DataGeneral

TECHNICAL STATEMENT

TEXT LISTING

068-000322-06

PROGRAM

EXERCISER FOR COMMERCIAL
ECLIPSE: PART 2

TEXT TAPE

097-000322-06

ABSTRACT

'ECOM2' 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          12:52:20 05/17/79
01
02
03
04
05
06
07              ;*****************************************************************
08              ;
09              ; NAME: ECOM2.TX                          PART NUMBER: 097-000322
10              ;
11              ;
12              ; DESCRIPTION: EXERCISER FOR COMMERCIAL ECLIPSE: PART 2
13              ;
14              ;
15              ; REVISION HISTORY:
16              ;
17              ;       REV.            DATE
18              ;
19              ;       00              08/08/75
20              ;       01              02/20/76
21              ;       02              08/06/76
22              ;       03              12/31/76
23              ;       04              09/09/77
24              ;       05              09/15/78
25              ;       06              11/17/78
26              ;
27              ; COPYRIGHT (C) DATA GENERAL CORPORATION, 1975, 1976, 1977, 1978
28              ; ALL RIGHTS RESERVED.
29              ;*****************************************************************
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10002 .MAIN
01              ;
02              ;ECOM2 - CONTINUATION OF ECOM1
03              ;
04              ;PART 2 OF EXERCISER FOR COMMERCIAL ECLIPSE
05              ;
06              ;: 0.0  REVISION HISTORY
07              ;:
08              ;:      REV. 05 WAS CREATED TO
09              ;:      IMPLEMENT THE STANDARDS PROVIDED
10              ;:      BY DLIB.
11              ;:      THIS HAS NOT CHANGED THE PHILOSOPHY
12              ;:      OR TEST PROCEDURES IN THIS PROGRAM.
13              ;:      ALL UNNECESSARY "IORST" HAVE BEEN
14              ;:      DELETED FROM THIS FILE.
15              ;:
16              ;:      REV. 06 WAS CREATED TO CORRECT THE MMPU1
17              ;:      WRAP AROUND SIZING PROBLEM (DTR # 248).
```

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!0003 .MAIN
01                ;
02
03                ;EXERCISER FOR  COMMERCIAL ECLIPSE: PART 2
04
05                ;
06                ;1.     PROGRAM NAME
07                ;       ------------
08                ;
09                ;       ECOM2
10                ;
11                ;2.     GENERAL DESCRIPTION
12                ;       -------------------
13                ;
14                ;2.1    'ECOM2' IS AN EXERCISER PROGRAM DEVELOPED FOR CHECKING
15                ;       OUT THE CENTRAL PROCESSOR INSTRUCTIONS OF COMMERCIAL
16                ;       ECLIPSE AND FOR TESTING ITS RELIABILITY. IT IS DESIGNED
17                ;       TO RUN IN BOTH UNMAPPED AND MAPPED MODE IF THE SYSTEM
18                ;       IS A MAPPED SYSTEM.
19                ;       'ECOM2' EXERCISES COMMERCIAL INSTRUCTIONS OF THE ECLIPSE
20                ;       EXTENSIVELY AND ASSURES OF ITS RELIABLE OPERATION.
21                ;       IT MUST BE RUN WITH 'CAT' AND 'KITTEN' PROGRAM
22                ;       IN THE BACKGROUND TO ASSURE OF THE PROPER OPERATION OF
23                ;       THESE COMMERCIAL INSTRUCTIONS IN CASE OF DCH REQUESTS
24                ;       AND/OR INTERRUPTS.
25                ;
26                ;2.2    THE INSTRUCTIONS EXERCISED ARE AS FOLLOWS:
27                ;
28                ;       LSN AND FINT
29                ;
30                ;
31                ;       CAUTION !!! - AT LEAST 2 PASSES OF 'ECOM2' MUST BE RUN
32                ;       WITH 'KITTEN' AND 'CAT' TO ASSURE THE USER OF THE PROPER
33                ;       FUNCTIONING OF ECLIPSE SYSTEM.
34                ;
```

```
 0004 .MAIN
01                ;3.     MACHINE REQUIREMENTS
02                ;       --------------------
03                ;
04                ;3.1    ECLIPSE PROCESSOR (COMMERCIAL)
05                ;*      I.E. EXTENDED INSTRUCTION SET MICRO PROGRAM
06                ;*      BINARY FILE "76-000005-04" REV. 04 OR LATER.
07                ;3.2    16.K READ-WRITE MEMORY
08                ;3.3    CONSOLE EQUIPMENT
09                ;*
10                ;*3.4   RESTRICTIONS
11                ;*      ------------
12                ;*      ECOM2 REQUIRES AT LEAST 40.K WORDS OF MEMORY
13                ;*      STORAGE TO RUN MAPPED WITH "CAT" OR "KITTEN".
14                ;*      ECOM2 REQUIRES A MINIMUM OF 32.K WORDS OF MEMORY
15                ;*      TO RUN MAPPED.
16
17
18                      E?PKD 4
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0005 .MAIN
01              ;4.0    ADDRESS LOCATIONS 200 TO 216 IN PAGE 0 ARE FIXED
02              ;       THE USE OF THESE LOCATIONS ARE AS FOLLOWS:
03              ;
04              ;       LOC 200 IS THE STARTING ADDRESS OF THIS PROGRAM.
05              ;       LOC 201 KEEPS TRACK OF RELOCATED ADDR OF THE TEST
06              ;               CURRENTLY RUNNING AND IS USEFUL FOR DEBUG WHEN
07              ;               LOOPING OCCURS IN THE PROGRAM.
08              ;       LOC 202 CONTAINS THE STARTING ADDR OF THE PROGRAM.
09              ;       LOC 203 SHOWS NUMBER OF PASSES RUN THROUGH THIS
10              ;               PROGRAM.
11              ;       LOC 204 SHOWS INTERNAL PASS COUNT WHICH IS FIXED BY
12              ;               LOCATION 205.
13              ;       LOC 207 IS THE CURRENT PASS COUNT FOR INDIVIDUAL
14              ;               TEST AND SHOWS THE PASSES REMAINING THRU THIS
15              ;               TEST AT A PARTICULAR TIME.
16              ;       LOC 214 IS THE BASE OFFSET USED TO CALCULATE THE
17              ;*              CURRENT  RELOCATION OF THE PROGRAM.
18              ;       LOC 215 KEEPS TRACK OF THE LISTING ADDR OF THE TEST
19              ;               CURRENTLY RUNNING AND IS USEFUL FOR DEBUG WHEN
20              ;               LOOPING OCCURS IN THE PROGRAM.
21              ;*      LOC 216 KEEPS TRACK OF THE CURRENT TEST# (TALLY)
22              ;*              RUNNING AND IS USEFUL FOR DEBUG WHEN RUNNING
23              ;*              UNDER A NORMAL PROGRAM EXECUTION.
24              ;*
25              ;4.0.1  NOTE:
26              ;*      -----
27              ;*      LOCATION 216 (TST?N) IS ADVANCED EACH TIME THAT THE
28              ;*      "SETUP" MACRO IS EXECUTED.FOR STAND ALONE SUBTEST
29              ;*      EXECUTION, THE SIGNIFICANCE OF THIS ENTRY IS ONLY
30              ;*      THAT OF A TALLY OF SUBTESTS ENTERED.
31
32              ;
33              ;4.1    THE FIRST PASS THRU THE PROGRAM WILL RUN VERY FAST
34              ;*      (I.E. WITHOUT SUBTEST ITERATIONS). ADDITIONAL PASSES
35              ;*      WILL RUN SLOWER AS EACH SUBTEST IS RUN ACCORDING TO IT'S
36              ;*      ITERATION VALUE SUPPLIED IN IT'S "SETUP" CALL, THIS WILL
37              ;*      ALLOW ALL RANDOM NUMBER COMBINATIONS OF ARGUMENTS AND OF
38              ;*      BUFFER ADDRESSES TO BE TESTED.
39              ;
40              ;       CAUTION !!! - AT LEAST 2 PASSES OF THE PROGRAM MUST
41              ;       BE RUN WITH 'KITTEN' AND 'CAT' TO ASSURE THE USER OF
42              ;       THE PROPER FUNCTIONING OF THE ECLIPSE SYSTEM.
43              .EJEC
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```
0006 .MAIN
01                      S?MPD   4.2
02
03
04              ;4.2.   SWITCH SETTINGS
05              ;
06              ;       LOCATION "SWREG" IS USED TO SELECT THE PROGRAM OPTIONS
07              ;       (NOT SYSTEM CONFIGURATION). WHILE RUNNING UNDER DTOS,
08              ;       THIS LOCATION WILL BE LOADED BY THE MONITOR.
09              ;       HOWEVER UNDER STAND ALONE AND PROGRAM LOAD MODES THIS
10              ;       LOCATION WILL BE SET ACCORDING TO THE ANSWERS SUPPLIED
11              ;       BY THE OPERATOR. IN ANY CASE THE OPTIONS CAN BE CHANGED
12              ;       OR VERIFIED BY USING ONE OF THE COMMANDS GIVEN IN SEC.
13              ;       4.2.2
14              ;
15              ;
16              ;4.2.1  SWITCH OPTIONS
17              ;       DIFFERENT BITS AND THEIR INTERPRETATION AT LOCATION
18              ;       "SWREG" IS AS FOLLOWS:
19              ;
20              ;       BIT     OCTAL   BINARY  INERPRETATION
21              ;               VALUE   VALUE
22              ;
23              ;       1               0       LOOP ON ERROR
24              ;               40000   1       SKIP LOOPING ON ERROR
25              ;
26              ;       2               0       PRINT TO CONSOLE
27              ;               20000   1       ABORT PRINT OUT TO CONSOLE
28              ;
29              ;       3               0       DO NOT PRINT % FAILURE
30              ;               10000   1       PRINT % FAILURE
31              ;
32              ;       4               0       ALLOW END OF PASS PRINT OUT
33              ;               04000   1       SUPPRESS END OF PASS PRINT OUT
34              ;
35              ;       5               0       DO NOT PRINT ON THE LINE PRINTER
36              ;               02000   1       PRINT ON THE LINE PRINTER
37              ;
38              ;       6               0       DO NOT HALT ON ERROR
39              ;               01000   1       HALT ON ERROR
40              ;
41              ;       7               0       DO NOT PRINT SUMMARY AND/OR
42              ;                               PASSING OF EACH SUBTEST
43              ;               00400   1       PRINT SUMMARY AND/OR
44              ;                               PASSING OF EACH SUBTEST
45              ;
46              ;       8               0       PRINT ONLY THE FIRST ERROR
47              ;               00200   1       PRINT EVERY ERROR
48
49              ;4.2.2  SWITCH COMMANDS
50              ;       ONCE THE PROGRAM STARTS EXECUTING THE STATE OF ANY OF
51              ;       THE BITS CAN BE CHANGED BY HITTING KEYS 1-9, A-F. THE
52              ;       PROGRAM WILL CONTINUE RUNNING AFTER UPDATING THE OPTIONS.
53              ;       EACH KEY WILL COMPLEMENT THE STATE OF THE BIT AFFILIAT-
54              ;       ED WITH IT, THUS BIT 4 CAN BE ALTERED BY HITTING KEY 4.
55              ;       SETTING OF ANY BIT OF LOCATION "SWREG" WILL SET BIT 0.
56              ;       (DEFAULT MODE IS DEFINED AS ALL BITS OF SWREG SET TO 0)
57              ;       THE PROGRAM CAN BE LOCKED INTO SWITCH MODIFICATION MODE
58              ;       BY TYPING A 0, IN WHICH CASE MORE THAN ONE BIT CAN BE
59              ;       CHANGED BEFORE  CONTROL IS ALLOWED TO RETURN TO THE
60              ;       MAIN PROGRAM.
```

```
0007 .MAIN
01              ;
02              ;4.2.2.1        OTHER COMMANDS
03              ;
04              ;       "CR"    A "RETURN" CAN BE TYPED TO CONTINUE THE PROGRAM
05              ;               AFTER ITS LOCKED IN A SWITCH MODIFICATION MODE
06              ;
07              ;       ^D      THIS COMMAND GIVEN AT ANY TIME WILL RESET "SWREG"
08              ;               TO DEFAULT MODE AND RESTART THE PROGRAM.
09              ;
10              ;       ^R      THIS COMMAND GIVEN AT ANY TIME WILL RESTART THE
11              ;               PROGRAM. SWITCHES ARE LEFT WITH THE VALUES THEY
12              ;               HAD BEFORE THE COMMAND WAS ISSUED.
13              ;
14              ;       ^U      THIS COMMAND GIVEN AT ANY TIME WILL CAUSE THE
15              ;               PROGRAM CONTROL TO GO TO ODT (NOTE: THIS IS AN
16              ;               OPTIONAL COMMAND AND IS AVAILBLE ONLY IF
17              ;               ODTPK IS PRESENT)
18              ;
19              ;       M       THIS COMMAND GIVEN AT ANY TIME WILL PRINT THE
20              ;               CURRENT OPERATING MODES.
21              ;
22
23              ;
24
25              ;:      BIT     OCTAL   BINARY  INTERPRETATION
26              ;:              VALUE   VALUE
27              ;:
28              ;:      C       00010   0       DISABLE MMPU/MMPU1 MAP DUMP
29              ;:                      1       ENABLE MMPU/MMPU1 MAP DUMP
30              ;:
31              ;:      F       00001   0       DO NOT ENABLE QUICK VERIFY OPTION
32              ;:                      1       ENABLE QUICK VERIFY (QV) MODE
33              ;:                              EXECUTION
34              ;:
35              ;
36              ;4.2.2  STARTING ADDRESS = 200 IN STAND ALONE MODE.
37              ;       IF 'CAT' OR 'KITTEN' WAS LOADED FROM DTOS AND RESTART
38              ;       WAS NEEDED , THEN USE AS FOLLOWS:
39              ;       STARTING ADDR = 170 (FOR START WITH NO 'CAT')
40              ;       STARTING ADDR = 171 (FOR START WITH 'CAT')
41              ;
42              ;4.2.3  MONITOR LOCATION 203 TO CHECK THE CURRENT PASS COUNT.
43              ;
44              ;4.2.4  MONITOR LOCATION X6000 TO MAKE SURE THAT 'CAT' OR
45              ;       'KITTEN' IS RUNNING , IN CASES WHERE THE PROGRAM IS
46              ;       STARTED WITH 'CAT' OR 'KITTEN'. ( X = THE NUMBER
47              ;       OF THE HIGHEST MEMORY MODULE IN THE SYSTEM AND IS
48              ;       1 THR' 7) MODULO 8.K .
49
50              ;       LOCATION X6000 MUST HAVE PATTERN CHANGING FROM ZEROES
51              ;       TO ALL ONES TO INC/SWAP PATTERN.
52              .EJEC
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0008 .MAIN
01              ;4.3    OPERATING PROCEDURE/OPERATOR INPUT
02              ;       ---------------------------------
03              ;
04              ;4.3.1  LOAD THE PROGRAM VIA THE BINARY LOADER OR INSERT A
05              ;       PRELOADED MEMORY MODULE.
06              ;4.3.2  SET SWITCHES TO 200.
07              ;4.3.3  PRESS START.
08              ;4.3.4  THE PROGRAM WILL RUN UNTIL MANUALLY STOPPED. IN CASE
09              ;       OF MALFUNCTIONING, THE PROGRAM WILL PRINT ERROR
10              ;       MESSAGE AND TAKE APPROPRIATE ACTION AS PER THE SW
11              ;       SETTINGS.
12              ;
13
14              ;4.4    PROGRAM OUTPUT/ERROR DESCRIPTION
15              ;       -------------------------------
16              ;
17              ;4.4.1  FOR ANY ERRORS DETECTED, THE PROGRAM WILL PRINT ERROR
18              ;       REPORT OR % FAILURES DEPENDING UPON THE SW SETTINGS.
19              ;
20              ;4.4.2  FOR ALL ERRORS, APPROPRIATE PROGRAM INFORMATION WILL BE
21              ;       PRINTED WHICH CONSISTS OF TEST#,ALL ACCUMULATORS,CARRY,
22              ;       LISTING PC OF ERR,LOGICAL RELOCATED PC OF ERR, PHYSICAL
23              ;*      PC (OCTAL) WHERE ERROR OCCURED AND THEN THE PROGRAM
24              ;       WILL GO INTO SCOPE LOOP. % FAILURE RATE MAY BE PRINTED
25              ;       AT THIS TIME BY USING THE PROPER SWITCHES.
26              ;       IF THE ERROR IS DETECTED IN MAPPED ENVIRONMENT, ADDITIONAL
27              ;       DATA ABOUT CURRENT MAP WILL BE PRINTED SHOWING THE BEGIN
28              ;       AND END OF THE 32K MODULE THAT LOGICAL 32K IS MAPPED
29              ;       TO. IF THE PROGRAM IS LOADED FROM 'DTOS', IT WILL ALSO
30              ;       PRINT 'DTOS1K' SHOWING THAT 'DTOS1K' IS NOT MAPPED AND
31              ;       MUST BE SKIPPED OVER TO DETERMINE THE PHYSICAL BLOCK OF
32              ;       FAILING ADDR IF IT HAPPENS TO BE ABOVE 'DTOS1K'.
33              ;       THE CONTENTS OF THE MMPU/MMPU1 MAP WILL BE DUMPED TO
34              ;       THE SELECTED DISPLAY DEVICE IF SWT "C" IS = 1 AND SWT "0"
35              ;*      IS = 1.
36              ;
37              ;4.4.3  THE PROGRAM WILL LOOP IN THE TEST THAT IS FAILING IF
38              ;       SW"1" IS 0 AND SWT "15" OF SWREG = 0. SEE 4.8.1 BELOW !!!
39              ;4.4.4  THE PRINTING OF ERROR REPORT CAN BE ABORTED BY SETTING
40              ;       SW"2" TO 1 AND/OR SW"5" TO 0.
41              ;4.4.5  IF LOOPING OCCURS IN THE PROGRAM,SELECT MONITOR MODE
42              ;       AND CHECK LOCATION 216 TO FIND OUT THE TEST THAT WAS
43              ;       RUNNING BEFORE THE LOOPING OCCURRED.
44              ;*      LOCATION 215 WILL HAVE THE LISTING ADDRESS AND LOCATION
45              ;*      201 WILL HAVE THE RELOCATED ADDRESS OF THE FAILING TEST.
46              ;
47              ;4.4.6  CAUTION
48              ;       -------
49              ;       ERRORS AT "XFERR" AND "XFERM" SIGNIFY THAT AN
50              ;       ERROR WAS DETECTED IN BASIC "BAM" (XFERR)
51              ;       PROGRAM RELOCATION OR "BLM" MAP MODE (XFERM)
52              ;       PROGRAM RELOCATION. IF EITHER OCCUR, IT IS
53              ;       HIGHLY PROBABLE THAT THE PROGRAM SEGMENT
54              ;       THAT WAS TRANSFERED IS NOT CORRECT, AND THE
55              ;       USER SHOULD RUN THE BASIC ECLIPSE DIAGNOSTICS!!!
56              .EJEC
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0009 .MAIN
01              ;4.4.7  FATAL ERRORS
02              ;*      ------------
03              ;       UNPREDICTABLE ERRORS SUCH AS STACK OVER/
04              ;*      UNDER FLOW, MAPPED PROTECTION FAULTS, ERCC PROTECTION
05              ;*      FAULTS AND  FALSE LOCATION EXECUTION LINKAGE AS WELL AS
06              ;*      "XFERR" AND "XFERM" RELOCATION CHECK SUM ERROR AND WORD
07              ;*      TRANSFER VERIFICATION ERRORS WILL RESULT IN PROGRAM HALT
08              ;*      EXECUTION WHEN ENCOUNTERED IN DTOS "LOAD MODE" .THESE
09              ;*      ERRORS ARE ALL CONSIDERED UNRECOVERABLE AND THE USER IS
10              ;*      ADVISED TO RUN THE BASIC ECLIPSE DIAGNOSTICS. IF THESE
11              ;*      TYPE OF ERRORS ARE ENCOUNTERED DURING NON-LOAD MODE OF
12              ;*      EXECUTION UNDER THE DTOS MONITOR, THE PROGRAM WILL THEN
13              ;*      ABORT FURTHER EXECUTION AND DISPLAY THE FOLLOWING
14              ;*      OUTPUT BELOW:
15              ;*
16              ;*
17              ;*
18              ;*
19              ;*
20              ;4.4.8  MONITOR MODE EXECUTION FATAL ERROR DISPLAY
21              ;*      ------------------------------------------
22              ;*
23              ;*              (TYPICALLY)
24              ;*
25              ;*              PROGRAM ABORTING
26              ;*LOC: OF   LOGICAL PHYSICAL TEST#
27              ;*FATAL PC = 000021 0000021  101
28              ;*ERROR ID = 177777
29              ;*
30              ;*
31              ;*      SEE 4.8.3 BELOW FOR ERROR CODE ID
32              ;*
  U     000000 **       .IFN    (ENVNT&4)
34              ;4.4.9  BYTE FORMAT ERROR DISPLAY
35              ;       ------------------------
36              ;
37              ;
38              ;ERROR  DEST    SOURCE  DEST    SOURCE  SOURCE  BYTE    DEST    BYTE
39              ;BYTE   BYTE    COUNT   BYTE    BYTE    WORD    RIGHT   WORD    RIGHT
40              ;FORMAT COUNT   CODE    ADDR    ADDR    ADDR    /LEFT   ADDR    /LEFT
41              ;(VALUES)       (AC0)   (AC1)   (AC2)   (AC3)
42              ;INITIAL:       (DLONG) (SLONG) (DEST)  (SORS)  (SORS/2)BIT<15> (DEST'?)
43              ;EXPECTED:      (ENAZ0) (ENAZ1) (ENAZ2) (ENAZ3)(ENAZ3/2)BIT<15> (ENAZ2/2
44              ;
45              ;SOURCE BYTE
46              ;EXPECTED = @(SORS)
47              ;
48              ;DEST   BYTE
49              ;EXPECTED = @(DEST)
50              ;:
51              ;:CAUTION:
52              ;:
53              ;:      THE (SYMBOLIC) LOCATIONS ABOVE, WHEN USED, ARE VALID
54              ;:      RELATIVE INFORMATION ON BYTE ERROR PRINTOUT. IN SOME
55              ;:      CASES, WHERE SUBSTITUTE LOCATIONS ARE USED, THIS
56              ;:      INFORMATION WILL BE MISLEADING. IN THESE CASES, ONLY
57              ;:      THE CONTENTS OF THE ACCUMULATORS BEING TESTED IS
58              ;:      SIGNIFICANT.
59              ;:
60              ;:4.4.10 WHEN SWITCH 6 OF THE SWITCH REGISTER IS SET =1,
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```
0010 .MAIN
01              ;:      THE PROGRAM WILL HALT ON ERROR.  TO CONTINUE:
02              ;:       1.  CLEAR SWITCH 6 VIA THE CONSOLE
03              ;:       2.  HIT CONTINUE ON THE FRONT PANEL
04              ;:      THE PROGRAM WILL THEN CONTINUE RUNNING WITH THE NEXT
05              ;:      TEST. IT WILL NOT HALT ON ERROR UNLESS SWITCH 6 IS
06              ;:      AGAIN SET VIA THE CONSOLE.
07              .EJEC
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0011 .MAIN
01              ;4.5    NEW MMPU/MMPU1 MAP DUMP UTILITY
02              ;
03              ;4.5.1  AUTO MAP DUMP DISPLAY
04              ;       FOLLOWING ERROR DETECTION OR TRACE REQUEST EXECUTION
05              ;       I.E.SEE 4.9 BELOW. THE CURRENT CONTENTS OF THE MMPU/
06              ;       MMPU1 WILL BE DISPLAYED IF EXECUTION IS DURING THE
07              ;       MAP MODE, AND SWITCH "C" = 1.
08              ;       ADDITIONAL MAP DUMP DISPLAYS WILL OCCUR ONLY WHEN THE
09              ;       CONTENTS OF THE MMPU/MMPU1 MAP HAVE BEEN MODIFIED.
10              ;
11              ;4.5.2  MANUAL MAP DUMP DISPLAY (USER) REQUESTED
12              ;       IF THE USER SHOULD NEED TO DISPLAY THE CONTENTS OF
13              ;       THE MMPU/MMPU1, HE MAY DO SO BY HALTING THE PROGRAM
14              ;       AND START AGAIN AT LOC. 220 (OCTAL). THE PROGRAM HALTS
15              ;       FOLLOWING THE DISPLAY AWAITING THE USER. IF THE USER
16              ;       DEPRESSES CONTINUE THE PROGRAM WILL EXECUTE THE MMPU/
17              ;       MMPU1 MAP DUMP DISPLAY UTILITY AGAIN.
18              ;       NOTE:
19              ;       IT IS THE USERS RESPONSIBILITY TO RESTART THE PROG-
20              ;       RAM FOLLOWING MANUAL MODE MMPU/MMPU1 MAP DUMP DISPLAY
21              ;       EXECUTION REQUESTS.
22              ;       SWITCH "C" MUST = 1,I.E. BE SET TO ENABLE MAP MMPU/MMPU1
23              ;       DUMP DISPLAY. ALSO SEE SWT"2" AND SWT"5" CONTROL ABOVE.
24              ;
25              ;4.6    PROGRAM DESCRIPTION/THEORY OF OPERATION
26              ;
27              ;4.6.1  MOST TESTS ARE MODULAR, SO THE PROGRAM CAN
28              ;       BE STARTED FROM ANY TEST WITHOUT CAUSING ANY
29              ;       INITIALIZATION ERRORS. SEE NOTE 4.0.1 ABOVE !!!
30
31              ;4.6.2  WHEN THE PROGRAM IS STARTED FROM CONSOLE OR VIA 'DTOS',
32              ;       IT WILL SCAN THE  SYSTEM AND WILL PRINT THE SIZE OF THE
33              ;       MEMORY.  THE 1ST PASS WILL RUN VERY FAST AS EACH TEST
34              ;       IS RUN ONLY ONCE IN THE FIRST PASS. ALL OTHER PASSES
35              ;       WILL TAKE MORE TIME AS EACH TEST IS RUN ACCORDING TO THE
36              ;       TEST ITERATION COUNT SPECIFIED IN EACH SUBTEST.
37              ;       AFTER THE 1ST PASS,'ECOM1' IS RELOCATED IN AVAILABLE
38              ;       LOGICAL MEMORY AND THE AREAS BELOW (CALLED 'LBU?F') AND
39              ;       ABOVE (CALLED 'HBU?F')  THE RELOCATED PROGRAM ARE USED
40              ;:      AS SCRATCH BUFFER AREA. 1 RELOCATED CYCLE IS RUN
41              ;:      FOR EACH LOGICAL 32K MODULE.
42              ;:      ON MAPPED ECLIPSE, 2 CYCLES ARE RUN UNMAPPED AS DESCRIBED
43              ;:      ABOVE.THEN THE FIRST 32K ARE MAPPED TO ITSELF AND 2 MORE
44              ;       CYCLES ARE RUN OUT OF WHICH THE 1ST ONE IS NON-RELOCATED.
45              ;:      THEN THE PROGRAM 1ST 16K IS MOVED TO NEXT 16K AND LOGICAL
46              ;:      32K ARE MAPPED TO 32K FROM THERE ONWARDS AND 2 CYCLES
47              ;       ARE RUN.THIS CONTINUES UNTIL THERE IS AT LEAST 32K LEFT
48              ;       ABOVE THE PROGRAM. THEN THE PROGRAM WILL PRINT 'PASS XX'.
49              ;       THE ORIGINAL COPY OF THE PROG IS ALWAYS LEFT UNTOUCHED
50              ;:      IN THE 1ST 16K.
51              ;       WHEN THE PROGRAM IS LOADED FROM 'DTOS', 1K OCCUPIED BY
52              ;       'DTOS' MONITOR, CAT OR KITTEN IS ALWAYS LEFT UNTOUCHED.
53              ;       THE NUMBER OF PASSES EACH TEST IS RUN IN MAPPED MODE
54              ;       IS ADJUSTED ACCORDING TO THE SIZE OF THE TOTAL MEMORY SO
55              ;       AS TO EQUALIZE THE RUN TIME FOR DIFFERENT SIZE SYSTEMS
56              ;:
57              ;:NOTE: DUE TO THE WAY THE PROGRAM IS RUN (AS DESCRIBED
58              ;:      ABOVE) THE MAXIMUM PROGRAM SIZE ALLOWED IS 15K. THIS
59              ;:      WILL LEAVE ROOM (1K) FOR THE CAT WITHIN THE FIRST
60              ;:      32K OF THE SYSTEM WHEN THE PROGRAM IS RELOCATED.
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0012 .MAIN
01              .EJEC
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01              ;4.7    DIAGNOSTIC SUPPORT FEATURES
02              ;       ---------------------------
03              ;       DIAGNOSTIC SUPPORT FEATURES HAVE BEEN ADDED
04              ;       TO ASSIST THE USER IN IDENTIFICATION OF THE IMPACT
05              ;       OF PROGRAM RELOCATION OR THE EXECUTION IN MAP MODE.
06              ;       THE USER MUST MODIFY THE ASSOCIATED CONTROL ENTRIES
07              ;       TO ENABLE THEM, BE ADVISED,"THE USER MUST RESTORE
08              ;       THE PROGRAM TO THE ORIGINAL STATE AND VERIFY NORMAL
09              ;       EXECUTION BEFORE ASSUMING THAT THE SYSTEMS CONFIGURA-
10              ;       TION IS FUNCTIONALLY CORRECT".
11              ;
12              ;4.7.1  PROGRAM RELOCATION CHECKSUM
13              ;       --------------------------
14              ;
15              ;       PRIOR TO RELOCATION IN NONMAPPED MODE A NEW "COB" CHECK
16              ;       WORD IS GENERATED, WHICH, IS VERIFIED FOLLOWING THE BAM
17              ;       XFER EXECUTION. IF THE CHECK WORDS DO NOT COMPARE THE
18              ;       PROGRAM HALTS. DUE TO THE NATURE OF THE PROGRAM OVERLAP-
19              ;       PING ON RELOCATION AND MODIFING THE SOURCE BUFFER FROM
20              ;       WHICH IT HAS TRANSFERED THIS TYPE OF ERROR IS UNRECOVER-
21              ;       ABLE AND THE USER IS ADVISED TO RUN THE BASIC ECLIPSE
22              ;       DIAGNOSTICS.
23              ;
24              ;4.7.2  PROGRAM RELOCATION VERIFICATION
25              ;       -------------------------------
26              ;
27              ;       DURING MAPPED MODE EXECUTION THE SOURCE BUFFER AREA
28              ;       IS VERIFIED WORD FOR WORD (EXCEPT LOC. 0 THRU 17 OCTAL)
29              ;       AND IF AN ERROR IS DETECTED THE PROGRAM HALTS. THIS
30              ;       IS A FATAL CONDITION IN THAT THE PROGRAM SEGMENT THAT IS
31              ;       TO BE EXECUTED NEXT MAY BE IN ERROR.
32              ;       WITH SLIGHT MODIFICATION (I.E. THE ADDITION OF A HALT)AT
33              ;       LOCATION "MAPHLT:" THE USER MAY RESTART THE FAILING
34              ;       PROGRAM FOLLOWING A "XFERR:" HALT IN BAM ABOVE AT LOC.
35              ;       "RETRY". THE OMISSION OF THE HALT ENTRY WILL RESULT IN
36              ;       MAP MODE EXECUTION FOLLOWING THE VERIFICATION AND COULD
37              ;       MISSLEAD THE USER IF FURTHER ERRORS RESULT.
38              ;
39              ;       NOTE:
40              ;       ADDRESSES SPECIFIED ABOVE ARE IN RELOCATED MEMORY AREA
41              ;       I.E. THE PROGRAM LISTING ADDRESS PLUS THE CONTENTS OF
42              ;       "RELOC:" FOR "MAPHLT: AND RETRY:"
43              ;       ALSO NOTE THAT THE ABOVE PROCEEDURE WILL VERIFY THE
44              ;       ABILITY OF THE BLM TO MOVE THE SOURCE CODE CURRENTLY
45              ;       RESIDENT TO THE DESTINATION BUFFER SPECIFIED. IF THE
46              ;       ADDRESS RANGE SPECIFIED ALLOWED THE ORIGINAL SOURCE
47              ;       BUFFER TO OVERLAY THE DESTINATION BUFFER, THE PROGRAM
48              ;       WILL HAVE BEEN WIPED OUT ON THE ORIGINAL TRANSFER.
49              ;       CAUTION:
50              ;       --------
51              ;       ALWAYS RUN THE BASIC ECLIPSE DIAGNOSTICS FOLLOWING
52              ;       PROGRAM CHECKSUM OR VERIFICATION ERRORS.
53              .EJEC
```



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01              ;4.7.3  INHIBIT MAP EXECUTION
02              ;       ---------------------
03              ;
04              ;       LOCATION "DMA?P:" MAY BE ALTERED TO ANY NON-ZERO ENTRY
05              ;       AND THIS WILL INHIBIT MAP MODE PROGRAM EXECUTION FOR
06              ;       THE PURPOSE OF EVALUATING THE OPERATIONAL CAPABILITY OF
07              ;       THE PROGRAM WITHOUT THE MAP (MMPU/MMPU1) ENABLED.
08              ;
09              ;       "DMA?P" IS LOCATION "376" OCTAL AND MUST BE SET IN NON-
10              ;       MAP MODE.
11              ;
12              ;       CAUTION:
13              ;       --------
14              ;       IT IS THE USERS RESPONSABILITY TO RESTORE THE PROGRAM
15              ;       TO IT'S ORIGINAL STATE AND VERIFY THE PROPER EXECUTION .
16              ;
17              ;4.7.4  LOCK ON FIXED RELOCATION BASE ADDRESS
18              ;       ------------------------------------
19              ;
20              ;       LOCATION "RLW?D:" MAY BE ALTERED TO ANY VALUE IN THE
21              ;:      RANGE OF GREATER THAN 16K (I.E. 40000 OCTAL) AND 16K LESS
22              ;       THAN THE CONTENTS OF"MAXLOC:". THIS WILL FIX THE LOGICAL
23              ;       ADDRESS OFFSET USED DURING RELOCATION AND EXECUTION OF
24              ;       THE PROGRAM,FOR THE PURPOSE OF EVALUATING THE OPERATION
25              ;       CAPABILITY OF THE PROGRAM WITHOUT RANDOM RELOCATION.NOTE
26              ;       HOWEVER THAT DURING MAP MODE EXECUTION THAT THE PHYSICAL
27              ;       ADDRESSES WILL THEN VARY ACCORDING TO AVAILABLE PHYSICAL
28              ;       STORAGE.
29              ;*      CAUTION:
30              ;*      --------
31              ;*              DO NOT SELECT A VALUE THAT WILL OVERLAY THE "CAT"
32              ;*      "KITTEN" DTOS 1K.
33              ;*
34              ;
35              ;       "RLW?D" IS LOCATION "377" OCTAL AND MUST BE SET IN NON
36              ;       -MAP MODE.
37              ;
38              ;4.7.5  FIXED RELOCATION ADDRESS = 0
39              ;       ----------------------------
40              ;
41              ;       LOCATION "RLW?D:" MAY BE SET EQUAL TO "100000" OCTAL,
42              ;       I.E. BIT <0> = 1. THIS ENABLES RELOCATION XFER EXECUT-
43              ;       ION TO TAKE PLACE AS ALWAYS, BUT THE PROGRAM IS ALWAYS
44              ;       TRANSFERED TO LOGICAL LOCATION "0". THIS IS ESPECIALLY
45              ;       USEFUL IN SYSTEMS WHERE IN MAPPED MODE THE PROGRAM
46              ;       FAILS IN RELOCATION AND A SPECIFIC AREA OF PHYSICAL
47              ;       MEMORY IS SUSPECT OF BEING INSTRUCTION EXECUTION OR
48              ;:      DATA XFER SENSITIVE. IN MAPPED MODE THE BASIC 16K PRO-
49              ;:      GRAM IS REPOSITIONED UP 16K (PHYSICALLY) AFTER EVERY
50              ;       THIRD EXECUTION CYCLE AND EVENTUALLY RESIDES IN THE
51              ;       SUSPECTED PHYSICAL AREA WHILE THE PROGRAM CODE BASIC-
52              ;       ALLY REFLECTS THE PROGRAM LISTING.
53              ;
54              ;
55              ;       CAUTION
56              ;       -------
57              ;       IT IS THE USERS RESPONSIBILITY TO RESTORE THE PROGRAM
58              ;       TO ITS ORIGINAL STATE AND VERIFY PROPER EXECUTION.
59              .EJEC
```

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0015 .MAIN
01              ;4.7.6 INHIBIT ITERATION(S) CONTROL
02              ;       ~~~~~~~~~~~~~~~~~~~~~~~~~~
03              ;
04              ;     WHEN PROGRAM EXECUTION IS STARTED AT LOC. 176 OCTAL THE
05              ;     ITERATION CONTROL FLAG IS COMPLEMENTED, I.E. NORMALLY THE
06              ;     PROGRAM WILL EXECUTE WITH ITERATIONS FOLLOWING FIRST PASS
07              ;     EXECUTION (WITHOUT ERRORS). WHEN STARTED AT LOC. 176
08              ;     THE CONTROL ENTRY IS COMPLEMENTED AND THE FIRST TIME THAT
09              ;     THE PROGRAM IS STARTED AT THAT LOCATION ITERATIONS WILL BE
10              ;     SUPPRESSED IN ANY SUCESSIVE PASSES AS WELL. NOTE THAT IF
11              ;     THE USER WISHES TO RETURN TO THE NORMAL MODE OF OPERATION HE
12              ;     JUST STARTS AT LOC. 176 OCTAL AGAIN.
13              ;
14              ;4.7.7 RESTRICTION
15              ;     ~~~~~~~~~~~
16              ;     THE PASS COUNT ENTRY IS NOT ADVANCED IF EITHER ITERATIONS,
17              ;     MAPPED EXECUTION OR RELOCATION CONTROL ARE INVOKED.
18              ;     I.E. END OF PASS WILL BE SIGNIFIED BY THE FOLLOWING OUTPUT:
19              ;     PASS = 0
20              ;     PASS = 0
21              ;     PASS = 0
22              ;     ETC.
23              ;     THIS IS TO ASSURE THAT THE USER WILL KNOW THAT NORMAL
24              ;     PROGRAM EXECUTION HAS BEEN SUSPENDED.
25              ;
26              ;
27              ;4.8     NEW FEATURES
28              ;*       ~~~~~~~~~~~~
29              ;*
30              ;4.8.1  QUICK VERIFY EXECUTION
31              ;*      ~~~~~~~~~~~~~~~~~~~~~
32              ;*
33              ;*      FOR LARGE S/230 OR C/330 (256.K MEMORY) SYSTEMS A
34              ;*      METHOD FOR QUICK VERIFICATION OF SYSTEMS INTEGRITY
35              ;*      HAS BEEN ADDED. IT'S PRIMARY INTENDED USE IS FOR THE
36              ;*      REDUCTION OF EXECUTION TIME FOLLOWING CORRECTIVE MAIN-
37              ;*      TENANCE. IT MAY ALSO BE USED AS A QUICK METHOD OF USER
38              ;*      VERIFICATION OF SYSTEMS CAPABILITY PRIOR TO LONG TERM
39              ;*      RELIABILITY TESTING. (I.E. OVER NIGHT RUNALL OR CRUNALL
40              ;*      EXECUTION UNDER DTOS).
41              ;*      CAUTION:
42              ;*      ~~~~~~~
43              ;*       BE SURE TO RETURN THE SWREG SETTING TO NON-
44              ;*      QUICK VERIFY MODE USING THE DTOS "SWREG" COMMAND.
45              ;*
46              ;*      RESTRICTION
47              ;*      ~~~~~~~~~~~
48              ;*      THIS METHOD OF OPERATION IS "NOT RECOMENDED"
49              ;*      FOR FINAL SYSTEMS ACCEPTANCE, OR IN CASES WHERE FAILURES
50              ;*      OCCUR EITHER RANDOMLY OR INFREQUENTLY.
51              .EJEC
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0016 .MAIN
01              ;4.8.2 SELECTION OF QV
02              ;*      ~~~~~~~~~~~~~~
03              ;*
04              ;*      QUICK VERIFICATION MODE OF OPERATION MAY BE SELECTED
05              ;*      AT ANY TIME SIMPLY BY HITTING KEY "F" ON THE
06              ;*      TTI DURING PROGRAM EXECUTION.
07              ;*      IT MAY ALSO BE SELECTED BEFORE LOADING THE PROGRAM WHEN
08              ;*      RUNNING UNDER DTOS BY FIRST UTILIZING THE SWREG COMMAND
09              ;*      AND INSERTING "1(CR)". WHEN SELECTED IN THIS MANNER,
10              ;*      THE QV OPTION IS ENABLED FOR ANY FUTURE DTOS PROGRAMS.
11              ;*      THEREFORE, IF IT IS NOT DESIRED ON OTHER PROGRAMS,
12              ;*      THE SWREG MUST BE CLEARED BY USING THE SWREG COMMAND
13              ;*      AND RESPONDING WITH "0(CR)".
14              ;*
15              ;*
16              ;4.8.3  ERROR CODE ID
17              ;*      ~~~~~~~~~~~~
18              ;*
19              ;*      A METHOD OF RELATING TO PROBABLE CAUSE OF FAILURES HAS
20              ;*      BEEN ADDED TO THE ECLIPSE EXERCISER PROGRAMS THAT USE
21              ;*      THE "EPACK" BASIC ECLIPSE EXERCISER UTILITY PACKAGE.
22              ;*      TWO VALUES OF ERROR CODE CAN BE GENERATED FOR EACH HARD
23              ;*      FAILURE, ONCE THEY HAVE BEEN RECORDED THE HISTORY OF ALL
24              ;*      PAST FAILURES CAN BE REFERENCED TO AFFECT REPAIR.
25              ;*
26              ;4.8.4  PROBABLE FAULT ID SELECTION
27              ;*      ~~~~~~~~~~~~~~~~~~~~~~~~~~
28              ;*
29              ;*      WHEN QUICK VERIFY MODE IS EXECUTED ABOVE PROBABLE FAULT
30              ;*      (ERROR CODE ID) SELECTION IS ENABLED AND A COURSE ID
31              ;*      VALUE IS GENERATED WHEN AN ERROR IS ENCOUNTERED. IT CAN
32              ;*      BE IN THE RANGE OF 000 THRU 100 OCTAL.
33              ;*
34              ;*      WHEN DTOS "LOAD" MODE PROGRAM EXECUTION IS EXECUTED AND
35              ;*      SW "1" IS SELECTED FOR SWITCH REGISTER SELECTION A SECOND OR
36              ;*      FINE ID VALUE IS GENERATED WHEN ERRORS ARE ENCOUNTED. IT
37              ;*      CAN BE IN THE RANGE OF 000000 THRU 177776 OCTAL.
38              ;*
39              ;*      DURING MONITOR MODE EXECUTION UNDER DTOS ANOTHER UNIQUE
40              ;*      PROBABLE FAULT (ERROR CODE ID) IS GENERATED AND IT'S
41              ;*      VALUE IS 177777 OCTAL. THIS ENTRY SIGNIFIES THAT A FATAL
42              ;*      ERROR HAS BEEN ENCOUNTERED DURING PROGRAM EXECUTION.
43              ;*
44              ;*      THE PROBABLE FAULT (ERROR CODE ID) IS APPENDED TO ANY OF
45              ;*      THE ADDITIONAL ERROR INFORMATION AT COMPLETION OF THE FIRST
46              ;*      PASS OF PROGRAM EXECUTION, UNDER CONTROL OF THE SWITCH
47              ;*      REGISTER SELECTION.
48              .EJEC
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0017 .MAIN
01              ;4.9    NEW TRACE CAPABILITY
02              ;       ~~~~~~~~~~~~~~~~~~~
03              ;
04              ;       THE USER MAY TRACE PROGRAM EXECUTION OF ANY "SINGLE
05              ;       MEMORY REFERENCE INSTRUCTION" BY REPLACEING IT WITH A
06              ;       TRACE CALL "XOP" INSTRUCTION. I.E. "104030" (OCTAL).
07              ;       THIS WILL RESULT IN THE FOLLOWING TYPICAL DISPLAY OUTPUT
08              ;       AT "XOP" TRACE CALL EXECUTION:
09              ;       TRACE: "N"
10              ;
11              ;4.9.1
12              ;*TEST# CRY      AC0     AC1     AC2     AC3    LISTING LOGICAL
13              ;*XXX    X      XXXXXX  XXXXXX  XXXXXX  XXXXXX  XXXXX   XXXXX
14              ;   NOTE:
15              ;   SEE 4.9.2 CAUTION BELOW. ALSO NOTE THAT DISPLAY
16              ;   TRACE: "N" (WHERE "N") SIGNIFIES THE OCTAL NUMBER OF
17              ;   CURRENT TRACE "XOP" CALL BEING EXECUTED. THIS VALUE
18              ;   WILL NORMALLY INCREMENT BY ONE EACH TIME EXCEPT WHEN
19              ;   "TCN?T" HAS BEEN MODIFIED BY THE USER. SEE 4.9.5 BELOW.
20              ;   4.5.1 MMPU/MMPU1 AUTO MAP DUMP DISPLAY AND 4.4.9 BYTE FORMAT
21              ;   DISPLAY WILL ACCOMPANY THE REQUESTED TRACE INFORMATION IF
22              ;   APPLICABLE AT THE TIME OF EXECUTION. THE USER MAY REPLACE
23              ;   LOCATION "DEB?G:" SYMBOLIC WITH THE INSTRUCTION THAT WOULD
24              ;   HAVE BEEN EXECUTED.
25              ;4.9.2  CAUTION
26              ;       ~~~~~~~
27              ;       ADDRESSING MODES THAT REQUIRE RELATIVE MEMORY REFERENCES
28              ;       BY THE INSTRUCTION REPLACED MUST BE JUDICIOUSLY SELECTED
29              ;       BY THE USER.
30              ;
31              ;4.9.3  ADDITIONAL TRACE CAPABILITY
32              ;       ~~~~~~~~~~~~~~~~~~~~~~~~~~
33              ;4.9.4  EXTENDED INSTRUCTION EXECUTION
34              ;       ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
35              ;       THE MORE ADVANCED USER MAY MODIFY LOCATIONS "DEB?G:"
36              ;       THRU "DEB?G:+2" TO ALLOW THE EXECUTION OF EXTENDED INST-
37              ;       RUCTIONS, DURING TRACE EXECUTION. SEE CAUTION 4.9.2
38              ;       ABOVE.
39              ;
40              ;4.9.5  "N'TH" OCCURANCE EXECUTION OF TRACE CALLS
41              ;       ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
42              ;       THE MORE ADVANCED USER MAY MODIFY LOCATION "TCN?T:"
43              ;       SYMBOLIC, TO ENABLE SELECTIVE "XOP" TRACE CALL ON
44              ;       THE "N'TH" OCCURANCE OF THE "XOP". WHERE "N'TH" IS A
45              ;       POSITIVE OCTAL NUMBER OF "XOP" TRACE INSTRUCTIONS
46              ;       BETWEEN INFORMATION THAT IS DISPLAYED.
47              ;       NOTE:
48              ;       THE FIRST OCCURANCE OF THE "XOP" TRACE CALL WILL ALWAYS
49              ;       RESULT IN INFORMATION DISPLAY EXECUTION.
50
51
52
53                      .EOT
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0018 .MAIN

**00001 TOTAL ERRORS, 00000 PASS 1 ERRORS
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0019 .MAIN

```
ENVNT 000000U          9/33
E?PKD 001044   MC      4/18
S?WPU 005717   MC      6/01
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