DataGeneral

TECHNICAL STATEMENT

TEXT LISTING

068-000156-04

PROGRAM

INTER-PROCESSOR BUFFER DIAGNOSTIC

TEXT TAPE

097-000156-04

ABSTRACT

THIS PROGRAM IS USED TO ISOLATE FAULTS ON AN INTER-PROCESSOR BUFFER BOARD. IT PRINTS AN ERROR MESSAGE TO THE CONSOLE OR LINE PRINTER WHEN A FAULT IS DETECTED.

NOTICE

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 0001  .MAIN    AOS ASSEMBLER REV 03.01          12:30:23 12/06/79
01
02
03
04
05
06
07
08              ;*****************************************************************
09              ;
10              ; NAME: 4240D.TX                          PART NUMBER: 097-000156-04
11              ;
12              ;
13              ; DESCRIPTION: INTER-PROCESSOR BUFFER DIAGNOSTIC PROGRAM
14              ;
15              ;
16              ; REVISION HISTORY:
17              ;
18              ;       REV.              DATE
19              ;       00              02/15/74
20              ;       01              05/17/74
21              ;       02              12/05/75
22              ;       03              06/18/76
23              ;       04              12/04/79
24              ;
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33              ; MATERIAL A PUBLICATION.
34              ;
35              ;                   NOTICE
36              ;
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46              ; SOFTWARE MANUFACTURED IN ACCORDANCE HEREWITH.
47              ;*****************************************************************
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10002  .MAIN
01              ;1.     PROGRAM NAME:
02              ;
03              ;       4240D -  INTER-PROCESSOR BUFFER (IPB) DIAGNOSTIC PROGRAM
04              ;
05              ;
06              ;2.     TEST PROGRAM PURPOSE:
07              ;
08              ;       THIS PROGRAM IS USED TO ISOLATE FAULTS ON AN INTER-
09              ;       PROCESSOR BUFFER BOARD. IT PRINTS AN ERROR MESSAGE
10              ;       TO THE CONSOLE OR LINE PRINTER WHEN A FAULT IS DETECTED.
11              ;       THE ERROR NUMBER VALUE IN THE MESSAGE INDICATES THE
12              ;       LOCATION OF THE FAILING TEST AND IS USED TO REFERENCE
13              ;       THE TEST DESCRIPTION FOUND IN THE PROGRAM LISTING.
14              ;
15              ;
16              ;3.     MACHINE REQUIREMENTS:
17              ;
18              ;       A.) A NOVA OR ECLIPSE PROCESSOR
19              ;       B.) AT LEAST 4K OF READ/WRITE MEMORY
20              ;       C.) A CONSOLE TELETYPE OR CRT
21              ;       D.) A DISK DRIVE OR MAGNETIC TAPE UNIT
22              ;
23              ;
24              ;4.     PROGRAM TEST REQUIREMENTS:
25              ;
26              ;       A.) AN IPB BOARD
27              ;       B.) AN IPB TEST PLUG
28              ;       C.) THE 4240D TEST PROGRAM
29              ;       D.) THE 4240D PROGRAM LISTING
30              ;
31              ;
32              ;5.     PROGRAM RESTRICTIONS:
33              ;
34              ;       THIS PROGRAM MUST BE RUN WITH THE IPB PROCESSOR TO
35              ;       PROCESSOR CABLE DISCONNECTED AND THE LOOPBACK TEST
36              ;       PLUG INSTALLED. IT ONLY TESTS ONE IPB BOARD OF A
37              ;       TWO CPU LINK.
38              ;
39              ;
40              ;6.     OPERATING MODES:
41              ;
42              ;       THIS PROGRAM USES THE STANDARD DTOS SWITCH REGISTER
43              ;       (SWREG) FEATURE. THE FOLLOWING SWITCHES ARE USED BY
44              ;       THIS PROGRAM. SEE THE DTOS HANDBOOK FOR MORE INFOR-
45              ;       MATION ON THE USE OF SWITCH REGISTER.
46              ;
47              ;       A) PRINTOUT OPTIONS
48              ;
49              ;          SWITCH NO.                  FUNCTION
50              ;          (BIT SET)
51              ;
52              ;             2              INHIBIT PRINTING TO CONSOLE
53              ;
54              ;             4              INHIBIT PASS MESSAGE PRINTOUT
55              ;
56              ;             5              PRINT TO LINE PRINTER
57              ;
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10003  .MAIN
01                ;       B) EXECUTION OPTIONS
02                ;
03                ;          SWITCH NO.                   FUNCTION
04                ;          (BIT SET)
05                ;
06                ;             1                 DO NOT LOOP ON ERROR
07                ;
08                ;             3                 PRINT % FAILURE RATE
09                ;
10                ;             6                 HALT ON ERROR
11                ;
12                ;
13                ;7.     OPERATING INSTRUCTIONS:
14                ;
15                ;       A) LOADING THE PROGRAM
16                ;
17                ;       1.POWER DOWN THE SYSTEM, REMOVE THE INTER-SYSTEM CABLE,
18                ;         INSTALL THE IPB TEST PLUG AND POWER THE SYSTEM UP.
19                ;
20                ;       2.LOAD THE PROGRAM USING THE DTOS COMMAND "LOAD 4240D".
21                ;         IF IT LOADS CORRECTLY IT WILL PRINT TO THE CONSOLE
22                ;        "4240D  REV X  RUNNING.".
23                ;
24                ;
25                ;       B) RUNNING THE PROGRAM
26                ;
27                ;       3.THE PROGRAM NEXT ASKS IF THE TEST PLUG IS INSTALLED.
28                ;         IF IT IS ANSWER YES. IF IT IS NOT POWER DOWN AND
29                ;         INSTALL IT AT THIS TIME AND RELOAD THE PROGRAM.
30                ;
31                ;       4.THE PROGRAM NOW CONTINUALLY EXECUTES PASSES OF THE
32                ;         DIAGNOSTIC. THE PASS MESSAGE WILL BE PRINTED TO THE
33                ;         CONSOLE AT INTERVALS OF ABOUT 1 MINUTE.
34                ;
35                ;       5.IF A FAILURE OF THE IPB BOARD IS DETECTED THE PROGRAM
36                ;         WILL EXECUTE ONE OF THE FOLLOWING SEQUENCES DEPENDING
37                ;         ON THE SETTING OF THE SWITCH REGISTER:
38                ;
39                ;            A)PRINT THE ERROR MESSAGE AND HALT THE PROGRAM.
40                ;
41                ;            B)PRINT THE ERROR MESSAGE AND LOOP ON THE FAILING
42                ;              TEST.
43                ;
44                ;            C)PRINT THE ERROR MESSAGE AND CONTINUE TO THE NEXT
45                ;              TEST.
46                ;
47                ;       C) RESTARTING OR TERMINATING THE TEST
48                ;
49                ;       6.TO RESTART THE TEST ENTER A CONTROL D OR A CONTROL R.
50                ;         THE CONTROL D WILL CLEAR SWREG AND THEN RESTART THE
51                ;         PROGRAM. THE CONTROL R WILL RESTART THE PROGRAM LEAVING
52                ;         SWREG AS SET.
53                ;
54                ;       7.TO TERMINATE A PROGRAM ENTER A CONTROL O WHICH WILL
55                ;         ENTER THE OCTAL DEBUGGER. SEE SECTION 10.1 FOR MORE
56                ;         DETAILS ON USING THE DEBUGGER.
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10004  .MAIN
01                ;8.     PROGRAM OUTPUT/ERROR MESSAGES:
02                ;
03                ;8.1    ERROR PRINTOUTS
04                ;
05                ;       THIS MESSAGE IS PRINTED WHEN AN ERROR IS DETECTED BY
06                ;       THE PROGRAM.
07                ;
08                ;
09                ;        PROGRAM NAME:    IPBD    X
10                ;        FAILING FRU: IPB
11                ;        ********FAILURE DESCRIPTION**********
12                ;        ERROR NUMBER XX    ENCOUNTERED SUBTEST XXX
13                ;
14                ;        CRY   AC0    AC1    AC2     AC3     PC
15                ;         X   XXXXXX XXXXXX XXXXXX  XXXXXX  XXXXXX
16                ;
17                ;        LOOPING ON ERROR       (IF SWREG SWITCH 1 IS NOT SET)
18                ;              OR
19                ;        HALTED ON ERROR        (IFSWREG SWITCH 6 IS SET)
20                ;
21                ;
22                ;8.2    END PASS MESSAGE
23                ;
24                ;       THIS MESSAGE MESSAGE INDICATES THE COMPLETION OF A
25                ;       SPECIFIC NUMBER OF ITERATIONS OF THE TEST.
26                ;
27                ;          PASS= XX
28                ;
29                ;
30                ;9.     PROGRAM DESCRIPTION/ THEORY OF OPERATION:
31                ;
32                ;       THE PROGRAM CONSISTS OF A SEQUENCE OF INDIVIDUAL CIRCUIT
33                ;       LEVEL TESTS. THESE TEST ARE REPEATED A NUMBER OF TIMES
34                ;       BEFORE THE PROGRAM PROCEEDS TO THE NEXT TEST. WHEN ALL
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10005  .MAIN
01              ;       TESTS ARE COMPLETED THE PROGRAM REPEATS THE SEQUENCE.
02              ;       SEE THE PROGRAM LISTING FOR DETAILS OF THE INDIVIDUAL
03              ;       TESTS.
04              ;
05              ;10.DEBUG AIDS:
06              ;
07              O?DTD  10.1
08
09              ;10,1.  OCTAL DEBUG TOOL (ODT)
10              ;
11              ;       THIS DIAGNOSTIC IS EQUIPED WITH A BUILT IN ODT WHICH CAN
12              ;       BE ACCESSED BY HITTING CONTROL O (^O) AT ANY TIME DURING
13              ;       THE EXECUTION OF THE PROGRAM (AFTER SETTING THE PARA-
14              ;       METERS).
15              ;       ON ENTERING ODT THE ADDRESS OF THE LOCATION HAVING THE
16              ;       NEXT INSTRUCTION TO BE EXECUTED WILL BE TYPED-OUT.
17              ;
18              ;10.1.1 CONVENTIONS AND SYMBOLS
19              ;       THE FOLLOWING CONVENTIONS ARE USED BY THE ODT:
20              ;       ?       PRESSING ANY ILLEGAL KEY CAUSES THE ODT TO RES-
21              ;               POND WITH A "?".
22              ;       @       ODT IS READY AND AT YOUR SERVICE.
23              ;
24              ;10.1.2 COMMAND STRUCTURE
25              ;       AN ODT COMMAND HAS THE FOLLOWING FORMAT:
26              ;               [ARGUMENT][COMMAND]
27              ;       AN ARGUMENT MAY BE ONE OF THE FOLLOWING:
28              ;       "EXP"   AN OCTAL EXPRESSION CONSISTING OF OCTAL NUMBERS
29              ;               SEPARATED BY PLUS (+) OR MINUS (-) SIGNS. LEAD-
30              ;               ING ZEROS NEED NOT BE TYPED.
31              ;       "ADR"   AN ADDRESS IS THE SAME AS AN EXPRESSION EXCEPT
32              ;               THAT BIT 0 IS NEGLECTED.
33              ;       A COMMAND IS A SINGLE TELETYPE CHARACTER
34              ;
35              ;10.1.3 ODT COMMANDS
36              ;       THE LOCATIONS THAT CAN BE EXAMINED AND MODIFIED BY THE
37              ;       USER ARE CALLED CELLS. THESE CELLS ARE OF TWO TYPES:
38              ;       INTERNAL CPU CELLS AND MEMORY LOCATIONS.
39              ;
40              ;10.1.3.1       OPENING INTERNAL CELLS
41              ;       THE COMMAND TO OPEN ONE OF THE INTERNAL REGISTERS IS OF
42              ;       THE FORM "NA" WHERE N IS ANY OCTAL EXPRESSION BETWEEN
43              ;       0 AND 7
44              ;       0-3     FOR ACCUMULATORS 0-3
45              ;       4       FOR PC OF THE NEXT INSTRUCTION TO BE EXECUTED IN
46              ;               THE EVENT OF A "P" COMMAND.
47              ;       5       CPU AND TTO STATUS
48              ;               BIT     INTERPRETATION
49              ;               15      STATUS OF TTO DONE FLAG
50              ;               14      STATUS OF INTERRUPTS (ION FLAG)
51              ;               13      STATUS OF CARRY BIT
52              ;       6       ADDRESS OF THE LOCATION HAVING THE BREAK POINT (IF
53              ;               ANY)
54              ;       7       INSTRUCTION AT THE BREAK POINT LOCATION
55
56              ;       OTHER COMMANDS TO OPEN CELLS ARE:
57              ;
58              ;       "ADR"/  OPEN THE CELL AND PRINT ITS CONTENTS
59              ;       ./      OPEN THE CELL CURRENTLY POINTED TO BY THE POINTER
60              ;               AND PRINT ITS CONTENTS.
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 0006  .MAIN
01              ;       .+"ADR"/        ADD "ADR" TO THE POINTER, OPEN THE CELL
02              ;               AND PRINT ITS CONTENTS.
03              ;       .-"ADR"/        SUBTRACT "ADR" FROM THE POINTER, OPEN
04              ;               THE CELL AND PRINT ITS CONTENTS.
05              ;       "CR"    THE RETURN KEY IS USED TO CLOSE THE OPEN CELL
06              ;               WITH OR WITHOUT MODIFICATION.
07              ;       "LF"    LINE FEED IS USED TO CLOSE THE OPEN CELL WITH OR
08              ;               WITHOUT MODIFICATION AND TO OPEN THE SUCCEEDING
09              ;               CELL.
10              ;       ^       CLOSE THE OPEN CELL WITH OR WITHOUT MODIFICATION
11              ;               AND OPEN THE PRECEDING CELL
12              ;       /       CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
13              ;               OPEN THE CELL POINTED TO BY ITS CONTENTS.
14              ;       +"ADR"/ CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
15              ;               OPEN THE CELL POINTED TO BY ITS CONTENTS + "ADDR".
16              ;       -"ADR"/ CLOSE THE OPEN CELL WITHOUT MODIFICATION, AND
17              ;               OPEN THE CELL POINTED TO BY ITS CONTENTS - "ADR".
18              ;
19              ;10.1.3.2       MODIFICATION OF A CELL
20              ;       ONCE A CELL HAS BEEN OPENED ITS CONTENTS CAN BE MODIFIED
21              ;       BY TYPING THE NEW VALUE THE CELL IS TO CONTAIN IN THE
22              ;       FORM OF AN OCTAL EXPRESSION FOLLOWED BY "CR" OR "LF".
23              ;       IF A + OR - IS TYPED AS THE FIRST CHARACTER OF THE EX-
24              ;       PRESSION THEN THE VALUE OF THE EXPRESSION IS ADDED TO OR
25              ;       SUBTRACTED FROM THE OLD CONTENTS OF THE CELL. THE
26              ;       ADDRESS ITSELF OR AN EXPRESION RELATIVE TO THE ADDRESS
27              ;       CAN BE DEPOSITED BY TYPING A "." OR ".+/-OCTAL EXPRESS-
28              ;       ION". A RUBOUT COMMAND GIVEN RIGHT AFTER OPENING A CELL
29              ;       ALLOWS THE MODIFICATION OF ITS CONTENTS AS IF THEY WERE
30              ;       TYPED IN JUST BEFORE THE COMMAND WAS ISSUED.
31              ;
32              ;10.1.3.3       OTHER ODT COMMANDS
33              ;       RUBOUT  THIS KEY IS USED TO DELETE ERRONEOUSLY TYPED
34              ;               DIGITS. EACH TIME THE KEY IS PRESSED THE RIGHT MOST
35              ;               DIGIT IS DELETED AND ECHOED ON THE TERMINAL. IF
36              ;               THE RUBOUT KEY IS PRESSED RIGHT AFTER OPENING A
37              ;               CELL THEN IT DELETES THE RIGHT MOST DIGIT OF THE CELLS
38              ;               CONTENTS. THIS ALLOWS THE MODIFICATION OF THE CELL
39              ;               AS IF ITS CONTENTS WERE TYPED IN JUST BEFORE THE
40              ;               KEY WAS PRESSED.
41              ;       "ADR"B  INSERT A BREAK POINT AT LOCATION "ADR".
42              ;               ONLY ONE BREAK POINT CAN BE INSERTED AND ANY
43              ;               ENTRY TO ODT AFTER EXECUTING A BREAK POINT WILL
44              ;               CAUSE IT TO BE DELETED.
45              ;       D       DELETE THE BREAK POINT IF ANY.
46              ;       P       RESTART THE EXECUTION OF THE PROGRAM AT LOCATION
47              ;               POINTED BY 4A.
48              ;       "ADR"R  START EXECUTING THE PROGRAM AT "ADR" AFTER AN
49              ;               IO-RESET.
50              ;       K       KILL THE STRING TYPED SO FAR. THE ODT RESPONDS
51              ;               WITH A "?" AND THE OPEN CELL IS CLOSED WITHOUT
52              ;               MODIFICATION.
53              ;       =       PRINT THE OCTAL VALUE OF THE INPUT ONLY.
54              ;               THIS WILL CLOSE ANY OPEN CELLS WITHOUT
55              ;               MODIFICATION AND WILL NOT OPEN A CELL
56              ;
57              ;
58              ;       NOTE:   IN PROGRAMS WHICH RELOCATE THEMSELVES THE
59              ;               THE USER SHOULD PLACE BREAK POINTS ONLY IN THE
60              ;               THE ORIGINAL PROGRAM AREA. IF A BREAK POINT IS
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 0007  .MAIN
01              ;               PLACED OUTSIDE THIS AREA THE RESULTS WILL
02              ;               BE UNPREDICTABLE.
03              ;
04              ;
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!0008  .MAIN
01              ;
02              ;
03              ;11.    SPECIAL FEATURES AND NOTES:
04              ;
05              ;11.1   ALL COMMENTS, SIGNAL NAMES, ETC. REFERENCE A
06              ;       STANDARD I.P.B. BOARD USING DEVICES 36,37,40,41.
07              ;
08              ;
09              ;11.2   IPB TEST PLUG DESCRIPTION
10              ;
11              ;       CONNECTED PINS          SIGNAL NAMES
12              ;
13              ;       23,43,36                DOAO, DOAI, DIAI
14              ;       21,33,32                -(DSO41), -(DSI41), -(DSI40)
15              ;       27,39                   -(IORSTO), -(IORSTI)
16              ;       18,34                   -(DSO36), -(DSI36)
17              ;       19,35                   -(DSO37), -(DSI37)
18              ;       22,37                   STRTO, IPI
19              ;       25 44                   IPO, STRTI
20              ;       29,40,42                -(41BUSYO), -(41BUSYI), LEFTFINDER
21              ;       31,46                   -(SCO40), -(SCI40)
22              ;       30,45                   CLRO, CLRI
23              ;       26,38                   DIBO, DIBI
24              ;       28,41                   -(36BUSYO), -(36BUSYI)
25              ;
26              ;
27              ;12.    RUMTIME:
28              ;
29              ;       THE FIRST TWO PASSES OF THIS PROGRAM SHOULD EXECUTE
30              ;       WITHIN 2 MINUTES MAXIMUM. IF THE APPROPRIATE PASS
31              ;       MESSAGES ARE NOT PRINTED BY THIS TIME THE PROGRAM IS
32              ;       NOT EXECUTING SUCCSSFULLY.

**00000 TOTAL ERRORS, 00000 FIRST PASS ERRORS
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0009 .MAIN
0?DTD 010322  MC    5/07
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