: OF LOGICAL PHYSICAL TEST#
: %FATAL_PC = 000021 0000021 101
: %ERROR_ID = 17777
:
: SEE 4.8.3 BELOW FOR ERROR CODE ID
:
: .IFN (ENVNT24)
: BYTE FORMAT ERROR DISPLAY
: *****
:
:
: ERROR DEST SOURCE DEST SOURCE SOURCE RYTE DEST BYTE
: :BYTE BYTE COUNT BYTE BYTE ADDR RIGHT WORD RIGHT WORD
: : (VALUES) (AC0) (AC1) (AC2) (AC3) (SORS/2)BIT<15> (DEST/2)BI
: :INITIAL: (OLONG) (SLONG) (DEST) (SORS) (ENAZ0) (ENAZ1) (ENAZ2) (ENAZ3) (ENAZ3/2)BIT<15> (ENAZ2/2)BI
: :EXPECTED: (ENAZ0) (ENAZ1) (ENAZ2) (ENAZ3)
: :SOURCE BYTE
: :EXPECTED = @ (SORS)
:
: :DEST BYTE
: :EXPECTED = @ (DEST)
:
: :CAUTION:
:
: THE (SYMBOLIC) LOCATIONS ABOVE, WHEN USED, ARE VALID
: RELATIVE INFORMATION ON BYTE ERROR PRINTOUT. IN SOME
: CASES, WHERE SUBSTITUTE LOCATIONS ARE USED, THIS
: INFORMATION WILL BE MISLEADING. IN THESE CASES, ONLY
: THE CONTENTS OF THE ACCUMULATORS BEING TESTED IS
: SIGNIFICANT.
:
: :4.4.10 WHEN SWITCH 6 OF THE SWITCH REGISTER IS SET =1,

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:: THE PROGRAM WILL HALT ON ERROR. TO CONTINUE:
1. CLEAR SWITCH 6 VIA THE CONSOLE
2. HIT CONTINUE ON THE FRONT PANEL
THE PROGRAM WILL THEN CONTINUE RUNNING WITH THE NEXT
TEST. IT WILL NOT HALT ON ERROR UNLESS SWITCH 6 IS
AGAIN SET VIA THE CONSOLE.
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4.5 NEW MMPU/MMPUI MAP DUMP UTILITY
4.5.1 AUTO MAP DUMP DISPLAY
FOLLOWING ERROR DETECTION OR TRACE REQUEST EXECUTION
I.E. SEE 4.9 BELOW. THE CURRENT CONTENTS OF THE MMPU/
MMPUI WILL BE DISPLAYED IF EXECUTION IS DURING THE
MAP MODE, AND SWITCH "C" = 1.
ADDITIONAL MAP DUMP DISPLAYS WILL OCCUR ONLY WHEN THE
CONTENTS OF THE MMPU/MMPUI MAP HAVE BEEN MODIFIED.
4.5.2 MANUAL MAP DUMP DISPLAY (USER) REQUESTED
IF THE USER SHOULD NEED TO DISPLAY THE CONTENTS OF
THE MMPU/MMPUI, HE MAY DO SO BY HALTING THE PROGRAM
AND START AGAIN AT LOC. 220 (CTAL). THE PROGRAM HALTS
FOLLOWING THE DISPLAY AWAITING THE USER. IF THE USER
DEPRESSES CONTINUE THE PROGRAM WILL EXECUTE THE MMPU/
MMPUI MAP DUMP DISPLAY UTILITY AGAIN.
NOTE:
IT IS THE USERS RESPONSIBILITY TO RESTART THE PROG-
RAM FOLLOWING MANUAL MODE MMPU/MMPUI MAP DUMP DISPLAY
EXECUTION REQUESTS.
SWITCH "C" MUST = 1. I.E. RF SET TO ENABLE MAP MMPU/MMPUI
DUMP DISPLAY. ALSO SEE SWT"2" AND SWT"5" CONTROL ABOVE.
4.6 PROGRAM DESCRIPTION/THEORY OF OPERATION
4.6.1 MOST TESTS ARE MODULAR, SO THE PROGRAM CAN
BE STARTED FROM ANY TEST WITHOUT CAUSING ANY
INITIALIZATION ERRORS. SEE NOTE 4.0.1 ABOVE !!!
4.6.2 WHEN THE PROGRAM IS STARTED FROM CONSOLE OR VIA 'DTOS',
IT WILL SCAN THE SYSTEM AND WILL PRINT THE SIZE OF THE
MEMORY. THE 1ST PASS WILL RUN VERY FAST AS EACH TEST
IS RUN ONLY ONCE IN THE FIRST PASS. ALL OTHER PASSES
WILL TAKE MORE TIME AS EACH TEST IS RUN ACCORDING TO THE
TEST ITERATION COUNT SPECIFIED IN EACH SUBTEST.
AFTER THE 1ST PASS, 'ECOM1' IS RELOCATED IN AVAILABLE
LOGICAL MEMORY AND THE AREAS BELOW (CALLED 'LBU2F') AND
ABOVE (CALLED 'HBU7F') THE RELOCATED PROGRAM ARE USED
AS SCRATCH BUFFER AREA. 1 RELOCATED CYCLE IS RUN
FOR EACH LOGICAL 32K MODULE.
ON MAPPED ECLIPSE, 2 CYCLES ARE RUN UNMAPPED AS DESCRIBED
ABOVE. THEN THE FIRST 32K ARE MAPPED TO ITSELF AND 2 MORE
CYCLES ARE RUN OUT OF WHICH THE 1ST ONE IS NON-RELOCATED.
THEN THE PROGRAM 1ST 16K IS MOVED TO NEXT 16K AND LOGICAL
32K ARE MAPPED TO 32K FROM THERE ONWARDS AND 2 CYCLES
ARE RUN. THIS CONTINUES UNTIL THERE IS AT LEAST 32K LEFT
ABOVE THE PROGRAM. THEN THE PROGRAM WILL PRINT 'PASS XX'.
THE ORIGINAL COPY OF THE PROG IS ALWAYS LEFT UNTOUCHED
IN THE 1ST 16K.
WHEN THE PROGRAM IS LOADED FROM 'DTOS', 1K OCCUPIED BY
'DTOS' MONITOR, CAT OR KITTEN IS ALWAYS LEFT UNTOUCHED.
THE NUMBER OF PASSES EACH TEST IS RUN IN MAPPED MODE
IS ADJUSTED ACCORDING TO THE SIZE OF THE TOTAL MEMORY SO
AS TO EQUALIZE THE RUN TIME FOR DIFFERENT SIZE SYSTEMS
:: NOTE: DUE TO THE WAY THE PROGRAM IS RUN (AS DESCRIBED
ABOVE) THE MAXIMUM PROGRAM SIZE ALLOWED IS 15K. THIS
WILL LEAVE ROOM (1K) FOR THE CAT WITHIN THE FIRST
32K OF THE SYSTEM WHEN THE PROGRAM IS RELOCATED.

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4.7 DIAGNOSTIC SUPPORT FEATURES
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DIAGNOSTIC SUPPORT FEATURES HAVE BEEN ADDED
TO ASSIST THE USER IN IDENTIFICATION OF THE IMPACT
OF PROGRAM RELOCATION OR THE EXECUTION IN MAP MODE.
THE USER MUST MODIFY THE ASSOCIATED CONTROL ENTRIES
TO ENABLE THEM, BE ADVISED, "THE USER MUST RESTORE
THE PROGRAM TO THE ORIGINAL STATE AND VERIFY NORMAL
EXECUTION BEFORE ASSUMING THAT THE SYSTEMS CONFIGURA-
TION IS FUNCTIONALLY CORRECT".

4.7.1 PROGRAM RELOCATION CHECKSUM
-----
PRIOR TO RELOCATION IN NONMAPPED MODE A NEW "COR" CHECK
WORD IS GENERATED, WHICH, IS VERIFIED FOLLOWING THE BAM
XFER EXECUTION. IF THE CHECK WORDS DO NOT COMPARE THE
PROGRAM HALTS. DUE TO THE NATURE OF THE PROGRAM OVERLAP-
PING ON RELOCATION AND MODIFYING THE SOURCE BUFFER FROM
WHICH IT HAS TRANSFERRED THIS TYPE OF ERROR IS UNRECOVER-
ABLE AND THE USER IS ADVISED TO RUN THE BASIC ECLIPSE
DIAGNOSTICS.

4.7.2 PROGRAM RELOCATION VERIFICATION
-----
DURING MAPPED MODE EXECUTION THE SOURCE BUFFER AREA
IS VERIFIED WORD FOR WORD (EXCEPT LOC. 0 THRU 17 OCTAL)
AND IF AN ERROR IS DETECTED THE PROGRAM HALTS. THIS
IS A FATAL CONDITION IN THAT THE PROGRAM SEGMENT THAT IS
TO BE EXECUTED NEXT MAY BE IN ERROR.
WITH SLIGHT MODIFICATION (I.E. THE ADDITION OF A HALT) AT
LOCATION "MAPHLT:" THE USER MAY RESTART THE FAILING
PROGRAM FOLLOWING A "XFER:" HALT IN BAM ABOVE AT LOC.
"RETRY". THE OMISSION OF THE HALT ENTRY WILL RESULT IN
MAP MODE EXECUTION FOLLOWING THE VERIFICATION AND COULD
MISLEAD THE USER IF FURTHER ERRORS RESULT.

NOTE:
ADDRESSES SPECIFIED ABOVE ARE IN RELOCATED MEMORY AREA
I.E. THE PROGRAM LISTING ADDRESS PLUS THE CONTENTS OF
"RELOC:" FOR "MAPHLT:" AND "RETRY:"
ALSO NOTE THAT THE ABOVE PROCEDURE WILL VERIFY THE
ABILITY OF THE RLM TO MOVE THE SOURCE CODE CURRENTLY
RESIDENT TO THE DESTINATION BUFFER SPECIFIED. IF THE
ADDRESS RANGE SPECIFIED ALLOWED THE ORIGINAL SOURCE
BUFFER TO OVERLAY THE DESTINATION BUFFER, THE PROGRAM
WILL HAVE BEEN WIPED OUT ON THE ORIGINAL TRANSFER.
CAUTION:
-----
ALWAYS RUN THE BASIC ECLIPSE DIAGNOSTICS FOLLOWING
PROGRAM CHECKSUM OR VERIFICATION ERRORS.

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4.7.3 INHIBIT MAP EXECUTION

LOCATION "DMA??" MAY BE ALTERED TO ANY NON-ZERO ENTRY
AND THIS WILL INHIBIT MAP MODE PROGRAM EXECUTION FOR
THE PURPOSE OF EVALUATING THE OPERATIONAL CAPABILITY OF
THE PROGRAM WITHOUT THE MAP (MNP/MMPU1) ENABLED.
"DMA??" IS LOCATION "376" OCTAL AND MUST BE SET IN NON-
MAP MODE.
CAUTION:
IT IS THE USERS RESPONSIBILITY TO RESTORE THE PROGRAM
TO ITS ORIGINAL STATE AND VERIFY THE PROPER EXECUTION .
LOCK ON FIXED RELOCATION BASE ADDRESS

LOCATION "RLW??" MAY BE ALTERED TO ANY VALUE IN THE
RANGE OF GREATER THAN 16K (I.E. 40000 OCTAL) AND 16K LESS
THAN THE CONTENTS OF "MAXLOC?". THIS WILL FIX THE LOGICAL
ADDRESS OFFSET USED DURING RELOCATION AND EXECUTION OF
THE PROGRAM, FOR THE PURPOSE OF EVALUATING THE OPERATION
CAPABILITY OF THE PROGRAM WITHOUT RANDOM RELOCATION. NOTE
HOWEVER THAT DURING MAP MODE EXECUTION THAT THE PHYSICAL
ADDRESSES WILL THEN VARY ACCORDING TO AVAILABLE PHYSICAL
STORAGE.
CAUTION:

DO NOT SELECT A VALUE THAT WILL OVERLAY THE "CAT"
"KITTEN" DTOS 1K.
"RLW??" IS LOCATION "377" OCTAL AND MUST BE SET IN NON
-MAP MODE.
FIXED RELOCATION ADDRESS = 0

LOCATION "RLW??" MAY BE SET EQUAL TO "100000" OCTAL.
I.E. BIT <0> = 1. THIS ENABLES RELOCATION XFER EXECUT-
ION TO TAKE PLACE AS ALWAYS, BUT THE PROGRAM IS ALWAYS
TRANSFERRED TO LOGICAL LOCATION "0". THIS IS ESPECIALLY
USEFUL IN SYSTEMS WHERE IN MAPPED MODE THE PROGRAM
FAILS IN RELOCATION AND A SPECIFIC AREA OF PHYSICAL
MEMORY IS SUSPECT OF BEING INSTRUCTION EXECUTION OR
DATA XFER SENSITIVE. IN MAPPED MODE THE BASIC 16K PRO-
GRAM IS REPOSITIONED UP 16K (PHYSICALLY) AFTER EVERY
THIRD EXECUTION CYCLE AND EVENTUALLY RESIDES IN THE
SUSPECTED PHYSICAL AREA WHILE THE PROGRAM CODE BASIC-
ALLY REFLECTS THE PROGRAM LISTING.
CAUTION

IT IS THE USERS RESPONSIBILITY TO RESTORE THE PROGRAM
TO ITS ORIGINAL STATE AND VERIFY PROPER EXECUTION.
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4.7.4 INHIBIT ITERATION(S) CONTROL

WHEN PROGRAM EXECUTION IS STARTED AT LOC. 176 OCTAL THE
ITERATION CONTROL FLAG IS COMPLETED. I.E. NORMALLY THE
PROGRAM WILL EXECUTE WITH ITERATIONS FOLLOWING FIRST PASS
EXECUTION (WITHOUT ERRORS). WHEN STARTED AT LOC. 176
OCTAL THE CONTROL ENTRY IS COMPLETED AND THE FIRST TIME THAT
THE PROGRAM IS STARTED AT THAT LOCATION ITERATIONS WILL BE
SUPPRESSED IN ANY SUCCESSIVE PASSES AS WELL. NOTE THAT IF
THE USER WISHES TO RETURN TO THE NORMAL MODE OF OPERATION HE
JUST STARTS AT LOC. 176 OCTAL AGAIN.
4.7.7 RESTRICTION

THE PASS COUNT ENTRY IS NOT ADVANCED IF EITHER ITERATIONS,
MAPPED EXECUTION OR RELOCATION CONTROL ARE INVOKED.
I.E. END OF PASS WILL BE SIGNIFIED BY THE FOLLOWING OUTPUT:
PASS = 0
PASS = 0
ETC.
THIS IS TO ASSURE THAT THE USER WILL KNOW THAT NORMAL
PROGRAM EXECUTION HAS BEEN SUSPENDED.
4.8 NEW FEATURES

4.8.1 QUICK VERIFY EXECUTION

FOR LARGE S/230 OR C/330 (256-K MEMORY) SYSTEMS A
METHOD FOR QUICK VERIFICATION OF SYSTEMS INTEGRITY
HAS BEEN ADDED. IT'S PRIMARY INTENDED USE IS FOR THE
REDUCTION OF EXECUTION TIME FOLLOWING CORRECTIVE MAIN-
TENANCE. IT MAY ALSO BE USED AS A QUICK METHOD OF USER
VERIFICATION OF SYSTEMS CAPABILITY PRIOR TO LONG TERM
RELIABILITY TESTING. (I.E. OVER NIGHT RUNNALL OR CRUNALL
EXECUTION UNDER DTOS).
CAUTION:

BE SURE TO RETURN THE SWREG SETTING TO NON-
QUICK VERIFY MODE USING THE DTOS "SMREG" COMMAND.
RESTRICTION

THIS METHOD OF OPERATION IS "NOT RECOMMENDED"
FOR FINAL SYSTEMS ACCEPTANCE, OR IN CASES WHERE FAILURES
OCCUR EITHER RANDOMLY OR INFREQUENTLY.
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:4.8.2 SELECTION OF QV
:*****
:
: QUICK VERIFICATION MODE OF OPERATION MAY BE SELECTED
: AT ANY TIME SIMPLY BY HITTING KEY "F" ON THE
: TTI DURING PROGRAM EXECUTION.
: IT MAY ALSO BE SELECTED BEFORE LOADING THE PROGRAM WHEN
: RUNNING UNDER DTOS BY FIRST UTILIZING THE SWREG COMMAND
: AND INSERTING "1(CR)". WHEN SELECTED IN THIS MANNER,
: THE QV OPTION IS ENABLED FOR ANY FUTURE DTOS PROGRAMS.
: THEREFORE, IF IT IS NOT DESIRED ON OTHER PROGRAMS,
: THE SWREG MUST BE CLEARED BY USING THE SWREG COMMAND
: AND RESPONDING WITH "0(CR)".
:
:4.8.3 ERROR CODE ID
:*****
:
: A METHOD OF RELATING TO PROBABLE CAUSE OF FAILURES HAS
: BEEN ADDED TO THE ECLIPSE EXERCISER PROGRAMS THAT USE
: THE "EPACK" BASIC ECLIPSE EXERCISER UTILITY PACKAGE.
: TWO VALUES OF ERROR CODE CAN BE GENERATED FOR EACH HARD
: FAILURE, ONCE THEY HAVE BEEN RECORDED THE HISTORY OF ALL
: PAST FAILURES CAN BE REFERENCED TO AFFECT REPAIR.
:
:4.8.4 PROBABLE FAULT ID SELECTION
:*****
:
: WHEN QUICK VERIFY MODE IS EXECUTED ABOVE PROBABLE FAULT
: (ERROR CODE ID) SELECTION IS ENABLED AND A COURSE ID
: VALUE IS GENERATED WHEN AN ERROR IS ENCOUNTERED, IT CAN
: BE IN THE RANGE OF 000 THRU 100 OCTAL.
:
: WHEN DTOS "LOAD" MODE PROGRAM EXECUTION IS EXECUTED AND
: SW "1" IS SELECTED FOR SWITCH REGISTER SELECTION A SECOND OR
: FINE ID VALUE IS GENERATED WHEN ERRORS ARE ENCOUNTERED. IT
: CAN BE IN THE RANGE OF 000000 THRU 177776 OCTAL.
:
: DURING MONITOR MODE EXECUTION UNDER DTOS ANOTHER UNIQUE
: PROBABLE FAULT (ERROR CODE ID) IS GENERATED AND IT'S
: VALUE IS 17777 OCTAL, THIS ENTRY SIGNIFIES THAT A FATAL
: ERROR HAS BEEN ENCOUNTERED DURING PROGRAM EXECUTION.
:
: THE PROBABLE FAULT (ERROR CODE ID) IS APPENDED TO ANY OF
: THE ADDITIONAL ERROR INFORMATION AT COMPLETION OF THE FIRST
: PASS OF PROGRAM EXECUTION, UNDER CONTROL OF THE SWITCH
: REGISTER SELECTION.
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:4.9 NEW TRACE CAPABILITY
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:
: THE USER MAY TRACE PROGRAM EXECUTION OF ANY "SINGLE
: MEMORY REFERENCE INSTRUCTION" BY REPLACING IT WITH A
: TRACE CALL "XOP" INSTRUCTION, I.E. "104039" (OCTAL).
: THIS WILL RESULT IN THE FOLLOWING TYPICAL DISPLAY OUTPUT
: AT "XOP" TRACE CALL EXECUTION:
:
: TRACE: "N"
:
:4.9.1
: *TEST# CRY AC0 AC1 AC2 AC3 LISTING LOGICAL
: *XXX X XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
:
: NOTE:
: SEE 4.9.2 CAUTION BELOW, ALSO NOTE THAT DISPLAY
: TRACE: "N" (WHERE "N") SIGNIFIES THE OCTAL NUMBER OF
: CURRENT TRACE "XOP" CALL BEING EXECUTED. THIS VALUE
: WILL NORMALLY INCREMENT BY ONE EACH TIME EXCEPT WHEN
: "TCM?" HAS BEEN MODIFIED BY THE USER. SEE 4.9.5 BELOW.
: 4.5.1 MPMU/MMPUI AUTO MAP DUMP DISPLAY AND 4.4.9 BYTE FORMAT
: DISPLAY WILL ACCOMPANY THE REQUESTED TRACE INFORMATION IF
: APPLICABLE AT THE TIME OF EXECUTION. THE USER MAY REPLACE
: LOCATION "DEB?G:" SYMBOLIC WITH THE INSTRUCTION THAT WOULD
: HAVE BEEN EXECUTED.
:
:4.9.2 CAUTION
:
: ADDRESSING MODES THAT REQUIRE RELATIVE MEMORY REFERENCES
: BY THE INSTRUCTION REPLACED MUST BE JUDICIOUSLY SELECTED
: BY THE USER.
:
:4.9.3 ADDITIONAL TRACE CAPABILITY
:*****
:
: EXTENDED INSTRUCTION EXECUTION
:
: THE MORE ADVANCED USER MAY MODIFY LOCATIONS "DEB?G:"
: THRU "DEB?G+2" TO ALLOW THE EXECUTION OF EXTENDED INST-
: RUTIONS, DURING TRACE EXECUTION. SEE CAUTION 4.9.2
: ABOVE.
:
:4.9.5 "N'TH" OCCURANCE EXECUTION OF TRACE CALLS
:*****
:
: THE MORE ADVANCED USER MAY MODIFY LOCATION "TCM?T:"
: SYMBOLIC, TO ENABLE SELECTIVE "XOP" TRACE CALL ON
: THE "N'TH" OCCURANCE OF THE "XOP". WHERE "N'TH" IS A
: POSITIVE OCTAL NUMBER OF "XOP" TRACE INSTRUCTIONS
: BETWEEN INFORMATION THAT IS DISPLAYED.
:
: NOTE:
: THE FIRST OCCURANCE OF THE "XOP" TRACE CALL WILL ALWAYS
: RESULT IN INFORMATION DISPLAY EXECUTION.

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RESTRICTIONS

:5. THIS REVISION OF ECOM1 REQUIRES ECU2 REV. 04 MICRO
:5.1 CODE ECO, OR LATER.
: I.E. ECLIPSE EXTENDED INSTRUCTION SET MICRO PROGRAM
: BINARY FILE "76-000005-04".
:5.2 THIS PROGRAM REQUIRES AT LEAST 16K OF MEMORY TO RUN
: UNDER DTOS !!!

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0020 .MAIN

**00001 TOTAL ERRORS, 00000 PASS 1 ERRORS

0021 .MAIN
ENVNT 0000000 10/33
EIPKD 001044 MC 5/21
SMPD 005717 MC 7/01